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# Superfund Site Update



## American Cyanamid Site Bridgewater Township, Somerset County, New Jersey

New Jersey Department of Environmental Protection

April 2022

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### SITE BACKGROUND

The site is located in the southeastern section of Bridgewater Township, Somerset County (Figure 1). The site is approximately 435 acres in size and is bounded by Main Street to the north, the Raritan River to the south, Interstate 287 and the Somerset Tire Service to the east and the Raritan River to the west. The site has been used for numerous chemical and pharmaceutical manufacturing operations for over 75 years. Manufacturing ceased at the site in June 1999 and demolition of the plant buildings was completed by November 2000.

Past manufacturing and disposal activities at the site had resulted in a number of areas used for waste storage and disposal as well as areas of soil and ground water contamination. The site is listed on the National Priorities List (NPL). Site cleanup activities are being addressed under a May 1988 (Amended May 1994) Administrative Consent Order (ACO) between American Cyanamid and the New Jersey Department of Environmental Protection (NJDEP). Wyeth Holding/Pfizer Corporation has assumed full responsibilities for remediation of the site. Requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Re-authorization Act (SARA) as well as the Resource Conservation and Recovery Act (RCRA) and the Hazardous and Solid Waste Amendments (HSWA) for corrective actions are included in the ACO and are being addressed as part of overall site cleanup. A HSWA permit, several Consent Decrees and numerous Air Pollution Control permits have also been issued to the site. May 1994 ACO was modified into Amended and Restated Administrative Consent Order (ARACO which became effective on 23Dec15.

### SITE INVESTIGATION

A Remedial Investigation of the site-wide soils was completed in 1992. A Feasibility Study addressing the site-wide soils will be initiated after completion of the remediation of the 16 on-site impoundments. Site-wide

ground water contamination will be addressed after completion of the remediation of site-wide soils. Potential

contamination in surface water, sediment and associated wetlands related to the Cuckolds Brook and Raritan River is being independently (and simultaneously with this program) addressed under the Natural Resource Assessment investigation program. Depending upon the outcome of this investigation program, additional study and/or restoration work may be required.

Due to practical limitations, all 16 of the Superfund impoundments cannot be remediated concurrently. Therefore, they have been grouped into three impoundment groups according to waste type, nature of contaminants, and geographical location on the site. This concept allows this complex site to be subdivided into discrete, more manageable units. The impoundment groups are as follows:

Group I - Impoundments 11, 13, 19, and 24

Group II - Impoundments 15, 16, 17, and 18

Group III - Impoundments 1, 2, 3, 4, 5, 14, 20, and 26

In addition to the 16 Superfund Impoundments, there are 4 RCRA Lagoons (Lagoons 6, 7, 8 and 9A), which require closure.

#### *Completed Programs*

American Cyanamid Company has completed, or is conducting, several remedial programs at the site. Completed programs include: removal of pumpable tars from Impoundments 1, 2, 4, and 5 for off-site use as a supplemental fuel, closure of Impoundments 11, 18, 19, 26 and closure of Lagoon 6, 8 and 9A. Each of the ongoing programs is discussed briefly below.

#### *On-going Programs*

##### **On-site Impound 8 Facility Program**

This program involves closure and post-closure of four on-site impoundments (Lagoons 6, 7, 8, and 9A) and the construction of a waste consolidation facility (Impound 8

facility). These construction, closure, and post-closure activities are being conducted in accordance with the May 1994 ACO. Construction of Cell 1 of the state-of-the-art Impound 8 facility was completed in May 1991. The design includes a triple liner, leachate detection and collection system and ground water monitoring system. A cross section of the Impound 8 facility is provided. Sludge from old Lagoon 8 was removed, dewatered, solidified, and consolidated into Cell 1 from August 1991 to November 1994. Also during this time period, most of the waste from Lagoon 7 was removed, dewatered, solidified, and consolidated into Cell 1. The solidified sludge from Impoundment 19 was placed in Cell 1. Construction of Cell 2 of the Impound 8 facility was completed in August 1996. The design of this cell includes a double composite liner system, leachate detection and collection system, and a ground water monitoring system. Solidified sludge from the remediation of Impoundment 11 was placed in Cell 2 between September 1996 and April 1997. Solidified sludge from the remediation of Lagoon 6 was placed in cell 2 between November 1997 and May 1999. Construction for Cells 3 and 4 of the Impound 8 facility was completed in December 1999. The design of cells 3 and 4 is similar to Cells 1 and 2 (Figure 2). Solidified sludge from the remediation of Impoundment 26 was placed in cell 3 and 4 between December 2000 and April 2001. Impoundment 9A has been closed in-place by installing a double synthetic liner capping system (60-mil High Density Polyethylene). The final closure of the Impoundment 8 Facility is nearly complete. See the attached Fact Sheet.

### **Surface Soils Remedial/Removal Action Program**

The 1992 Surface Soils Remedial/Removal Action (SSR/RA) Program was completed in December 1992 addressing areas of surface soil contamination that posed a potential risk to worker health and safety. The program included excavation and off-site disposal of Polychlorinated Biphenyl (PCB)-contaminated soils, excavation and disposal of Polynuclear Aromatic Hydrocarbon (PAH)-contaminated soil in the on-site RCRA permitted facility, and capping of another PAH-contaminated area (in West Yard Area near Impoundment 14), as well as placement of a geotextile, soil and vegetative cover over a chromium-contaminated area. These areas, except for one PAH Area (Area 11) will be revisited as part of the site-wide soil remediation program. PAH Area 11 was determined to be clean based on post-excavation sampling results that indicated no surface contamination and based on the Soil Remedial Investigation data that indicated no subsurface contamination above the applicable State Cleanup Criteria. NJDEP non-residential cleanup criteria were used in the SSR/RA program.

### **Hill Property Remedial Investigation/Rod**

The Hill Property is approximately 140 acres in area, bounded to the south by the Central Railroad of New Jersey (CRNJ) railroad tracks, to the east by Interstate Highway 287, to the north by Route 28 (Union Avenue). Although physically separated from the main plant of the site the Hill property portion was part of the overall site, which consisted of a research laboratory and administrative buildings. The March 1991 Hill Property Remedial Investigation Report and comparison of contaminant levels in soils to NJDEP Soil Cleanup Criteria indicated that levels of contaminants in soils at the Hill Property are below the applicable NJDEP Soil Cleanup Criteria (both residential and non-residential) and/or background and/or Impact to Ground Water Criteria. The March 1992 Baseline Site-Wide Endangerment Assessment Report (Hill Property Quantitative Risk Assessment, Appendix VII) established that there is no current or future unacceptable risks to human health and the environment associated with the Hill Property. Based on this finding, no remedial actions were required for the Hill Property soils.

In July of 1996, a no further action ROD was issued by the NJDEP for the Hill Property portion of the site. The ROD included provisions for a Classification Exception Area (CEA) covering the groundwater beneath the Hill Property. This groundwater was monitored at five bedrock wells (former production wells PW-16, PW-17, PW-18, as well as wells UU and MJ). Low levels of some organic compounds were observed in these wells at the time of issuing of the ROD/CEA. Monitoring of these wells was terminated after it was observed that the monitoring results are below criteria for two consecutive quarters (NJAC 7:26E-6.3).

The Hill Property area of the site was deleted from the NPL in December 1998 and developed under the Brownfields program, which includes a Baseball Stadium and Retail Stores (Home Depot, Target and others).

### **Bedrock Ground Water Pumping/Control System Program**

Presently an average of 650,000 gallons of groundwater per day is being withdrawn from the on-site extraction wells. The withdrawal of over 650,000 gallons per day results in ground water flow inward from the perimeter of the site towards the pumping wells. This system effectively contains the majority of the ground water contamination within the production area and West Yard area on the site. Recovered ground water is transferred to the adjacent Somerset-Raritan Valley Sewerage Authority (SRVSA) wastewater facility for subsequent treatment.

Any ground water not captured by the production well pumping system flows to the Raritan River. A previous study (Lawler, Matuskey, and Skelley, 1983) concluded that the Cyanamid facility did not have a significant impact on water quality in the Raritan River.

Natural Resource Damage: NJDEP and Wyeth/Pfizer settled for groundwater-only Natural Resource Damage dated 3Sep20.

### **Impoundments 11, 13, 19, and 24 (Group I)**

Remediation of the Group I Impoundments, consisting of solidification and consolidation into the Impoundment 8 facility, has been initiated in accordance with the September 1993 Record of Decision (ROD), May 1994 Remedial Design Report as well as the July and September 1994 Impoundment 19 Remedial Action Plans and the August 1996 Impoundment 11 Remedial Action Plan. To date, remediation of Impoundments 11 and 19 has been completed. Remediation of Impoundments 13 and 24 will be addressed as part of site-wide remediation program (see below).

### **Impoundments 15, 16, 17, and 18 (Group II)**

Remediation of the Group II Impoundments has been initiated in accordance with the July 1996 ROD, the March 1997 Remedial Design Report, and the October 1997 Remedial Action Plan (Impoundment 18). The selected remedial alternatives for those impoundments are as follows:

*Impoundment 15 and 16:* Consolidation of the material from Impoundment 16 into Impoundment 15, followed by covering with a synthetically lined cap. NJDEP received a proposal from American Home Products Corporation for an alternative remedy consisting of recycling/reuse of iron oxide material at an offsite facility (used in an industrial process to scrub / strip Hydrogen Sulfide). Based on this proposal, NJDEP issued a Superfund Explanation of Significant Difference (for selected remedy in the July 1996 ROD). This recycling/reuse activity is now in progress. Impoundments 15 & 16 contained approximately 80000 tons of material. To date, approximately 39960 tons of material has been sent to off-site location for recycling / reuse.

*Impoundment 17:* Solidification and consolidation into the Impound 8 facility. Remediation of Impoundment 17 will be addressed as part of site-wide remediation program (see below).

*Impoundment 18:* Security fencing, berm improvements and maintenance of natural vegetative cover. The closure of Impoundment 18 has been completed.

### **Group III Impoundments (1, 2, 3, 4, 5, 14, 20 & 26):**

A ROD was signed on 8 October 1998 as follows:

1. Category A material (High BTU tar of Impoundments 1 and 2):
  - Low-Temperature Thermal Treatment (LTTT) and placement of treated material in Impoundment 8;
2. Category B (Low BTU tar of Impoundments {4, 5 (wet), 14, and 20}):
  - Biotreatment and placement of treated material in Impoundment 8
3. Category C (remaining tar material of Impoundment 3):
  - LTTT and placement of treated material in Impoundment 8
4. Category D (non-hazardous material of Impoundments 5 (dry) and 26):
  - Consolidation in Impoundment 8
5. Category E (General plant debris of Impoundments 3, 4, 5, 14, and 20):
  - Consolidation in Impoundment 8.

During 2002, a 65,000 square foot processing structure was constructed to support the Group III Impoundment remediation projects. The purpose of the structure is to control odors and air emissions generated during the processing of impoundment materials. Using the facility, a portion of Impoundment 5 Dry was solidified and placed into the Impound 8 Facility. The remaining portion of Impoundment 5 Dry will be removed during the remediation of Impoundment 5 Wet. Impoundments 14 and 20 were excavated and staged in preparation for biotreatment (see below).

### **Impacts on Floodplain and Raritan River**

The approved Baseline Ecological Risk Assessment (O'Brien & Gere, 2005) and Human Health Risk Assessment (O'Brien & Gere, 2006) both concluded that there were minimal risks or impacts to either the floodplain soils or the Raritan River. Additionally, as required by the USEPA guidance and regulations, the Human Health Risk Assessment included an evaluation of potential risks to transient trespassers and others who may spend limited time on the Site. Constituents at the Site do not pose an unacceptable risk based on current Site use and employed interim measures.

### **USEPA Site Assessment**

The USEPA has performed an assessment of the Site for RCRA Corrective Action Environmental Indicators (EIs) and found that both Migration of Contaminated

Groundwater (CA 750) and Current Human Exposures (CA 725) were under control.

#### Activities since 2004

- **Groundwater collection and treatment** – Wyeth continues to pump at least 650,000 gallons per minute of groundwater to provide on-site contaminant containment and eliminate migration of contaminants. The water is transferred to Somerset Raritan Valley Sewerage Authority for treatment. This containment is confirmed through quarterly (and now biennial) monitoring and reporting.
- **Impoundments 15 and 16 Recycling** – during the period of 2004 through 2009 approximately 84,000 tons of impoundment material (i.e. iron oxide) were excavated and shipped off-site for recycling.
- **Groundwater remedial investigation** – the Remedial Investigation for the Site groundwater was conducted from 2004 through 2007 as summarized within the approved Remedial Investigation Report for Ground Water (HydroQual, 2006) and the Supplemental Remedial Investigation Report for Groundwater (HydroQual, 2007).
- **Data Adequacy Review** – during 2004 a review of Site data was conducted to determine the adequacy for performing a Comprehensive Site-wide Feasibility Study. This was confirmed in an approved Data Adequacy Review Report (O'Brien & Gere, January 2005).
- **Baseline Ecological Risk Assessment (BERA)** – was conducted through 2004 culminating in an approved report dated January 2005.
- **Human Health Risk Assessment (HHRA)** – was conducted in 2004 through 2006 culminating in an approved report dated December 2006.
- **Impoundments 14 and 20** – the remediation of Impoundments 14 and 20 material continued with the completion of the Remedial Design and Remedial Action Work Plan in 2005 and the treatment and final placement of materials into the Impound 8 Facility in 2009. This included the excavation and treatment of approximately 19,300 cubic yards of material.
- **Comprehensive Site-wide Feasibility Study** – from 2005 through 2009, the Feasibility Study for the entire remainder of the Site was conducted.

- **Surface water and sediment monitoring** – six rounds of additional surface water and sediment samples were collected following the completion of the HHRA and BERA. The data from these sampling activities show that there is no measured adverse effect related to migration of compounds of concern from on-site sources to Cuckold's Brook or the Raritan River.

#### Community Involvement

Monitoring, review, and input on the remedial activities conducted at the Site are provided through Bridgewater Township and a local community group, Concerned Residents Involved with Stopping Incinerators (CRISIS). Representatives from these groups attend the monthly progress meetings and are provided with drafts of documents for review and comment.

#### Drying Bed

The Drying Bed Area is located in the Floodplain portion of the Site and consists of a former railroad loading/unloading area for spent iron oxide. As such, there are iron oxide deposits on the ground which are remains from historical operations. The area was not identified as a disposal area or impoundment by the agencies during Superfund Site designation. Additionally, it was not deemed a high enough risk to warrant a required berm inspection and maintenance program, as were the other identified impoundments.

Surface sample results presented within the approved Soils Remedial Investigation Report (BB&L, 1992) showed minimal concentrations of any target compounds with only arsenic and PCBs detected at concentrations slightly above soil screening levels.

The iron oxide material within the Drying Bed Area was included within the ROD for Impoundments 15 and 16 and is slated for recycling. This process is ongoing.

#### Odor Control

Wyeth employs various methods (i.e. liners and water covers) to mitigate potential nuisance odors from migrating beyond the Site's borders. Furthermore, during any remedial or investigative program, Wyeth performs active air monitoring and control in accordance with regulatory agency approved methods.

## Site Security

The site is posted private property and has full time security. The majority of the site is fenced with posted “no trespassing” signs, however there are areas along the Raritan River, which bounds the site to the South, and where an active Conrail railroad line passes through the Site that are not fenced. The unfenced areas are patrolled by the site’s security service. An evaluation of security procedures is being conducted and additional security measures (installing additional fence & additional security patrol) are being considered.

## SITE MONITORING

Periodic sampling of groundwater, surface water, sediment, and ambient air is performed at the Site. All results are provided to the U.S. Environmental Protection Agency (EPA) and the New Jersey Department of Environmental Protection (NJDEP).

## SITE-WIDE CLEANUP

On September 27, 2012, the EPA issued a Record of Decision (ROD) for Operable Unit 4 (OU4), which addresses Site-wide soils and groundwater, as well as the remaining impoundments on the Site, with the exception of Impoundments 1 and 2. The Site-wide remedy includes these components:

- A new and expanded bedrock and overburden groundwater containment, extraction, treatment and reinjection system.
- Treatment of waste material located within Impoundments 3, 4, and 5 using stabilization and solidification technologies.
- Engineering and construction of protective covers to address site-wide soils.
- Long-term operation of the groundwater treatment system and continued Site monitoring and maintenance.

## RECENT PROGRESS

Construction of the bedrock and overburden groundwater containment, extraction, treatment and reinjection system, a major component of the Site-wide remedy, is complete. The dedicated on-site groundwater treatment facility, located on Polhemus Lane in Bridgewater, is fully operational.



Exterior view of the treatment plant building on Polhemus Lane.

In addition to progress on the groundwater treatment system, pre-design and design activities for the site-wide soils remedy continue, including design of the stabilization/solidification treatment process for waste materials located in Impoundments 3, 4 and 5.



View of the metals precipitation phase of the groundwater treatment system.



Critical system infrastructure was raised above historic flood levels to help build resiliency in storm events.

## IMPOUNDMENTS 1 AND 2

On September 25, 2018, EPA issued a ROD for Operable Unit 8 (OU8), commonly referred to as Impoundments 1 and 2. The final remedy is based

upon a comprehensive Focused Feasibility Study, input from EPA’s National Remedy Review Board, a detailed analysis of the alternatives, and public comments.



Impoundments 1 and 2 are located in the southeast corner of the

Site.

Based on the cleanup approaches for the Site chosen by the EPA, no additional materials will be added to the Facility. Therefore, Wyeth is closing the Facility with the oversight of the NJDEP and the USEPA.



Rendering of Facility closure, expected to be complete in Summer 2022

The major components of the OU8 remedy include:

- Treatment of impoundment material (i.e. tar) using excavation and removal as well as in-situ stabilization and solidification for adjacent earthen berms and underlying soil and clay impacted by tar that exceeds numeric remedial goals.
- Engineering and installation of a protective cover over the entire OU8 footprint; and
- Institutional controls, monitoring, and periodic reviews to ensure that the remedy remains protective of public health and the environment.



Remedy demonstrations were performed in 2020 and 2021 to gather information for the final design of the OU8 remedy.

## IMPOUNDMENT 8 FACILITY

The Impoundment 8 Facility (Facility), located on Polhemus Lane, was designed and used to store treated material from other areas of the Site as part of the multi-phase environmental cleanup. The Facility is regulated under the Resource Conservation and Recovery Act (RCRA) and work is addressed with oversight by the NJDEP, and the concurrence of the EPA.