



Brunswick Environmental Cleanup Newsletter

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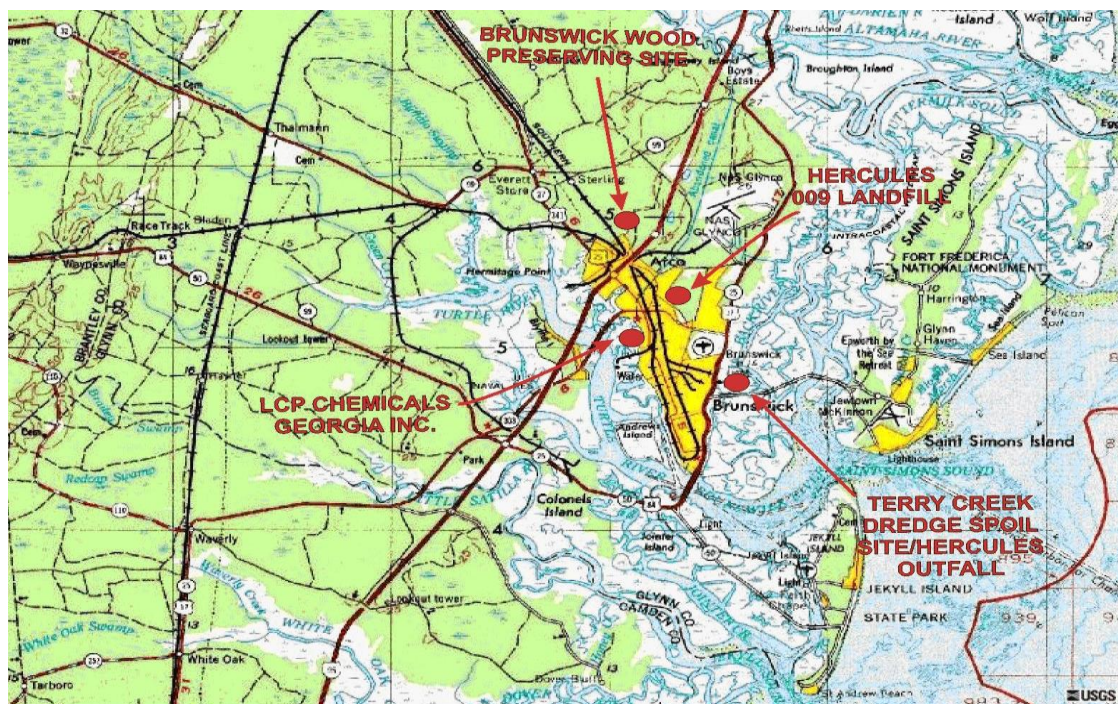
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Brunswick, Georgia

June 2014



BRUNSWICK WOOD PRESERVING

Site Background

The Brunswick Wood Preserving Superfund site is a former wood treating site. While in operation from 1958 to 1991, wood was treated using pentachlorophenol (PCP), creosote, and chromated copper arsenate (CCA). Wastewater from facility operations was disposed in on-site ponds on the eastern and western ends of the 84 acre site.

Cleanup Progress

Cleanup work at this site has been conducted in two parts, or Operable Units (OUs). In 2006, the OU1 Remedial Action was begun, which includes the following:

- ✓ Placement of two subsurface slurry walls around the old creosote ponds
- ✓ Solidification and/or stabilization of the contaminated soils and sediments from the site and Burnett Creek. This treatment binds the contaminants to the

- soil materials, which were then placed over the old creosote ponds as subcaps
- ✓ Placement of caps on top of the subcaps to prevent human contact with wastes and prevent the infiltration of water into the wastes below
 - ✓ Treatment of the contaminated groundwater outside the western slurry wall using a process called *in situ* chemical oxidation
 - ✓ Placement of institutional controls to restrict future land and groundwater use
 - ✓ Long term monitoring to ensure that the remedy remains protective

Phase One of the OU1 Remedial Action ended in late 2007 and included site preparation, drainage improvements, pond dewatering and treatment, and soil/sediment excavation activities. Phase Two of the OU1 Remedial Action ended in December 2009 and included the treatment of contaminated soils/sediments, construction of two subcaps and subsurface barrier walls, additional restoration of Burnett Creek, and construction of the western engineered cap. Phase Three of the OU1 Remedial Action was funded primarily with \$8.3 million provided through the American Recovery and Reinvestment Act of 2009, and included an additional subsurface barrier wall, the eastern engineered cap, site restoration activities, and installation/startup of the groundwater remediation system. Groundwater treatment outside of the western barrier wall began in July 2011, and includes quarterly groundwater monitoring.

Operable Unit Two (OU2) addressed ecological risks in Burnett Creek. Additional sampling in the creek was conducted in October/November 2011. Based on the results of that sampling, EPA selected No Action for OU2 in September 2012.

In August 2013, EPA conducted its regular sampling of residential and business water wells

in the site vicinity; no chemicals of public health concern were found in the wells sampled.

Three videos focused on OU1 have been made to keep the public informed about EPA's remedial activities at the Brunswick Wood Preserving site. To view these videos, please visit EPA Region 4's web page for the site at the following address:

<http://www.epa.gov/region4/superfund/sites/npl/georgia/brunwprega.html>

Cleanup Status: Western Containment Area

The OU1 Remedial Action overall cleanup strategy is designed to contain contaminant source areas, with contaminated groundwater outside the western containment area treated *in situ* via chemical oxidation (ISCO) and enhanced bioremediation. As a result of the groundwater remediation system, contaminant levels have dropped in the dissolved phase portion of the groundwater plume, primarily north of Perry Lane Road. In May 2013, injection of hydrogen peroxide and ozone was discontinued in favor of oxygen injection, while oxygen injection was discontinued in December 2013.

However, in some areas creosote still remains in the subsurface outside the OU1 containment remedy.

In September 2013, EPA conducted additional sampling using an advanced technology called Tar-GOST that can highlight free product creosote in the subsurface better than groundwater samples can. To the southwest, creosote in the shallow subsurface was shown in thin, tight stringers of 1-3 feet thickness, at depths <25 feet below ground surface, and encompassing an area of about 0.75 acres (see Figures 1 and 4; also attached are two logs labeled TG-45 and TG-63 highlighting the creosote in yellow at these locations).

It is unlikely that this contamination has migrated to its present location since the two western subsurface barrier walls were constructed in 2009 and 2011, respectively. For example, the shallow groundwater south of the CSX railroad tracks has been known to be contaminated since 2000; however, the historical samples collected there were above and below the creosote stringers, indicating dissolved phase contamination as opposed to creosote.

As discussed in EPA's June 2011 Explanation of Significant Difference, ISCO is technically challenging and cost-prohibitive in cases where the treatment area includes significant source materials such as creosote. EPA is currently evaluating available technologies, options, and costs for addressing this remaining source material.

Cleanup Status: Performance Monitoring

To ensure the integrity of the subsurface containment cells, EPA has been monitoring the water levels inside and outside both containment areas. In 2013, it became apparent that water levels in both cells have risen over time, indicating that groundwater has been able to enter the containment cells. Of more concern, a

decrease in water levels from August 2012 to March 2013 indicated that contaminated groundwater may be exiting the containment cells.

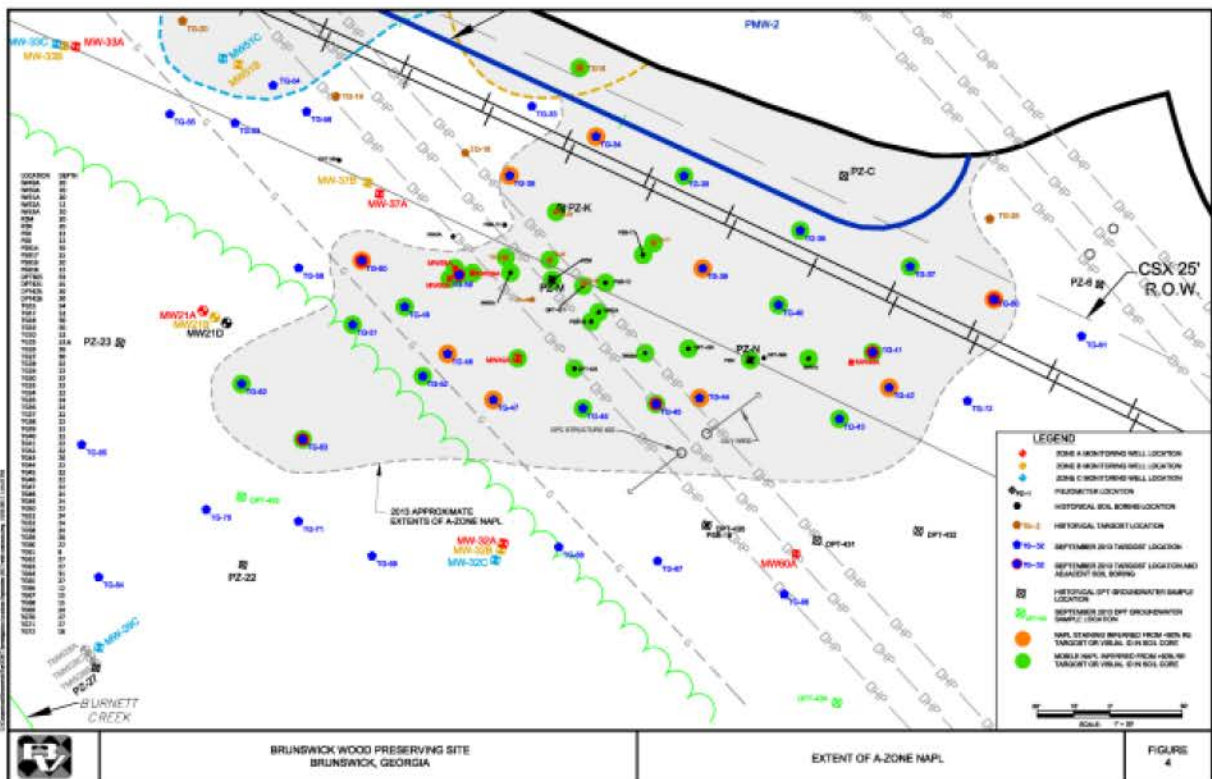
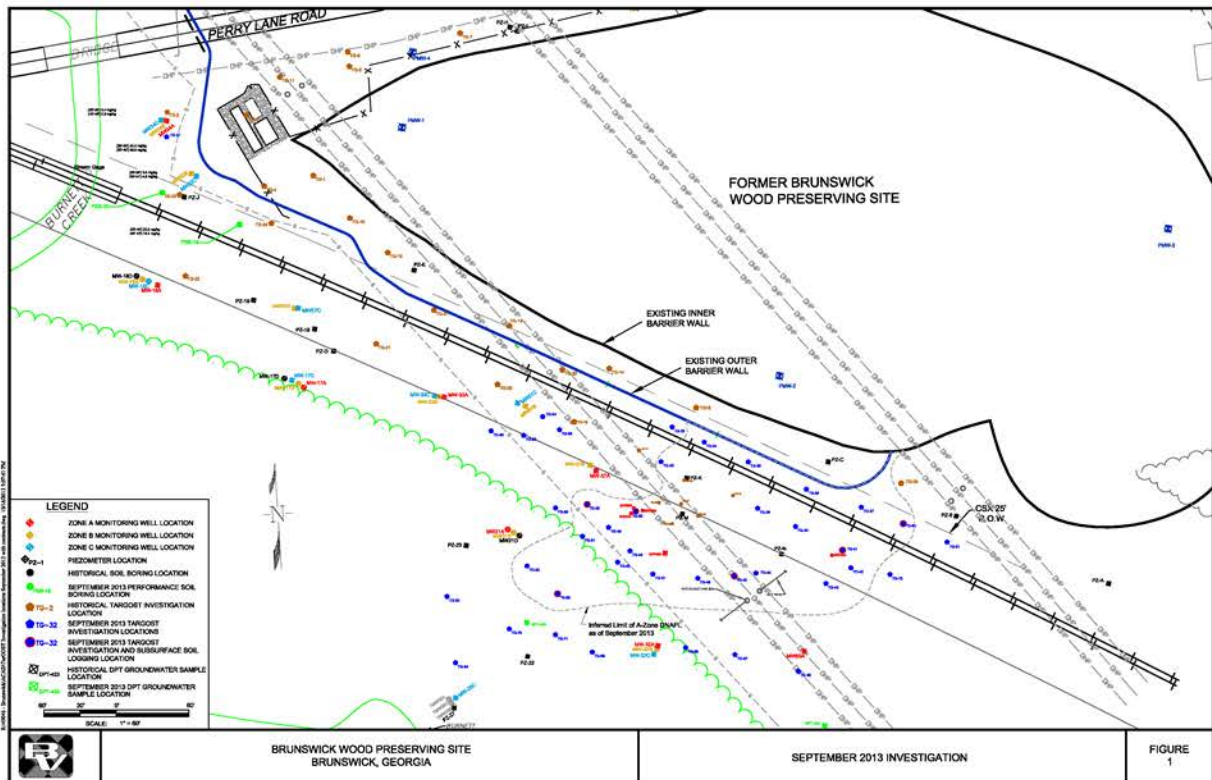
To investigate this development further, EPA is conducting additional subsurface investigations. During the week of February 10, seven new wells were installed across the site and sampled, with five screened beneath the confining unit, and two screened across the confining unit itself. No contamination was found in these wells.

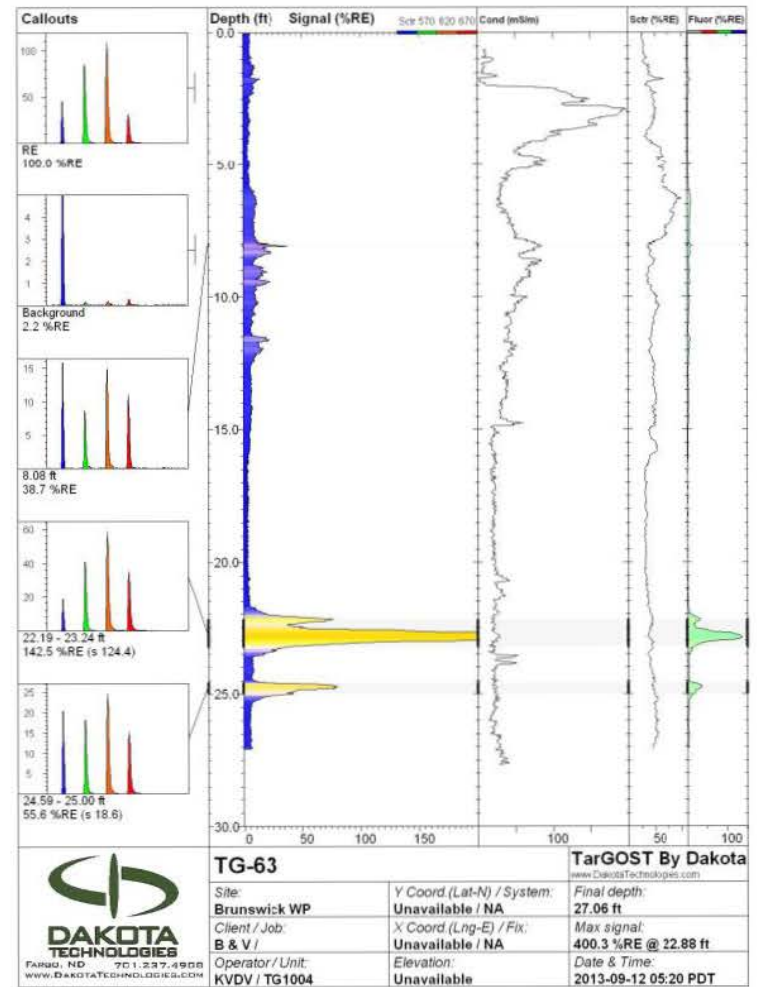
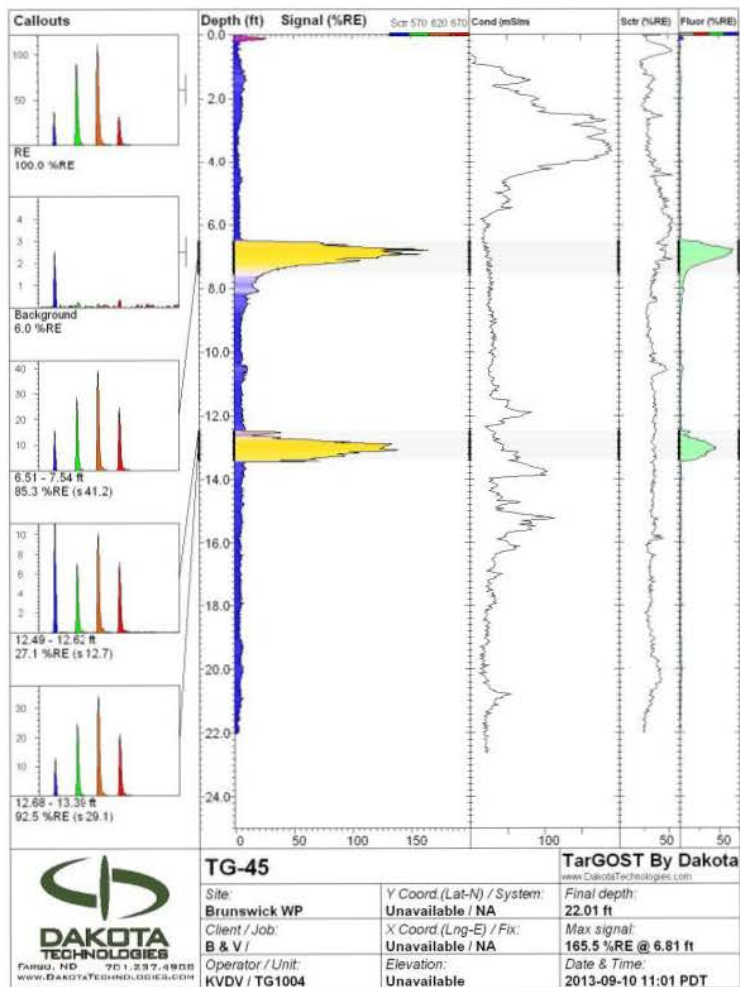
During the week of March 17, thirty-three transducers were installed in wells across the site. The purpose of these transducers is to collect continuous water level data over several months. When this data has been evaluated, EPA will take additional steps, as necessary, to confirm the integrity of the containment cells.

If groundwater is determined to be entering and exiting the containment cell(s), it may be necessary to take steps to maintain a constant water level. As stated in the 2002 Record of Decision, "... pumping groundwater out of the [containment cell] might be required to optimize water levels, and if so, treatment would be required for the contaminated groundwater."



Brunswick Wood Preserving, January 2012





Site Background

Under the supervision of the Environmental Protection Agency (EPA), the former LCP Chemicals Superfund Site in Brunswick, Georgia is undergoing investigation and cleanup. The LCP Site is located off Ross Road in Brunswick, Glynn County, Georgia. The Site covers about 750 acres, the majority of which are tidal marshlands. The primary contaminants of interest at the LCP Site include mercury, polychlorinated biphenyls (PCBs), lead, and polynuclear aromatic hydrocarbons (PAHs). These contaminants are the result of about 100 years of manufacturing operations at the Site.

Cleanup Progress

Operable Unit 1 (OU1) previously represented the marsh and upland soils and OU2 represented groundwater. During 2005, EPA redefined the operable units as follows: OU1 represents the marsh, OU2 represents groundwater, and OU3 represents the upland soil. OU3 was created to allow EPA to separate two technically different areas. All three OUs remain in the remedial investigation/feasibility study (RI/FS) phase.

Operable Unit 1: Marsh

Due to redefining this OU to represent only the marsh, EPA requested that Honeywell International, Inc. submit an updated Baseline Human Health Risk Assessment (HHRA) and Baseline Ecological Risk Assessment (BERA). Below is the status of submittals for this OU:

- EPA, in consultation with the State of Georgia Environmental Protection Division (GaEPD) has approved the remedial investigation, including the baseline human health and ecological risk assessments;

- Between the spring of 2012 and the winter of 2013, the responsible parties, EPA and GaEPD met on multiple occasions for the purpose of preparing the draft feasibility study (FS) for the marsh;
- The initial draft of the FS was received in April 2013;
- EPA's and EPD's consolidated comments were made available in June 2013;
- A revised draft of the FD for the estuary was submitted in October 2013;
- In December 2013, the Region presented the proposed remedy for the marsh to EPA's National Remedy Review Board;
-
- The Record of Decision (ROD) for the marsh is anticipated by September 2014, provided the FS is finalized by the spring of 2013.

Operable Unit 2: Groundwater

A caustic brine pool (CBP) defined by very high pH and high soluble mercury concentrations in an estimated 9.5-acre groundwater plume is located adjacent to the former production plant buildings. Construction of a CBP pump, treat and re-infiltrate system became operational in January 2010. The system performed well below design expectations due to the following: 1) inability of the three infiltration galleries to handle the design volume of treated water and 2) creation of solids which fouled the system after the addition of sulfuric acid to neutralize the pH.

Honeywell then evaluated multiple technologies to address the CBP contaminated groundwater that involved pumping the CBP for off-site treatment and disposal, as well as treating it on-site. In April 2013, Honeywell and a new consultant team completed an in-

situ field pilot treatability study and presented a report “Proof of Concept for CO₂ Sparging”. Upon acceptance of the pilot report by the EPA and GaEPD, a Work Plan for full implementation was submitted and approved in May 2013. Full-scale implementation of carbon dioxide sparging began in Nov. 2013 and the 1st phase (year-1) was completed in Feb. 2014 with very good field-monitoring results. A report detailing the year-1 results and presenting effectiveness conclusions is expected to be submitted to the EPA and GaEPD in late April 2014. Post-injection monitoring and preparation for year-2 implementation will occur into the fall of 2014 with year-2 CO₂ sparging anticipated to begin in Oct./Nov. 2014. The CO₂ sparging is expected to neutralize the high pH and significantly reduce the high concentrations of soluble mercury in the CBP within three years. Consideration of a final remedy for OU2 can then move forward.

Operable Unit 3: Upland Soils

The Update to the 1999 HHRA for Upland Soils, Operable Unit 3 was approved by EPA in March 2007. The updated RI/FS report was submitted to EPA during May 2007. After reviewing this report, it was determined that a

complete ecological risk assessment must be completed in order to evaluate the Site for potential ecological use. Below is the status of submittals for the upland soils:

- In early September 2009, EPA sent the toxicity reference values (TRVs) for PCBs and methyl mercury to be used in the BERA. In mid-December 2009, Honeywell invoked the Dispute Resolution provision of the Administrative Order on Consent (AOC). Following the process described in the AOC, in early February 2010, EPA sent Honeywell its response to Honeywell’s Notice of Dispute;
- The revised OU3 BERA was approved by EPA, in consultation with GA EPD, during July 2010;
- The revised OU3 HHRA was approved by EPA, in consultation with GAEPD, in February 2012 March 2012;
- In April 2013, a draft FS Technical Memorandum, which identifies the areas and volumes to be addressed by the FS was submitted;
- EPA is awaiting input on this document;
- The ROD for this operable unit is anticipated in late spring 2015, provided all supporting documents are finalized in the winter of 2014.

HERCULES 009 LANDFILL

Site Background

Hercules Inc. began producing toxaphene, an agricultural pesticide, in 1948 and continued production through 1980. Toxaphene was one of the most heavily used insecticides in the United States until 1982, when the U. S.

Environmental Protection Agency (EPA) cancelled most uses and then banned the use of toxaphene in 1990. Between 1975 and 1980, Hercules Inc. operated the 009 Landfill to dispose of toxaphene-contaminated drums, glassware, rubble, and trash. EPA added the Hercules 009 Landfill to the National

Priorities List in 1984. The Record of Decision for clean-up of the Hercules 009 Landfill included connecting nearby residents to municipal water service, consolidation and stabilization of soils and sludge using in-situ stabilization, and removing up to one foot of soil and backfilling with clean fill on adjacent county property and nearby residential yards that contained elevated levels of toxaphene. The site achieved the construction completion milestone in 1999 and is in the operations and maintenance (O&M) period. Currently, the landfill cap serves as a parking lot for a nearby auto dealership.

Cleanup Progress

During the fall of 2010 Hercules conducted field activities to implement the groundwater assessment plan submitted on July 20, 2010. The purpose of this plan was to investigate the source and extent of benzene in groundwater near monitoring well N-5. Results of the field work conducted in September 2010 indicated that monitoring

well N-5 continues to monitor exceedances. Temporary wells installed near well N-5 monitored exceedances for benzene as well. To further investigate the source and extent of benzene Hercules conducted additional field work in January 2011. A small benzene plume was delineated, and additional monitoring wells are being installed to continue evaluation of monitored natural attenuation.

In July 2011 EPA issued the third five-review for the site. The review concluded that the remedy is functioning as intended, and is protective of human health and the environment in the short term. In order to be protective in the long term institutional control, which restrict onsite land use, should be implemented. The third five-year review is available for public review at the site repository.

TERRY CREEK DREDGE SPOILS/HERCULES OUTFALL

Site Background

Between 1948 and 1980, Hercules, Inc. produced toxaphene, a chlorinated pesticide, at its Brunswick plant. During this period, wastewater containing toxaphene was discharged through an outfall ditch into Dupree Creek which flows into Terry Creek. Portions of Dupree and Terry Creek were periodically dredged by the U.S. Army Corps of Engineers. Dredge material was placed in several areas near the confluence of Terry and Dupree Creeks. Some material was placed south of Terry Creek and north of the Torras Causeway. Other material was placed in an area adjacent to the Riverside neighborhood. Most of the dredge material was placed in the main dredge disposal area located directly north of Terry Creek and directly east of Dupree Creek. Toxaphene

contamination has been found in the outfall ditch sediments, Terry and Dupree Creek sediments, and the dredge disposal areas.

Cleanup Progress

In April 1997, the site was proposed for listing on the National Priorities List (NPL). The proposed listing did not go final because Hercules voluntarily agreed to enter into an administrative order to conduct a removal action. From January 1998 until April 2000, Hercules began an EPA-directed dredge/excavation of the areas within the waterways that contained the highest sediment concentrations of toxaphene. Approximately 37,000 cubic yards of toxaphene contaminated sediment were removed and taken to a permitted and controlled landfill. By December 2001 the

removal was formally completed. While the removal work was proceeding, EPA and Hercules entered into an administrative order in 1999 to conduct an additional study called a remedial investigation and feasibility study (RI/FS).

As part of a State of Georgia sport fishing study several fish sampling events have been conducted in Terry and Dupree Creeks. Fish sampling events conducted after the removal action was completed in 2001 demonstrated that toxaphene levels in fish tissue had significantly decreased. However, a fish consumption advisory is still in effect for Terry and Dupree Creeks.

In response to concerns that toxaphene concentrations in fish might be underestimated EPA, GAEPD, and Hercules conducted extensive evaluations of the methods used to analyze samples for toxaphene. Concurrent with this review, the Office of Inspector General (OIG) conducted a review of analytical methods used at the Hercules 009 Landfill for analysis of toxaphene and its breakdown products. Subsequently, a new analytical method utilizing gas chromatography negative ion mass spectroscopy (GC-NIMS) was

identified as the “best available science.” This method was then used to analyze groundwater at the Hercules 009 Landfill, and has been used on fish tissue samples at the Terry Creek site. EPA has established formal analytical test methods utilizing GC-NIMS for both water and soil, and EPA is in the process of developing a formal methodology for fish tissue. The SW-846 analytical test method for toxaphene using GC-NIMS is Method 8276.

Current Status

In February 2014 Hercules submitted the draft Focused Remedial Investigation/Feasibility Study Report for Operable Unit 1 (OU1) Outfall Ditch. The purpose of this document is to establish the nature and extent of contamination in the Outfall Ditch, and to develop and screen remedial alternatives to finalize a cleanup decision document.

A fish sampling event was conducted in Terry and Dupree Creeks during the Fall of 2013. The analytical results from this event are expected to be available by Fall 2014.

U.S. EPA Contact Information		
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Information Repository

Three Rivers Regional Library System
208 Gloucester Street
Brunswick, Georgia 31520
(912) 267-1212
Hours of Operation
Monday, Wednesday, Friday, and Saturday
9:30 am to 5:00 pm
Tuesday and Thursday: 9:30 am to 8:00 pm

EPA Region 4 Website
www.epa.gov/region4/waste/npl/nplga



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