

**FINAL CLOSE OUT REPORT**

**Southern Maryland Wood Treating Superfund Site**

**St. Mary's County, Maryland**

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**Region III**

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**I. Introduction**

This Final Close Out Report (FCOR) documents that the U.S. Environmental Protection Agency (EPA) completed all response actions for the Southern Maryland Wood Treating Superfund Site (Site) in accordance with *Close Out Procedures for National Priorities List Sites* (OSWER Directive 9320.2-09A-P).

The SMWT site has been cleaned to residential standards. In addition to the soil sampling results of treated soil during construction, post closure groundwater monitoring demonstrated that the remedy has been successful. All the remaining work deficiencies that were identified in the Preliminary Close Out Report (PCOR) dated April 23, 2001 have been completed. Therefore EPA has determined that the remedy is operational & functional (O&F). Finally, since the site is available for unrestricted use, there has been considerable interest in the redevelopment of the SMWT site by various organizations and companies.

**II. Summary of Site Conditions**

**Background**

The Southern Maryland Wood Treating Site is approximately 25 acres in size and is located on a 96-acre parcel of land approximately one mile north of Hollywood, Maryland. The Site is bounded by residential, agricultural and wooded tracts of land. The Site is currently at the headwaters of the McIntosh Run Watershed, a relatively undeveloped tributary of the Chesapeake Bay, which contains federally endangered mussels.

The facility was owned and operated by the Southern Maryland Wood Treating Company from 1965 to 1978 as a pressure treatment wood preservation business. Creosote and pentachlorophenol (PCP) were used as wood preservatives by the facility. Six unlined lagoons were used for disposal of liquid wastes from the process. As a result of such disposal practices, on-site soils and ground water beneath the lagoons became contaminated. Non-aqueous phase liquids (NAPLs), both light (LNAPLs) and dense (DNAPLs), were found in the subsurface beneath the lagoons and above the underlying clay layer. Additionally, due to ground water discharge to the on-site pond from the lagoon area, surface water and sediments in the on-site pond and sediments in Old Tom's Run (east and west tributaries) became contaminated. Storage of treated wood on-site resulted in surface soil contamination in the upper Site and northeast tank areas (see Figure 1).

## **Removal Actions**

On March 14, 1985, EPA initiated its first response action at the Site after the discovery of contaminated material seeping into the on-site freshwater pond. The removal action excavated 1,400 cubic yards of contaminated sediments from the freshwater pond. The sediments were stabilized with cement kiln dust and encapsulated on-site awaiting final treatment. The Site was promulgated on the National Priorities List on June 10, 1986. (A second removal action was initiated in 1993 – see below)

## **Record of Decision**

In 1988, EPA concluded a Remedial Investigation (RI) and Feasibility Study (FS) for the Site. Based on the findings of these studies, EPA issued a Record of Decision (1988 ROD) on June 29, 1988. Some of the elements of the 1988 ROD included: the construction of a subsurface barrier wall around the former lagoon area; treatment of contaminated soil using on-site incineration; and treatment of contaminated ground water using pump and treat methods. As the Remedial Design work was nearing completion, local citizens and local government entities expressed opposition to an on-site incinerator. The design work was suspended and EPA proposed to conduct a Focused Feasibility Study (FFS) to reevaluate this component of the remedy for the Site.

On June 29, 1993, a second removal action was initiated to address certain immediate threats to the Site while the FFS was being conducted. This action included the demolition of several buildings that were in danger of collapse; the removal and off-site disposal of liquid and solid waste in numerous tanks and retorts; maintaining the pile of previously excavated and stabilized sediment; the construction of an underflow dam to reduce the amount of contaminated material migrating from the on-site pond into the west tributary stream; the construction of a trench upgradient of the pond to collect contaminated ground water; and the construction of a water treatment facility. The water treatment plant (WTP-1) became fully operational in 1995.

The FFS was issued in February 1995. Based on the FFS, the EPA issued a Record of Decision on September 8, 1995 (1995 ROD). This 1995 ROD revised the soil treatment component of the remedy selected in the 1988 ROD from incineration to thermal desorption, which the community accepted as an alternative remedy. The objectives in the 1995 ROD were to eliminate contaminants at the Site which served as a source of contamination to ground water and surface water and thereby eliminate the risks associated with exposure to contaminated surface water, soil and sediments.

## **Remedial Construction Activities**

The first phase of the 1988 ROD involved installation of a sub-surface barrier sheet pile wall around the most highly contaminated part of the site. The barrier wall, installed as an interim measure to prevent off-site migration of contaminated groundwater was completed in 1990.

The second phase of the 1988 ROD called for on-site incineration of the wastes and contaminated soil and sediments. The incineration remedy drew strong opposition from the

community due to perceived health concerns and from the State due to high estimated costs. This second phase of construction was never started due to the issuance of the 1995 ROD which used thermal desorption as a treatment method.

On October 7, 1997 work began on the second phase of the clean-up based on the 1995 ROD. Initial preparatory activities included siting and preparing the locations for the new water treatment plant (WTP-2) and for the thermal treatment pad. These activities also included the clearing and grubbing of other handling and process areas, road building and utilities installation and hook-up. Several buildings that were part of the former wood treatment plant operations were also demolished during this phase.

Installation of the thermal treatment pad area commenced in January 1998. This concrete pad provided a solid surface for construction and operation of the thermal desorption units (TDUs). Two pole barns for protecting staged soil from the elements were also constructed adjacent to the TDU pad. A truck scale was installed for weighing dump trucks filled with excavated soils for treatment. A 100,000-gallon modular tank was installed for process water storage just south of the TDU pad.

In February 1998, the two batch vacuum thermal desorption units (BTDUs) and two continuous thermal desorption units (CTDUs) were mobilized to the Site. Installation activities (mounting, piping, wiring, etc.) for these units and their respective vapor recovery systems began immediately. Operations of the BTDUs commenced with the goal of sustaining the design average throughput rate of 1 ton per hour for each unit. In addition, EPA granted authorization for operation of the CTDUs up to a throughput rate of 12 tons per hour for each unit. Stack sampling provided acceptable results for compliance with air discharge limitations. Sustained 24-hour, 7-day per week operations of the four thermal desorption units (TDUs) began after the satisfactory testing in June 1998.

Operation of the two BTDUs proved problematic and therefore these units were shut down in January 1999 due to unsatisfactory performance. The BTDUs were decontaminated and returned to the supplier. Soil blending activities were refined and expanded in order to make wetter, more contaminated Site soils amenable to treatment in the CTDUs. Requirements for the thermal desorption system for use at the Site were a treatment temperature of 900 degrees Fahrenheit at a retention time of approximately 15 minutes in order to desorb contaminants from the soils and sediments. The desorbed contaminants were condensed and collected for further treatment or disposal. Air emissions from the thermal desorber complied with the substantive requirements of Maryland regulations governing air pollutants and air quality for volatile organic compounds (VOCs).

The main portion of the Site was divided into five contamination source areas and thereby designated as Pits 1, 2, 3, 4, and 5. The excavation and treatment of soil in each designated pit continued until no more contamination was found. The extent of contamination was determined based on the soil sample results from an on-site laboratory. Once soil sample results from the excavation hole came back clean from the on-site laboratory, a confirmation sample was sent to an outside laboratory. United States Army Corps of Engineers (US ACE) personnel maintained

an ongoing tracking system for the verification of excavation pits throughout the project and ensured achievement of the appropriate cleanup levels in all excavated source pits.

The ground water treatment system at the Site consisted of two systems, the original water treatment plant, designated as WTP-1, placed in operation in 1995 for the treatment of surface waters from Pit 4, and the new ground water treatment system, designated as WTP-2, constructed for the treatment of thermal desorption condensate water. Construction of WTP-2 was completed in March of 1998, and a successful Proof of Performance Test was completed in April 1998. Components of the WTP-2 treatment system consisted of settling tanks, oil/water separation, chemical addition and mixing, inclined plate clarification, sand filtration, sludge dewatering, ultraviolet oxidation technology, pH adjustment and activated carbon treatment. Pit 4 dewatering activities began in February 1999. Extracted water was pumped through an oil/water separator and a settling tank and was then pumped to either WTP-1 or WTP-2 for processing. Dewatering activities continued through the summer of 1999. On September 16, 1999, Hurricane Floyd dumped 17 inches of rain onto the Site, flooding Pit 4 with approximately 2 million gallons of rainwater and significantly undermining all de-watering progress made up to that point. Removal of the hurricane water from Pit 4 was accomplished gradually over the next few months using a new mobile water treatment system, designated WTP-3.

Beginning in February 2000, excavation activities in the small tributary stream that receives storm water runoff from Pit 4 commenced. Sampling activities detected pockets of contamination within the stream sediment. Excavation activities were undertaken with the minimal impact necessary for adequate removal of affected sediments. In total, approximately 500 tons of contaminated sediment were removed from the stream area. Restoration activities followed and were completed in September 2000.

Soil treatment operations ceased on October 6, 2000, after treating approximately 270,600 tons of contaminated soils and sediments. After thermal treatment operations ceased in October 2000, demobilization activities commenced with the dismantling and decontamination of the CTDU units and then WTP-2. WTP-3 was reconfigured for equipment decontamination water treatment and moved adjacent to the thermal treatment pad to permit the shutdown and breakdown of WTP-2. The CTDUs were later sold and shipped off-site by the respective new owners after cleaning and breakdown operations were completed.

Prior to final grading the top four feet of the sub-surface barrier sheet pile wall was cut and removed from the Site. A continuous ten to twenty foot section of the wall was therefore left in place four feet below the surface (see figure 1). Backfill of staged treated soils continued until the proper grading was achieved. Final grades were roughly based on initial Site contours with minor adjustments for the slightly increased amount of fill material (due to swell factor) and for aesthetic purposes. Prior to seeding, two inches of organic leaf mulch material was tilled into the upper six inches of soil as an amendment to encourage vegetative growth. The prescribed EPA seed mix was placed via a hydroseed machine, along with straw and a paper pulp tacking media. Nylon netting was placed as needed in areas of concern to help prevent erosion.

This Final Close Out Report documents the completion of all Remedial Actions at the Site.

## **Community Relations Activities**

Originally, the 1988 ROD called for on-site incineration of the wastes and contaminated soil and sediments. As the design was nearing completion, the incineration remedy drew strong opposition from the community due to perceived health concerns. EPA recognized that the community needed its own voice as a stakeholder in the cleanup process. EPA worked with the community to develop a cohesive group structure such that the concerns and interests of each community member could be heard. This EPA model community involvement program not only gave the community standing in the cleanup process it also provided funding through a "Technical Assistance Grant (TAG)." With the funds from the TAG the community group could support their basic needs and even hire an expert of their own to review and comment on EPA's documents. While discussions with the community continued a relatively new technology, thermal desorption, was being proven to be effective on cleanups. All the stakeholders, including the community, agreed that this new technology could meet many of the needs and concerns of the stakeholders. EPA re-evaluated cleanup alternatives and selected this new, mutually acceptable cleanup technology, thermal desorption, in the 1995 ROD.

Throughout the entire cleanup process EPA's community relations staff conducted an active campaign to ensure that area residents were well informed about activities at the Site. Community involvement activities included fact sheets and public meetings at key points in the cleanup process. A construction completion ceremony was held in July 2000 to invite the public to tour the cleaned up Site.

## **Site Redevelopment**

The Site was cleaned to residential standards and groundwater sampling has demonstrated that the remedial action objectives of the 1995 ROD have been achieved; therefore, EPA has not required institutional controls on the use of the property. However, future developers should be aware that a sheet pile wall was cut below grade and left in place (see Figure 1). There have been a variety of suggestions for the future use of the Site, ranging from commercial development to a nature preserve.

### **III. Demonstration of Cleanup Activity Quality Assurance and Quality Control**

Activities at the Site were consistent with the ROD and the RD. EPA and State quality assurance/quality control (QA/QC) procedures were followed during construction and sampling activities. As directed by EPA, construction and sampling activities were overseen by US ACE and verified to conform with the RD/RA documents. Representatives from US ACE were on-site during the entire construction period and continually inspected the various elements of construction. US ACE provided suggestions and advice to the contractor regarding sampling methods, construction methods, and health & safety. The EPA Remedial Project Manager (RPM) and Maryland Department of Environment (MDE) representatives visited the Site to review construction progress and evaluate and review the results of QA/QC activities. In addition, IT Group, Inc. and their subcontractors performed random and routine inspections of the construction activities at the Site.

Processed soils were staged in temporary holding bins after processing. Each bin held

approximately 700 tons of processed soil. Each bin was sampled in accordance with the Sampling and Analysis Plan for Remedial Activities (SAP), June 1998, and the Quality Assurance Project Plan (QAPP), May 1998, to verify that clean-up levels were achieved.

In accordance with the SAP and QAPP, all excavation sidewalls and floors were sampled for attainment of the appropriate cleanup level (either subsurface clean or surface clean). An on-site laboratory was used to determine extent of contamination during the excavation process. If verification sample results indicated an exceedance of the cleanup criteria, excavation activities continued as needed to achieve the cleanup goals. Once soil samples were found to be clean in the excavation, a confirmation sample was sent to an outside laboratory. US ACE personnel maintained an ongoing tracking system for the verification of cleanup in the excavation pits and wetlands throughout the project and ensured achievement of the appropriate cleanup levels in all excavated areas.

#### **IV. Monitoring Results**

One hundred percent (100%) of the treated Site soils were cleaned to the required performance standards. The 1995 ROD established the soil clean-up levels of 0.1 ppm Benzo (a) Pyrene (B(a)P) equivalent for surface soils (within two feet of the surface) and 1.0 ppm B(a)P equivalent for subsurface soils (below two feet from the surface). However, during the remedial action, data showed that in areas where the site was below the Benzo (a) Pyrene (B(a)P) clean-up levels there were still high levels of pentachlorophenol (PCP) in the soil. To assure that the soil in these areas was treated, a non-significant change to the 1995 ROD was issued March 5, 1999. This non-significant change established a cleanup level of 5.0 ppm PCP. In addition, another non-significant change was the use of treated soils from the site as backfill below the water table. These treated soils were required to meet a clean-up level of 1.7 ppm PCP. This change from the 1995 ROD was documented in the site-specific work plan dated July 1997, and the Public Meeting minutes of November 7, 1996.

A Post Closure Monitoring Plan, dated November 2000, was prepared to verify the success of the cleanup. The plan required sampling a network of monitoring wells throughout the Site, including one well at the center of the former lagoon area. In addition, the plan required the evaluation of the restored uplands and wetlands areas that had undergone excavation, backfilling, and re-vegetation. The monitoring wells were sampled quarterly from October 2000 to September 2002. Samples were analyzed for target compounds such as semi-volatiles, polynuclear aromatic hydrocarbons (PAHs), and pentachlorophenol (PCP). All the ground water sampling results demonstrated that the remedial action objectives of the 1995 ROD have been achieved. Formal inspections of the wetland and upland areas were conducted concurrently with the monitoring well sampling effort. These areas showed no signs of erosion. All disturbed wetland areas have stabilized. The disturbed uplands areas are currently stabilized with grass, and the overall upland area is showing 95 percent total herbaceous coverage.

## V. Summary of Operations and Maintenance

The Site has been cleaned to residential standards, therefore, no operation and maintenance activities nor institutional controls are required for this Site. Vegetation on the Site has been allowed to over grow and all that may remain visible is the gravel road. The disturbed wetlands areas have been determined by EPA, MDE and US Fish and Wildlife Service (US FWS) to have recovered and will not require additional monitoring. After completion of sampling in September 2002, all monitoring wells and the 600-foot deep production well were subsequently closed out in accordance with MDE regulations for well abandonment. The production well required special close-out procedures involving blasting. The concern for this very deep well was that ground water from the upper non-potable aquifer could migrate down to the lower potable aquifer along possible voids on the outside of the well sleeve. Complete separation of these two aquifers was assured by blasting the well sleeve open at a point where there was an impervious clay layer between the upper and lower aquifers and then pumping in grout material to seal the well.

## VI. Summary of Remediation Costs

The total project costs, including both remedial design and remedial action, are summarized as follows:

|   | Estimate at Deletion |
|---|----------------------|
| Remedial Design                           | \$1,022,044          |
| RA Contract Costs                         | \$47,918,685         |
| RA Contract Total Equipment Capital Costs | \$8,193,616          |
| Total US ACE RA Costs (estimated)         | \$4,045,486          |
|   |                      |
| Sub-total                                 | \$61,179,831         |
|   |                      |
| Revenue from sale of Government property  | (\$460,000)          |
|   |                      |
| Total Project Cost (estimated)            | \$60,719,831         |

The 1995 ROD estimate for the remedial action was \$31,000,000 for the treatment of 145,000 tons (or 97,000 cubic yards) of contaminated material. However due to greater than anticipated soil contamination, the estimate at this time is \$60,719,831 for the treatment of 270,600 tons of contaminated material. The cost to treat the contaminated soils/sediments was \$218/ton, which is very close to the unit price estimate in the 1995 ROD of \$214/ton.

## VII. Protectiveness

This Site meets all of the site completion requirements as specified in OSWER Directive 9320.2-09-A-P, *Close Out Procedures for National Priorities List Sites*. Confirmatory sampling during

construction and during post closure evaluations verify that the clean-up accomplished the remedial action objectives. No additional activity is required at the Site.

### **VIII. Five-Year Review**

EPA has completed two Five-Year Reviews for this Site. The first was completed on September 30, 1994, and the second on September 30, 1999. Since the clean-up was ongoing, these reviews were not required by statute, but were conducted as a matter of policy. Five-Year Reviews are required at sites where the remedial action results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure. The response actions conducted at the Southern Maryland Wood Treating Site are now complete, and allow for unlimited use and unrestricted exposure, thus no additional Five-Year Reviews will be conducted for this Site.

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