FIVE-YEAR REVIEW REPORT

Southern Maryland Wood Treating

Superfund Site

Hollywood, Maryland

Prepared by:

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Region III

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Date

U.S. Environmental Protection Agency
Region III
Hazardous Site Cleanup Division
Five-Year Review (Type IA)
Southern Maryland Wood Treating
(EPA ID# MDD980704852)
Hollywood, Maryland

I. Introduction

Purpose

This review has been conducted by the United States Environmental Protection Agency (EPA) Region III pursuant to section 121(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. § 9621(c); section 300.400(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300 (as amended); and OSWER Directives 9355.7-02 (May 23, 1991), 9355.7-02A (July 26, 1994), and 9355.7-03A (December 21, 1995). This review was conducted in September 1999 and this report documents the result of the review.

Although not required by the statute, this review was conducted as a matter of policy. EPA conducts five-year reviews as a matter of policy at sites where no hazardous substances will remain above levels that allow unlimited use and unrestricted exposure after the completion of remedial actions, but the cleanup levels specified in the Record of Decision will require five or more years to attain. The purpose of five-year reviews is to determine whether the remedy at a site will be protective of human health and the environment and is functioning as designed. This Type Ia review is appropriate for the Southern Maryland Wood Site (Site) because the response action is ongoing. This document will become a part of the Site file.

This is the second five-year review for the Southern Maryland Wood Treating Site. The triggering action for this policy review is the date of the first five-year review completed for the Site as shown in EPA's WasteLAN database: 9/30/94. The first five-year review was completed within five years of the completion of the first operable unit remedial action for the Site. In November 1990, EPA completed the construction of a circumferential sheet pile wall enclosing the former lagoon and process areas (containment area).

Site History and Characteristics

The Southern Maryland Wood Treating Site, approximately 25 acres in size, 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. An onsite freshwater pond discharges to Old Tom's Run, the discharge from which eventually reaches Breton Bay.

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

In the early 1970's, the operators of the facility, L.A. Clarke and Sons, Inc., submitted an application to the local health department for the construction of a new onsite well. Upon inspection of the Site, health officials found evidence of possible contamination and rejected the application. The State of Maryland (the State) then entered into negotiations with L.A. Clarke, asking them to clean up the Site. However, in 1978, the company filed for bankruptcy and closed the facility.

Pursuant to a petition for contempt filed by the State, L.A. Clarke began an initial cleanup of the Site in 1982. Liquids from the lagoons were sprayed into the woods behind the Site. The sludge from the lagoons was excavated and mixed with wood chips, composted sewage sludge and top soil in a previously uncontaminated area on the southeastern section of the property in an attempt to bioremediate the contaminants. This attempt at land treatment of the sludge was unsuccessful, and resulted in the contamination of several additional acres of the property.

On March 14, 1985, EPA initiated its first response action at the Site. After the discovery of contaminated material seeping into the fresh water pond, EPA started a removal action. During this action, approximately 1,400 cubic yards of contaminated sediment were excavated from the pond. This sediment was stabilized with cement kiln dust and encapsulated onsite in an impermeable synthetic liner to the east of the former lagoon area within what is now the containment area. The stabilized material was temporarily stored onsite awaiting final cleanup action.

The Site was promulgated on the National Priorities List on June 10, 1986. In 1988, EPA concluded a Remedial Investigation (RI) and Feasibility Study (FS) at the Site. Based on the findings of these studies, EPA issued a Record of Decision (1988 ROD) on June 29, 1988. The 1988 ROD called for construction of a subsurface barrier wall around the former lagoon area, which was found to contain a plume of contaminated ground water; excavation and onsite incineration of contaminated soil from the former lagoon area, the land treatment area, and other areas of the Site; onsite incineration of liquids and solids contained in tanks and retorts; demolition of buildings; and pumping and treatment of contaminated ground water.

In order to expedite the start of cleanup work at the Site, the remedial action was broken down into two phases. The first phase was the installation of a sheet pile barrier wall around the former lagoon and process areas (see Figure 1). This area is now referred to as the "containment

area or Pit 4". Construction of the sheet pile wall was completed in November of 1990. The second phase included the remaining components of the selected remedy. In May 1992, design of the incineration and ground water treatment components had reached the 95% stage. At that time, it was apparent that a substantial cost reduction could not be achieved, resulting in Maryland's inability to fund its required 10% share of Site remediation costs. At the same time, local citizens and local government entities expressed opposition to an onsite incinerator. The design work was suspended and EPA proposed to conduct a Focused Feasibility Study (FFS) to reevaluate the remedy for the Site.

On June 29, 1993, a second removal action was initiated to address certain immediate threats at 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 offsite disposal of liquid and solid waste in numerous tanks and the retorts, and over 350 drums of investigation-derived waste; the re-covering of the pile of previously excavated and stabilized sediment; the construction of an underflow dam to reduce the flow of floating and sinking material from the onsite pond to the west tributary; the construction of a trench upgradient of the pond to collect contaminated ground water and, if possible, DNAPL; and the construction of a water treatment facility to treat water from the pond and/or the trench prior to its discharge to the west tributary. The water treatment facility became fully operational in June 1995 and will continue be operated on a 24-hour basis through the completion of the final remedial action at the Site.

The FFS was conducted from May 1992 to February 1995, at which time the Final FFS Report was issued. Based on the FFS, EPA issued a Record of Decision (1995 ROD) on September 8, 1995 which revised the remedy selected in the 1988 ROD. The major components of the remedy selected in 1995 ROD include the following:

- Dewatering of the containment area in preparation for the excavation of subsurface soil and DNAPLs below the water table followed by onsite treatment of water generated in the dewatering process and discharge of treated water to the west tributary;

- Excavation of soil from within and outside of the sheet pile wall and dredging of sediments from the onsite pond and segments of Old Tom's Run that contain contaminants in excess of the established cleanup levels;

- Dewatering of saturated soils/sediments onsite in preparation for treatment by thermal desorption, followed by onsite treatment of water generated in the dewatering process and discharge of treated water to Old Tom's Run;

- Staging of excavated soil/sediments onsite in preparation for dewatering, following dewatering in preparation for treatment by thermal desorption, and following thermal desorption in preparation for backfilling. Also, onsite staging of NAPLs collected during excavation and dewatering, water treatment residues, recondensed contaminants from the thermal desorption treatment process, and any grossly contaminated soil/sediment that is

not amenable to treatment by thermal desorption prior to offsite shipment for treatment and disposal;

- Onsite treatment of excavated soils and sediments by a thermal desorption process;
- Appropriate on- or off-site treatment and disposal of desorbed, recondensed contaminants from the thermal desorption treatment process, NAPLs collected during excavation and dewatering, water treatment residues, and any grossly contaminated soil/sediment that is not amenable to treatment by thermal desorption;
- Sampling of treated soils and sediments to ensure delisting levels have been achieved;
- Backfilling with treated soil/sediments in excavated areas;
- Pumping and treating of surface water from the onsite pond until the sources of contamination to the surface water (i.e., soil, sediment, ground water) are remediated. Treatment of surface water in onsite water treatment system followed by discharge to Old Tom's Run;
- Building demolition and cutting off of the sheet pile wall following remediation, as determined necessary. Offsite disposal of building rubble and sheet piling; and
- Maintenance of perimeter fencing until access restrictions are no longer necessary.

II. Discussion of Remedial Objectives; Areas of Compliance/Noncompliance

The remedial action objectives as stated in the 1988 ROD and revised by the 1995 ROD are to eliminate contaminants at the Site which serve as a source of ground water and surface water contamination and to reduce or eliminate the risks associated with exposure to contaminated surface water, soils, and sediments. In order to address these unacceptable risks and to protect human health and the environment, the following detailed remedial action objectives and associated cleanup levels have been established:

(1) to prevent ingestion/direct contact with surface soils that contain in excess of 0.1 ppm benzo(a)pyrene (B(a)P) equivalence[1];

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[1] The contaminants that present the greatest risk at the Site are the CPAHs. The cleanup levels set forth in the ROD were therefore based on addressing these contaminants. EPA has set cleanup standards in terms of benzo[a]pyrene (B[a]P) equivalence. This approach involves converting all CPAH concentrations to B[a]P equivalence, using a set of factors which are based on the relative carcinogenic potency of each compound (See Table 17 of the 1995 ROD). B[a]P equivalence for all CPAHs is then summed for comparison with the cleanup standard

Carcinogenic PAHs included in calculations to determine the cleanup levels include benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benz(a)anthracene, carbazole, and chrysene. Any additional CPAHs that might be encountered during remediation, such as indeno(1,2,3-cd)pyrene or dibenzo(a,h)anthracene, can be converted to B(a)P equivalence and factored into the total B(a)P equivalence to assure that cleanup levels have been achieved.

(2) to protect ground water as a current or potential drinking water supply, by containing or treating subsurface soil that contains in excess of 1.0 ppm B(a)P equivalence;

(3) to prevent future ground water contamination through the recovery and/or management of NAPL; and

(4) to protect surface water quality and to restore sediments in the pond and tributaries to acceptable levels for the protection of aquatic life. Sediment cleanup levels have been set at 3.2 ppm low molecular weight PAHs, and at 9.6 ppm high molecular weight PAHs[2] and 0.4 ppm PCP. All sediment cleanup levels are on a dry weight basis.

Further, upon achievement of the cleanup levels as detailed above, the Site will be available for residential use.

Although the source of the contamination, DNAPL and contaminated soil, has not yet been remediated by thermal treatment to completion, several response actions have been completed and other response actions are underway at the Site. A discussion of progess made toward the accomplishment of the remedial action objectives follows. It is anticipated that the final response actions at the Site will be completed during the Summer of 2000

Sheet Pile Wall

The sheet pile wall completed in 1990, in conjunction with an impermeable clay layer which underlies the Site, serves to contain ground water and DNAPL in the most contaminated area of the Site, the former wastewater lagoons and the process area. This prevents both the DNAPL and a dissolved ground water plume from migrating either horizontally downgradient or vertically into deeper ground water units which are used as potable water supplies. Ground water monitoring has shown no contamination in the sand unit just below the clay, and very low levels in a few monitoring wells outside the sheet pile wall in the unconfined uppermost water-bearing unit. The sand unit beneath the clay is currently monitored on a bimonthly basis. The sheet pile wall is functioning as designed. In accordance with the 1995 ROD, the sheet pile will be cut off, as determined necessary, at the conclusion of soil treatment within the containment area.

Water Treatment Plant - 1 (WTP-1) and Site Stabilization

A second removal action was initiated at the Site in 1993. The demolition of several buildings that were in danger of collapsing, and the offsite disposal of liquid and solid waste, numerous tanks and retorts, and over 350 drums of investigation derived waste, eliminated a major immediate threat to the community and the environment. The pile of previously excavated and stabilized sediment was re-covered after the original cover began to deteriorate.

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[2] For sediment cleanup levels, low molecular weight PAHs include, but are not limited to, acenaphthene, acenaphthylene, anthracene, fluorene, 2-methyl naphthalene, naphthalene, and phenanthrene. High molecular weight PAHs include, but are not limited to, benz(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluoranthene, pyrene.

Additionally, an underflow dam was constructed to reduce the flow of floating material from the onsite pond to Old Tom's Run and a trench was installed upgradient of the pond to collect contaminated ground water and DNAPL. Finally, an onsite water treatment facility (WTP-1) was constructed to treat water from the onsite pond prior to its safe discharge to Old Tom's Run. WTP-1 consists of an oil/water separator, precipitation (pH adjustment and polymer addition), carbon adsorption and all associated transfer pumps and controls. WTP-1 has been successfully treating pond water at a rate of 25 gallons per minute since its completion in June 1995. Extracted ground water from dewatering trenches utilized for soil excavation below the water table in the containment area has been added to the WTP-1 influent since dewatering began in October 1998. Only water meeting established discharge limits is released to the Old Tom's Run.

Thermal Desorption of Soils and Sediments

Two thermal desorption units with vapor recovery systems were constructed onsite and became operational in June 1998. An overview of the treatment process is summarized below. Contaminated soil is excavated, screened and transferred to a feed hopper. From the feed hopper, soil is conveyed to a rotating drum in one of the two continuous thermal desorption units (CTDUs). In the CTDU, the temperature of the soil is increased by indirect heat (i.e., heat applied outside the drum walls) to desorb contaminants as they travel from the feed to the discharge end. At the "discharge" end of the CTDU clean soil is hydrated and conveyed to the treated soil stockpile area where it is sampled to confirm that performance standards have been met. The CTDU exhaust gases--consisting of steam, desorbed contaminants, and particulate carryover--enter the vapor recovery system (VRS). The vapor recovery system consists of a hot cyclone, a direct contact quencher/scrubber, a wet electrostatic precipitator, and a flameless thermal oxidizer, in series. In summary, contaminated soil enters the front end of the system where it is separated into three "waste" streams: clean air, clean soil, and condensate (containing the desorped and recondensed contaminants). The condensate is then conveyed to the water treatment plant #2 (WTP-2) for futher processing (see discussion below for further details regarding condensate treatment).

The two CTDUs are operational and have been averaging a combined through-put of approximately 15 tons/hour. Air monitoring and soil testing has confirmed that the thermal desorption and vapor recovery system is meeting all established performance standards. As of September 25, 1999, approximately 160,000 tons of the estimated 245,000 tons of contaminated soil and sediment has been treated. The soil and sediment treatment and backfilling mandated by the 1995 ROD is on schedule for completion during the Summer of 2000.

Water Treatment Plant-2

The construction of a second, larger water treatment plant (WTP-2) was completed in April 1998. WTP-2 was designed to provide treatment of the condensate from the thermal desorption system, dewatering of excavations (ground water) and water from the stormwater pond located in the containment area, as necessary. WTP-2 consists of an equalization tank, an oil/water separator, a bag filtration system, precipitation (pH adjustment and polymer addition),

an inclined plate separator, sand filtration, UV/oxidation, liquid phase carbon adsorption, aeration and all associated transfer pumps and controls. A filter press is utilized to dewater the sludge prior to its disposal in an approved disposal facility.

To date, WTP-2 has been utilized exclusively for treating condensate generated by the thermal desorption units. The treated consensate is cycled back to the thermal desorbers where it is used to cool gases resulting from the soil treatment process and to rehydrate clean soil discharged from the desorbers. The thermal desorption process--including condensate treatment and recycle--is a water-losing operation. Therefore, clean "make-up" water is continually added to the process. WTP-2 has been successfully treating condensate at a rate up to 70 gallons per minute on a 24-hour basis since the thermal desorption process began in June 1998. WTP-2 will continue to operate until the treatment of soil and sediment exceeding ROD-mandated cleanup levels is completed.

Site Security (Restricted Access)

The perimeter of the landfill is secured by a chain-link fence with a guard posted at the front gate on a 24-hour basis.

Site Visit Performed to Assess the Effectiveness of the Remedy

On August 25-26, 1999, Eric Newman, EPA RPM conducted a site inspection. Upon arrival at the Site, Mr. Newman met with Mr. Ed Hughes of the U.S. Army Corps of Engineers (USACE). The USACE is providing technical and contractual support to EPA by implementing the on-going response action at the Southern Maryland Wood Treating Site. Mr. Newman had reviewed all weekly, monthly and quarterly reports documenting construction activities as well as environmental monitoring results prior to the Site visit. During the Site visit, Mr. Newman confirmed that two thermal desorbers were actively processing contaminated soil. The thermal desorbers continue to treat contaminated soil on a 24-hour, 7-day-per-week basis. As of September 25, 1999, approximately 160,000 tons of the estimated 245,000 tons of contaminated soil and sediment have been treated. Treated soil, once verified clean, is being returned to excavated areas on Site. The two onsite water treatment plants were also confirmed to be in operation during the Site visit. WTP-1 processes contaminated surface water collected from the onsite pond within the containment area and extracted ground water from the soil excavation dewatering activities. WTP-1 effluent is discharged to Old Tom's Run. The second water treatment system (WTP-2) processes condensate conveyed from the desorber units. Treated condensate is recirculated back to the thermal desorbers where it is used to cool gases resulting from the soil treatment process and to rehydrate treated soil discharged from the desorbers.

During the facility inspection, in interview format, Mr. Hughes confirmed that monitoring of air emissions and water treatment plant effluent remedial objectives are being met. Only water meeting established discharge limits is released to the onsite stream. Sludge and "spent" carbon generated by the water plant is routinely tested and disposed at RCRA-compliant facilities. Mr. Newman and Mr. Hughes walked the Site to inspect the property and evaluate the

integrity of the Site security. The perimeter of the site was secured by chain-link fence with a guard posted at the front gate on a 24-hour basis. The storm water and erosion control system was operable.

On August 19, 1999, Mr. Newman conducted the most recent monthly status conference call with representatives of the St. Mary's County citizens task force, the County Commissioners office and the local print media. After Mr. Newman reported the current status, the local representatives expressed satisfaction in the condition of the Site and stated that no community members have indicated any complaint with the on-going activities at the Site.

III. Recommendations

No further response actions have been determined to be necessary based on this five-year review beyond those needed to complete the remedy selected in the Records of Decision. A review of the applicable or relevant and appropriate regulations, and the current toxicological profiles of contaminants of concern, cited in the Records of Decision concludes that the implementation of the selected remedy will result in a condition that is protective of human health and the environment. The completion of the on-going remediation activities will achieve the remedial objectives mandated by the RODs and no further action is recommended at this time.

IV. Statement on Protectiveness

The remedy is not, at this time, protective of human health and the environment. By implementing the remedial action selected in the Records of Decision, EPA is taking steps to make this Site protective. The on-going soil remediation process is scheduled for completion during the Summer of 2000.

V. Next Five-Year Review

The next five-year review will be completed no later than September 2004. The next five-year review is expected to be the final review, as completion of the on-going response action will result in a clean closure. Upon completion of the response action, the Site will be available for unrestricted use.

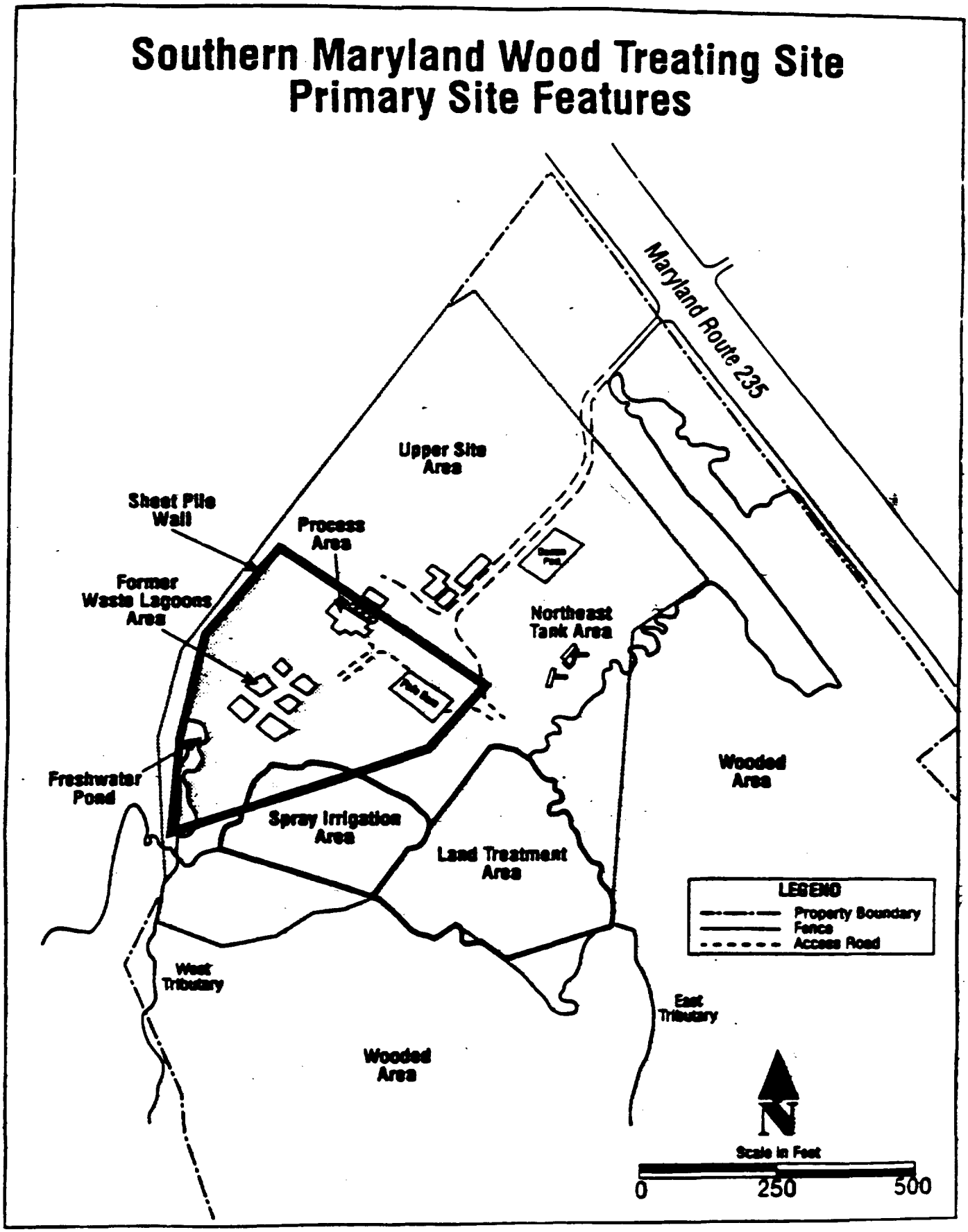
Southern Maryland Wood Treating Site
Primary Site Features
Maryland Route 235
Upper Site Area
Sheet Pile Wall
Process Area
Former Waste Lagoons Area
Northeast Tank Area
Freshwater Pond
Spray Irrigation Area
Land Treatment Area
Wooded Area
West Tributary
East Tributary
Wooded Area
LEGEND
Property Boundary
Fence
Access Road
N
Scale in Feet
0
250
500

FIGURE 1