STATEMENT OF BASIS FOR PROPOSED CORRECTIVE MEASURES UNDER RCRA SECTION 3008(h)

APPALACHIAN TIMBER SERVICES, INCORPORATED
BRAXTON COUNTY, WEST VIRGINIA

I. Introduction

This Statement of Basis explains the proposed corrective measure alternatives for remediating soils, sediment and groundwater contaminated with wood treating compounds at the Appalachian Timber Services, Inc. ("ATS") Facility ("Facility"), located in Sutton, Braxton County, West Virginia. This document summarizes the corrective measure alternatives that the United States Environmental Protection Agency ("EPA") and ATS have evaluated under an Administrative Consent Order ("Order" or "Consent Order"), entered into by EPA and ATS on December 29, 1991, Docket Number RCRA-III-025-CA, pursuant to Section 3008(h) of the Resource Conservation and Recovery Act ("***RCRA***")[1], as amended, 42 U.S.C. Section 6928(h).

In accordance with the Order, ATS completed the tasks described in the EPA-approved RCRA Facility Investigation ("RFI") Workplan. The purpose of the RFI was to evaluate the nature and extent of releases of hazardous waste and hazardous constituents at and/or from the Facility. ATS completed and submitted a Corrective Measure Study ("CMS") for EPA's approval for the purposes of evaluating corrective measure alternatives appropriate to address contamination identified at the Facility as part of the RFI. The CMS sets forth the evaluation of these alternatives.

This document describes the corrective measure alternatives considered for the Facility, presents EPA's preferred corrective measure alternative and explains EPA's rationale for selecting that alternative. This document also summarizes information that can be found in greater detail in the workplans and reports submitted by the Facility to EPA during the RFI. To gain a more comprehensive understanding of the RCRA activities that have been conducted at the Facility for this matter, EPA encourages the public to review these documents, which are found in the Administrative Record for this matter. The Administrative Record is located at the **Sutton Public Library**.

EPA is issuing this Statement of Basis consistent with the public participation provisions of RCRA. EPA will select a final corrective measure to be conducted at the Facility after information submitted during a public comment period has been

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[1] Words and abbreviations set forth in ***bold*** italicized type are further defined in the Glossary attached hereto.

considered.

EPA may modify the proposed corrective measures alternative or select other alternatives based on new information and/or public comments. Therefore, the public is encouraged to review and comment on the alternatives described in this document and/or any additional options not previously identified and/or studied. The public may participate in the remedy selection process by reviewing the documents contained in the Administrative Record and submitting written comments to EPA during the public comment period.

II. Proposed Remedy

EPA is proposing the following action to remedy the contamination at the Facility:

- Prevent further creosote contamination from the wood treating operations by installing drip pads at the opening of the wood treating cylinders in accordance with the provisions of West Virginia Code of State Regulations, Title 47-Series 35, Section 7.

- Perform in-situ land treatment (***Bioremediation***) on creosote-contaminated soil at the Facility. Prior to full-scale bioremediation, conduct a bench-scale test to evaluate the waste media and optimum operating conditions. Soil areas that do not meet clean-up standards after bioremediation will be capped with asphalt.

- Excavate or asphalt cap Chromated Copper Arsenate ("CCA") contaminated areas which exceed the media cleanup standards.

- Restrict the Facility deed to require future land owners to maintain the asphalt cap. Limit future land use of the property to industrial uses (i.e., non-residential).

- Install an additional monitoring well on the east side of the existing Clay Encapsulated Disposal Area, to provide sufficient groundwater monitoring coverage for this unit.

- Perform additional ecological impact studies of contaminated media on additional identified endangered species.

- Continue implementation of the current pump and treat system.

- Comply with groundwater clean-up standards for the Facility (See Section IX.B.)

A more detailed discussion of the proposed remedy is set forth in Section IX, below.

III. Facility Background

The Facility is located in the Old Fair Grounds, Sutton, Braxton County, West Virginia (see Figure 1). The Facility is approximately 15 acres in size, and is located adjacent to the Elk River. The Facility is immediately downstream and in sight of the Sutton Dam, which is operated by the United States Army Corps of Engineers. The Facility was constructed in 1971 and began wood treating operations on February 1, 1972. Approximately ten years prior to such operations, a portion of the land now occupied by the Facility was used as a landfill for the disposal of municipal and household refuse (see Figure 2). This landfill was known as the old Braxton County Landfill, and was operated by either Braxton County or the Town of Sutton.

The Facility consists of approximately 9,000 square feet of enclosed single story structures, including wood treatment buildings, a raw material storage building, maintenance shop, boilerhouse, saw mill, and an office building. The remaining areas are used for storage of raw materials and treated wood. See Figure 2 for the location of buildings and structures at the Facility.

ATS treated wood with creosote or CCA in wood treatment cylinders until July 1993. ATS ceased the CCA wood treatment portion of its operations on July 16, 1993, and the equipment used for CCA treatment was sold as scrap. ATS operated an unlined lagoon for collection of contaminated water produced as a result of wood treatment operations, which were conducted at the Facility from 1972 until the unlined lagoon was closed in 1979. The lagoon was closed in 1979 under a pre-RCRA closure plan, approved by West Virginia Department of Natural Resources ("WVDNR"), Office of Water Resources. (The West Virginia Department of Natural Resources is now known as the West Virginia Division of Environmental Protection, hereinafter referred to as "WVDEP"). Sludge contained in the lagoon was removed as part of the closure plan and placed in the Clay Encapsulated Disposal Area on the northeast corner of the property. When the lagoon was closed in 1979, it was replaced with a clay-lined evaporation spray pond (also referred to as a ***surface impoundment***). From 1980 to 1985, wastewater was treated in a creosote separator tank, and the treated effluent from the tank was discharged to the spray pond. The spray pond was used until 1985, when a complete wastewater treatment/recycle system was placed in operation. The spray pond was closed in May 1988 under a closure plan approved by the WVDEP, Division of Waste Management.

IV. Previous Investigations

On June 15, 1984, WVDEP investigated the Facility in response to two complaints which stated that an oily sheen was seen on the bank of the Elk River and in the river immediately adjacent to the Facility. Although no sheen was observed during this inspection, WVDEP did document the presence of a creosote-like material seeping into the river adjacent to the Facility during another inspection conducted on July 31, 1984. EPA investigated the Facility the following week and confirmed the presence of the seepage. At that time, WVDEP requested that ATS install booms on the river to prevent the creosote-like material from migrating further down the river. ATS installed booms shortly thereafter and constructed an interceptor trench next to the river in an effort to keep contaminated groundwater from entering the river.

In early 1988, ATS's consultant installed groundwater monitoring wells in order to study the groundwater conditions at the Facility. The main objective of the study was to determine if contamination had been released from the Facility into the groundwater and to identify the source of the contamination. The study concluded that groundwater contamination had occurred at the Facility and that the sources of contamination were the spray pond and the old closed unlined lagoon. The groundwater was contaminated with creosote compounds which were found both as a separate dense immiscible phase, and as a dissolved phase ***plume***. The plume was defined both vertically and horizontally as part of the assessment.

On December 15, 1989, WVDEP, Division of Waste Management issued a Post-Closure Permit (WVD063461958) for the spray pond. The Post-Closure Permit requires ATS to monitor the level of contamination in the groundwater and to recover and treat contaminated groundwater in the vicinity of the closed spray pond. Since the unlined lagoon was located next to the spray pond, and the plume of contaminated groundwater is contiguous under both areas, the monitoring and recovery includes this source of contamination.

V. Summary of the RCRA Facility Investigation

Pursuant to the Order, the RFI investigated three ***solid waste management units ("SWMUs")*** for releases of hazardous waste and hazardous constituents and evaluated site-specific conditions and characteristics that could affect potential contaminant migration. The three SWMUs identified in the RFI were the Clay Encapsulated Disposal Area, Tram Track Area, and the Treated Wood Storage area. During the RFI, two additional areas were added to the investigation. They were the Debris Burning Pile and the Potential Additional Waste Management Unit (area near the wood

treatment building). See Figure 3 for location of investigated areas of the RFI.

ATS did not investigate the Closed Spray Evaporation Pond as a requirement of the RFI since this unit was closed in accordance with a State approved Closure Plan in 1988.

Based on the findings of the RFI, EPA has determined that the soils beneath the Tram Track Area, Treated Wood Storage Area, and Debris Burning Pile have been contaminated by creosote and/or CCA constituents associated with wood treating operations. The Tram Track Area and Treated Wood Storage Area appear to be the sources of contamination found in sediments and surface water on-site and at one sample point in the Elk River. Soil from beneath the Debris Burning Pile may also be contributing to the on-site and Elk River sediment and surface water contamination. However, none of the investigated areas was found to be contributing to the groundwater contamination.

The RFI activities included: 1) installing a monitoring well (MW-10) located north of the Clay Encapsulated Disposal Area (see Figure 2); 2) performing groundwater sampling and analyses on samples collected from monitoring well MW-10; 3) conducting soil sampling and analyses; 4) performing surface water and stream sediment sampling and analyses; 5) identifying drinking water supply wells in the vicinity of the Facility; and 6) performing a risk assessment to identify and define possible existing and future health risks and potential environmental impacts associated with exposure to chemical constituents present in various media at the Facility.

A. Groundwater Investigation

The groundwater investigation conducted as part of the RFI at the Facility focused specifically on the Clay Encapsulated Disposal Area to determine whether or not there had been a release from this unit. The spray pond and the unlined lagoon were not included in the RFI because there were sufficient data available from monitoring done in accordance with the requirements of the Post-Closure Permit. The RFI required the installation of monitoring well MW-10 ***downgradient*** of the Clay Encapsulated Disposal Area, and sampling of the well for hazardous constituents.

The Facility is located on flood plain ***alluvium*** (no longer within the 100-year flood plain due to the Sutton Dam). The top layer consists of two to three feet of gravel fill. Beneath the gravel fill is an alluvial layer consisting of a brown sandy silt with few distinct strata changes to a depth of about 20 feet. The total thickness of the alluvial layer in the Sutton area ranges from approximately 10 to 40 feet, the average being about 30

feet. After the alluvial layer, there is the upper bedrock unit which underlies the Facility and is most likely the Lower Freeport sandstone. This sandstone is generally 30 to 50 feet thick and is a medium-hard to hard, medium-grained, well-cemented, micaceous sandstone. The uppermost aquifer under the Facility is a typical river valley alluvial aquifer. Groundwater beneath the Facility generally flows from south to north toward the Elk River. However, slight variations in groundwater flow direction exist across the site.

Considerable groundwater monitoring is ongoing at the Facility. Ten monitoring wells are located at the Facility within the alluvial aquifer. These wells were installed between 1978 and 1990 in order to fulfill requirements of various permits and orders relating to the closure of the unlined lagoon and spray pond. (These permits and orders were issued by the WVDEP Divisions of Water Resources and Waste Management.) These wells are labeled MW-1 through MW-9 and ATS well. (See Figure 3 for location of all wells.)

In January 1990, in order to meet a requirement of the Post-Closure Permit, two recovery wells (R-1 and R-2) and two bedrock monitoring wells (D-1 and D-2) underlying the alluvial aquifer were installed. The recovery wells were installed within the contaminant plume known to exist at the Facility. The groundwater recovery system began operation in November 1990. The two deep bedrock monitoring wells (D-1 and D-2) are located in the bedrock.

The RFI investigation required the installation of monitoring well MW-10, located between the Clay Encapsulated Area and the Elk River. Well MW-10 provided a monitoring point north (downgradient) of the Clay Encapsulated Area and allowed a determination of whether there had been a release from this unit and also will allow for future monitoring of the Clay Encapsulated area. Groundwater sampling results from MW-10 did not indicate the presence of any creosote compounds or volatile organic compounds. After the installation of monitoring well MW-10, it was determined that groundwater flows in both a northern and eastern direction in the vincity of the Clay Encapsulated Area. While MW-10 is located north of the Clay Encapsulated Area, there is no well on the eastern side of this unit. An additional well east of the Clay Encapsulated Area is part of the Proposed Remedy.

The groundwater plume that exists at the Facility has been characterized by installation of the monitoring wells in the alluvial aquifer. Analysis of samples taken from the two deep bedrock monitoring wells demonstrated that the contamination is confined vertically to the alluvial aquifer, and that the upper bedrock aquifer is not contaminated. The analytical results obtained from well MW-10 further confirm the source of

contamination as the closed unlined lagoon and closed spray pond. (See Figure 4 for groundwater plume.)

B. Soil Investigation

As stated previously, the three SWMUs identified in the RFI were the Clay Encapsulated Disposal Area, Tram Track Area, and the Treated Wood Storage area. During the RFI, two additional areas were added to the investigation, i.e. the Debris Burning Pile and the Potential Additional Waste Management Unit (area near the wood treatment building). Each of these areas was investigated to determine the extent of release of hazardous waste and hazardous constituents and the site-specific conditions and characteristics that could affect contaminant migration.

Forty-seven surface soil samples were collected from the Tram Track Area and the Treated Wood Storage Area, as shown on Figure 5, at depths up to one foot. Analytical results are provided in Table 1 for soil samples. The purpose of the sampling was to determine the horizontal extent of contamination. All surface soil samples were analyzed for creosote indicator constituents, i.e., naphthalene, acenaphthene, phenanthrene, anthracene, pyrene and benzo(a)anthracene. Analysis also included CCA indicator constituents, i.e. chromium and arsenic. Ten of the initial forty-seven surface samples were also analyzed for additional constituents in order to satisfy the requirements of the Risk Assessment. The additional analyses were performed in order to determine the presence of benzene, toluene, ethylbenzene, xylene and benzo(a)pyrene. Repeat sampling was also performed on nine surface samples for copper, Chromium III, and Chromium VI for the Risk Assessment. Sampling results indicated that creosote and CCA constituents were found at nearly all of the surface soil sample points. (See Figure 6 for a contour map illustrating total creosote indicator constituent concentrations in surface soils. See Figure 7 for a contour map showing chromium concentrations in surface soils and Figure 8 for arsenic concentrations.)

Based on the initial surface soil sampling, eight sample locations were selected for soil borings to determine the vertical extent of contamination. Soil samples were collected from depths of two to ten feet at each location. Analysis included creosote indicator constituents and CCA indicator constituents. Sampling results indicated that creosote indicator constituent concentrations decreased rapidly with increasing depth. At the two- to four-foot depth interval, constituent concentrations were found to be approximately 99 per cent less than concentrations found at similar surface locations. CCA indicator constituent concentrations also decreased with depth, but not as rapidly as creosote. At the two- to four-foot depth, CCA was found to be approximately 85 per cent less than that of

surface concentrations. (See Table 2 for analytical results of the eight soil borings.)

Investigation of the Clay Encapsulated Disposal Area consisted of installing a monitoring well (MW-10) downgradient of the area. During installation of the monitoring well, soil samples were obtained and there was no evidence of contamination found in the soil samples.

Three surface soil samples were taken from the area which comprised the Debris Burning Pile after the debris was removed. Analytical results showed elevated levels of arsenic in the soil samples. Analytical results are shown in Table 3.

During the investigation of the Treated Wood Storage Area, elevated readings (i.e., greater than 1000 ***parts per million ("ppm")***) of more volatile constituents than those found in creosote (e.g. methane) were recorded at two sample points near the wood treatment building. This area was then classified as a Potential Additional Waste Management Unit. However, further investigation determined that the source of the contamination was a leaking natural gas line, rather than a waste management unit.

C. Surface Water and Stream Sediment Investigation

Surface water samples of the Elk River were collected adjacent to, upstream, and downstream of the Facility. Surface water samples were also collected from the unnamed tributary west of the Facility and from a runoff channel draining the Tram Track Area and the Treated Wood Storage Area. The runoff channel is a wet weather drainage, containing water only during rainfall events. (See Figure 9 for surface/sediment sample points and location of the unnamed tributary and runoff channel.)

No creosote indicator constituents were detected in surface water samples collected off-site. Creosote constituents acenaphthene, phenanthrene, anthracene, and pyrene were detected in two samples (SW-10 and SW-11) located in the runoff channel draining the Tram Track Area and the Treated Wood Storage Area.

CCA constituents chromium and arsenic were present in surface water samples from the runoff channel (SW-10 & SW-11) and the unnamed tributary (SW-3 & SW-4). One sample (SW-8) from the Elk River, located immediately downstream of the point where the runoff channel draining the Tram Track Area and the Treated Wood Storage Area discharges to the Elk River also showed similar levels of arsenic and chromium. (See Table 4A for Surface Water analytical results)

Sediment sampling was also conducted at the same locations as the surface water sampling. CCA indicator constituents were

detected at all of the sediment sampling points. However, only 5 of the 11 sediment points were above background levels. Of the 5 that were above background, CCA was found in three samples from the unnamed tributary (S-1,S-3, S-4), one from the runoff channel draining the Tram Track Area and the Treated Wood Storage Area (S-10), and one from the Elk River located immediately downstream of the outlet from the runoff channel (S-8). Creosote indicator constituents were detected in 5 of the 11 sediment sampling points (S-1,S-3,S-7,S-8 & S-10). Of the five samples, S-10 had the highest level of creosote indicator constituents found at the runoff channel draining the Tram Track Area and the Treated Wood Storage Area. (See Table 4B for Sediment Sample analytical results.)

The contamination in the sediment and surface water in the runoff channel and the area where the runoff channel discharges into the Elk River (sediment sample point S-8 and surface water sample point SW-8) is a result of ongoing storm water runoff from the Tram Track, Treated Wood Storage Area and the Debris Burning Pile. The proposed remedy will address these sources of contamination, thereby eliminating the sources of contamination to the runoff channel and Elk River.

The contamination in the sediment and surface water of the unnamed tributary has been primarily attributed to past storm water runoff from the Treated Wood Storage Area. Presently, the Treated Wood Storage Area is graded such that most of the storm water runoff flows to the runoff channel. The unnamed tributary receives runoff from the southeast portion of the Facility, which includes a portion of the Treated Wood Storage Area. The proposed remedy will address the Treated Wood Storage Area as a source of contamination.

The creosote contamination found in Sediment sample S-7 in the Elk River is caused by the surface discharge of contaminated groundwater associated with past operations of the spray pond and unlined lagoon. The groundwater contamination is being addressed by WVDEP under the Post-Closure Permit.

Storm water runoff from the Facility is monitored and regulated by a ***NPDES*** permit (permit no. WV0072249) issued by the WVDEP, Office of Water Resources. Both the unnamed tributary and runoff channel from the Facility property are discharge points listed in the NPDES permit. The NPDES permit sets terms and conditions for storm water runoff at these discharge points, which includes monitoring for arsenic. Implementation of the proposed remedy will address the sources of contamination for both the unnamed tributary and runoff channel, while the NPDES permit provides for monitoring the storm water discharge from these points.

D. Drinking water wells in the vicinity of Facility

The Braxton County Health Department was contacted regarding groundwater use in the vicinity of the Facility. One well was identified within one mile of the Facility; it was located southeast and *upgradient* of the ATS Facility.

Three public water supply intakes are located on the Elk River within 10 miles of the Facility. The United States Geological Survey (USGS) maintains a gauging station approximately 0.5 miles downstream from the Facility. The three public water supply intakes are as follows: the Flatwoods-Canoe Run Public Service District located approximately 0.2 miles upstream from the Facility; the West Virginia-American Water Company Sutton intake located approximately 0.2 mile downstream from the Facility; and West Virginia-American Water Gassaway plant located approximately seven miles downstream of ATS.

The Flatwoods-Canoe Run intake is located upstream from the Facility and would not likely be affected by a release from it. The West Virginia-American Water Company Sutton and Gassaway supply intakes are located downstream from the Facility and were investigated to determine whether releases from the Facility may have affected those intakes. Analytical results obtained from the West Virginia-American Water Company for the Sutton plant did not show any hazardous constituents associated with wood treatment operations. Data were not available for the Gassaway supply intake; however, since the Sutton intake analysis did not show any hazardous constituents associated with wood treatment, it is unlikely that the Gassaway intake located about seven miles downstream from Sutton, would be affected

Some limited analytical data showing results of analysis for metals were available from the USGS at the gauging station at Sutton. The results showed that chromium and arsenic were not present above acceptable detection limits. This was confirmatory of the Sutton intake results for arsenic and chromium. The Sutton intake was permanently closed in mid-1994 by the West Virginia-American Water Company.

E. Ecological Investigation

During the RFI an Ecological Assessment was conducted at the Facility for the following reasons:

- to characterize quantitatively the existing ecosystem;
- to compare the ecosystem's habitat values and functions to those of the regional ecosystem;
- to identify qualitatively ecological contaminants of concern;
- to describe potential contaminant pathways and exposures; and

- to discuss qualitatively ecological impacts of contaminated media

The RFI identifies varying levels of contamination in the Treated Wood Storage and Tram Track Areas; however, in these operational areas there is little or no vegetation. Wildlife does not currently inhabit these areas, and it is unlikely to do so in the future. Since wildlife would come in contact with contaminants at the Facility only infrequently when traversing these areas on an infrequent basis, it is therefore, not considered a potential receptor.

The RFI has documented other potential ecological receptors including fish populations in the Elk River. For this receptor, exposure to Facility related constituents is limited by the very low or non-detectable concentrations in surface water and sediment as well as the effects of both fish migration and dilution of the river. However, there were several additional receptors that were not included in the RFI, such as fourteen species of freshwater mussels, that will require investigation. The U.S. Fish and Wildlife Service has identified the various species of freshwater mussels as well as the other receptors that the ATS needs to further evaluate to determine the ecological impact.

VI. Interim Measures

Pursuant to the Consent Order, ATS is required to continue pumping and treating the groundwater. Futhermore, in accordance with the Consent Order, ATS installed two recovery wells near the Elk River.

EPA, ATS and WVDEP had agreed in discussions prior to issuance of the Consent Order, that the groundwater contamination attributed to the evaporation spray pond and the unlined lagoon could be remediated under the Post-Closure Permit. This allowed WVDEP, which only has corrective action authority over the regulated unit (i.e. the evaporation spray pond), to require ATS to remediate the groundwater plume which exists under both the unlined lagoon and the evaporation spray pond. The close proximity of the units to each other and the contigous plume that exists under the units make it impractical to separate the two units for groundwater remediation purposes.

The remedial objective of the Post-Closure Permit was to contain the groundwater plume within the Facility's boundaries and recover the contaminated groundwater. The Post-Closure Permit details a corrective action plan to accomplish the remedial objective, which was to install and operate a pump and treat system.

The pump and treat system currently in place and being utilized at the Facility consists of two groundwater recovery wells and associated pumps. The recovered groundwater is sent to an oil water separator where the oil is recovered for reuse and the water is evaporated in an above ground evaporator.

As a requirement of the proposed remedy, ATS will continue to pump and treat the groundwater. EPA will continue to coordinate with the WVDEP over the groundwater remediation and to ensure that EPA's minimum groundwater clean-up standards for the Facility are met. See Section X.B for groundwater standards.

VII. Summary of Facility Risks

As detailed in Section VI above, groundwater contamination recovery and containment were addressed in the Post-Closure Permit. Furthermore, the Post-Closure Permit stipulates that ATS may terminate the groundwater recovery system only when the concentration of hazardous constituents are reduced to levels below their respective background concentrations.

While the pump and treat system was supposed to capture the entire plume, ATS has reported that the "current pumping rates do not induce adequate ***drawdown*** of the alluvial aquifer to ensure capture of the entire dissolved contaminant plume." (emphasis added). Both EPA and WVDEP agreed with this assessment of the current pump and treat system.

ATS has asserted that the current pump and treat system has effectively reduced risk to potential receptors while operating at the current pumping rate; therefore, ATS believes that clean-up levels less stringent than the background levels cited in the Post-Closure Permit may be warranted. Under a request from WVDEP, ATS submitted a separate Groundwater Risk Assessment to address exposures to the groundwater, surface water, and sediments potentially impacted by contaminated groundwater at the Facility. EPA and WVDEP reviewed the initial Groundwater Risk Assessment and have provided comments to ATS. The Groundwater Risk Assessment utilized data and information gathered during monitoring conducted under the Post-Closure Permit and the RFI. EPA and WVDEP have reviewed the revised Groundwater Assessment. Based on that review, EPA has provided to ATS what it considers the minimum acceptable clean-up levels for contaminants identified in the groundwater at the Facility. EPA is including these groundwater clean-up levels as the media clean-up standards in the remedy it is proposing in this Statement of Basis to ensure that protection of human health and the environment are met for all contaminated media. Although these are EPA's minimum standards, the WVDEP may enforce more stringent State standards. Appropriate cleanup levels and the recovery and containment system associated with the contaminated groundwater will be

incorporated into the West Virginia Post-Closure Permit and/or a subsequent EPA corrective action order or permit. EPA will continue to assist WVDEP with the groundwater remediation as part of the overall Corrective Action at the facility.

As a result of the ongoing groundwater pump and treat system, analytical sampling results, and location of the Public Water Intakes, EPA has determined that there has been no impact to the off-site Public Water System by contaminants of concern from ATS. One well identified by the Braxton County Health Department in the vicinity of the Facility is located southeast and upgradient of the Facility and consequently would not be impacted by groundwater contamination from the Facility.

A site-wide Health and Environmental Assessment was performed to establish clean-up standards for the contaminants of concern identified during the RFI.

The toxicities of the compounds existing in the soil, sediment and surface water were evaluated for carcinogenic and non-carcinogenic effects. Based on the baseline risk assessment, the soil is a medium of concern because the concentration levels of some of the contaminants of concern identified in the soil are above EPA Region III's Risk-Based Concentrations ("RBC") for an industrial site. The contaminants of concern in soil above the RBC are arsenic, benzo(a)anthracene and benzo(a)pyrene. (All of these contaminants are considered by EPA to be potential carcinogens.) Contaminants of concern that were found to be below EPA's Risk-Based Concentrations for an industrial site were Chromium III, acenaphthene, anthracene, naphthalene, and pyrene. For potential carcinogens (arsenic, benzo(a)anthracene and benzo(a)pyrene), risks are expressed as probabilities that are often written in scientific notation. An excess lifetime cancer risk of 1E-06 indicates that an individual has a one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year lifetime. The need for remediation at a site is indicated when total excess cancer risks exceed the range 1E-04 to 1E-06.

The potential excess cancer risk that is associated with soil contaminants at the ATS Facility was evaluated for both an actual worker exposure and future residents exposure. For the actual worker, the excess cancer risk is 4E-04. For future exposure to residents, the excess cancer risk is 6E-03. This risk is attributable to exposure to soils via ingestion, inhalation and from direct contact (dermal exposure). These risks exceeds EPA's acceptable risk range of 1E-04 to 1E-06.

The above-noted contaminants can also cause toxic effects other than cancer. Reference Doses (RfD) have been developed by EPA for chemicals that cause non-carcinogenic effects. The RfD, expressed in units of mg/kg-day, is an estimate of a lifetime

daily exposure level for humans that is not likely to cause an appreciable risk of adverse health effects over a lifetime of exposure. Calculated intakes of chemicals from environmental media (e.g., groundwater) can be compared to RfDs. The ratio of an estimated intake of a single chemical (e.g., benzene) in a single medium (e.g., groundwater) to a contaminant's RfD is expressed as the hazard quotient. The **Hazard Index (HI)** for the Facility is calculated by adding the hazard quotients for all contaminants within a medium or across all media to which a given population may reasonably be exposed. The HI provides a reference point to gauge the potential significance of multiple contaminant exposure within a single medium or across several media. Any media with a cumulative HI equal to or greater than 1.0 is considered to pose an unacceptable risk to human health.

The HI associated with soil contamination at the Facility is 0.85 for the current workers scenario and 11 for future residents scenario. The future residents exposure scenario exceeds the acceptable HI of 1.0. The HI is derived from potential exposure to the contaminants of concern identified in the baseline risk assessment for soil via ingestion, inhalation, and dermal contact.

The toxicities of the contaminants existing in sediment and surface water were evaluated for carcinogenic and non-carcinogenic effects. Based on the baseline risk assessment, sediment was not a medium of concern. The potential excess cancer risk was 4E-05, which is in EPA's acceptable risk range of 1E-04 to 1E-06. The HI is 0.14, which does not exceed the reference point of 1.0.

Analytical results for surface water samples taken in the Elk River did not reveal any of the indicator parameters for creosote or CCA except for the result from a sample taken at surface water sample point SW-8, which was taken near the unnamed tributary, and initially showed arsenic and chromium concentrations of 0.842 ppm and 0.710 ppm respectively. Since the sample was taken after a rainfall event, the contamination appeared to be due to runoff from the Tram Track, Treated Wood Storage Area and the Debris Burning Pile. WVDEP resampled the surface water at sample point SW-8 on October 3, 1995 for arsenic and chromium, and the analytical results showed that neither of these constituents was detected. Therefore, there is no risk associated with surface water.

Actual or threatened releases of hazardous wastes and/or hazardous constituents from this Facility, if not addressed by the proposed remedy or another remedy, may present a current or potential threat to human health and the environment.

VIII. Scope of Corrective Action

Based on the findings of the RFI, EPA has determined that the soils beneath the Tram Track Area, Treated Wood Storage Area, and Debris Burning Pile have been contaminated by the creosote and/or CCA wood treating operations. The Tram Track Area and Treated Wood Storage Area appear to be the source of contamination found in sediments and surface water on-site and at one sample point in the Elk River. Soil from beneath the Debris burning pile may also be contributing to the on-site and Elk River sediment and surface water contamination.

The scope of this proposed corrective action at the ATS Facility is as follows:

* Prevent further creosote contamination from the wood treating operations by installing drip pads at the opening of the wood treating cylinders in accordance with the provisions of West Virginia Code of State Regulations, Title 47-Series 35, Section 7.

* Prevent further run-off or migration of the creosote contaminant by bioremediating creosote-contaminated soil at the Facility. Any area that fails to meet clean-up standards after bioremediation will be asphalt capped.

* Prevent further run-off or migration of the CCA contaminant by either excavating and disposing of contaminated soils or installing an asphalt cap over those areas with results exceeding the proposed clean-up standards.

* Restrict the Facility deed to require future land owners to maintain the asphalt cap. Limit future land use of the property to industrial uses (i.e. non-residential).

* Install an additional monitoring well on the east side of the existing Clay Encapsulated Disposal Area to provide sufficient groundwater monitoring coverage for this unit.

* Perform additional ecological impact studies of contaminated media on additional identified endangered species.

* Continue implementation of the current pump and treat system.

* Comply with groundwater clean-up standards for the Facility.

IX. Summary of Alternatives

As part of the RCRA Corrective Action process, seven soil

treatment technologies were evaluated for their applicability to remediation of creosote and CCA at the Facility. Based on this evaluation, four alternatives were further considered in the CMS by ATS. EPA used the four alternatives in the CMS as a basis for the proposed remedy for the Facility.

Alternative 1: **Excavation/Off-Site Disposal**

Alternative 1 calls for the excavation, removal and commercial incineration of all contaminated soils. ATS estimates that approximately 4.5 acres are contaminated with creosote and/or CCA. Assuming a depth of six inches, except for the Tram Track Area (assume two feet in creosote tracks and three feet in the CCA track), the amount of soil required to be removed would be 7,200 cubic yards (yd^3).

Alternative 2: **Soil Washing**

Alternative 2 calls for excavation of contaminated soil (approximately 7,200 yd^3) and then soil washing. Soil washing is a water-based process for mechanically scrubbing excavated soil to remove contaminants in one of two ways: by dissolving or suspending the contaminants in the wash solution or by concentrating them into a smaller volume of soil through particle size separation techniques.

Alternative 3: **Asphalt Cap**

Alternative 3 calls for capping some or all the contaminated areas with five or six inches of asphalt. Asphalt would be used rather than a clay or synthetic cap because contaminated areas are located in active production, storage and loading areas of the Facility. Asphalt is preferable under these circumstances because it would withstand the vehicle traffic associated with this production area. The existing monitoring system in place would provide future groundwater monitoring of the capped area. Under this alternative, institutional controls including deed restrictions would be utilized to ensure that the future land use would remain industrial.

Alternative 4: **Bioremediation/Excavation/Asphalt capping**

Under this alternative, a combination of remedial options is being proposed to address contamination associated with the organic constituents (Creosote) and the inorganic constituents (CCA). This alternative uses in-situ bioremediation to treat the creosote contaminated soil, and either capping (Alternative 3) or removal (Alternative 1) to remediate CCA-contaminated soil. Prior to full scale bioremediation, the Facility will conduct a bench-scale test to evaluate the waste media and optimum operating conditions. In the Tram Track Area, to prevent further creosote contamination from the wood treating operations, drip

pads will be installed in accordance with West Virginia Code of State Regulations, Title 47-Series 35, Section 7, at the opening of the wood treating cylinders. The Facility areas where CCA has been identified above clean-up standards will be either excavated or asphalt capped. Any excavated CCA-contaminated soil will be sent off-site in accordance with applicable State and Federal regulations. The existing monitoring system in place will provide future groundwater monitoring of the capped area. Institutional controls will include revising the Facility deed to restrict future land use of the property to its current industrial operations and require future land owners to maintain the asphalt cap.

ATS has calculated the following costs associated with each alternative:

Alternative	Capital Cost ($)	Annual Operational & Maintenance Costs ($)	Present Worth ($)
1	5-6 million	0	5-6 million
2	2,500,000	50,000	2,500,000
3	300,000	100,000	400,000
4	600,000	100,000	700,000

The cost analysis above for Alternatives 1 through 4 above does not include the cost for installing a Drip Pad. This cost is detailed separately since the drip pad installation is a requirement under provisions of West Virginia Code of State Regulations, Title 47-Series 35, Section 7. EPA is including the drip pad installation as part of the proposed remedy to ensure that all contaminated soils are remediated expeditiously.

Drip Pad Cost

Alternative	Capital Cost ($)	Annual Operational & Maintenance Costs ($)	Present Worth ($)
1 thru 4	160,000	200,000	360,000

X. Evaluation of the Proposed Remedy and Alternatives

The proposed remedy for cleaning up the soils at the ATS Facility is Alternative 4 - Bioremediation/Excavation/Asphalt capping along with the installation of a drip pad. EPA is proposing clean-up standards that meet action levels for commercial/industrial soils, with the exception of arsenic. (For clean-up standards see Section B, below) The future land use of this property would remain industrial. EPA believes that the

presence of the existing Clay Encapsulated Area, the Closed Unlined Lagoon, the closed Spray Pond and the existing refuse landfill underlying the Facility make this an unlikely future residential area.

Consistent with EPA guidance, each corrective measure alternative is to be evaluated using four general standards and five remedial decision factors. This section profiles the performance of the proposed corrective measure alternative against four general standards for corrective measures -- overall protection, attainment of media clean-up standards, source control, and compliance with waste management standards -- and five remedial decision factors -- long-term reliability, reduction in toxicity, mobility or volume of waste, short term effectiveness, and implementability and cost.

A. Overall Protection

All of the alternatives described above will provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through removal, treatment, engineering controls or institutional controls. However, Alternative 4 is preferred since a combination of Alternatives 1 and 3 plus bioremediation will allow for treatment of creosote in areas where appropriate and allow for excavation, disposal and containment for the less mobile constituents, namely, chromium and arsenic. EPA has determined that Alternative 4 is protective of human heath and the environment.

B. Attainment of Media Clean-Up Standards

EPA is establishing media clean-up standards for the site-specific contaminants of concern for surface soils at the Facility. Three constituents are present at concentrations which exceed health-based standards for an industrial site. The media cleanup standards for these constituents in contaminated soils are listed in the chart below.

Contaminants of Concern for Soil		
Contaminant of Concern	Cleanup standard	Remarks
arsenic	33 ppm	See Note 1
benzo(a)anthracene	7.8 ppm	
benzo(a)pyrene	0.78 ppm	

Note 1: At a risk of 10E-06, the cleanup standard for arsenic as a carcinogen for industrial soil is 3.3 ppm. Because the type of skin cancer associated with arsenic exposure (squamous cell carcinoma) is not normally fatal, it is reasonable to base the cleanup standard on a potential cancer risk of 10E-05 rather than 10E-06 utilized for carcinogens associated with more serious effects. A cleanup standard of 33 ppm would result in an associated risk of 10E-05.

The proposed remedy, Alternative 4, will result in soils contaminated with arsenic being removed or capped when above 33 ppm, and soils contaminated with creosote constituents benzo(a)anthracene and/or benzo(a)pyrene being bioremediated to below 7.8 ppm and 0.78 ppm respectively.

EPA is establishing clean-up standards for the site-specific contaminants of concern for groundwater at the Facility. The cleanup standards for the site-specific contaminants of concern for groundwater are listed in the chart below.

Contaminants of Concern for Groundwater	
Contaminant of Concern	Media Cleanup Standard (ppb)
Naphthalene	1,500
Anthracene	11,000
Carbazole	3.4
Indeno(1,2,3-cd)pyrene	0.2
Dibenz(a,h)anthracene	0.2
Benzo(a)anthracene	0.2
Chrysene	9.2
Benzo(b)fluoranthene	0.2
Benzo(k)fluoranthene	0.92
Benzo(a)pyrene	0.2
Fluoranthene	1,500
Pyrene	1,100
Benzene	5.0
Toluene	1,000

Ethylbenzene	700
Xylene	10,000
Arsenic	50
Chromium	100

C. Controlling the Sources of Releases

Alternatives 1, 2, 3 and 4 would each require the installation of a drip pad near the wood treatment cylinders in accordance with West Virginia Code of State Regulations, Title 47-Series 35, Section 7. The drip pad will be effective in controlling or eliminating further creosote releases to the soil from the ongoing wood treatment operations. Alternatives 1 and 2 require extensive excavation, which inherently leads to additional airborne releases; however, engineering controls will be utilized to reduce the migration of airborne contamination. Even Alternative 3 will result in some additional airborne releases due to grading the surface areas prior to asphalt capping. Alternative 4 would only require some limited excavation. All of the alternatives would be effective in reducing, to the maximum extent practicable, further releases of contaminants to groundwater, surface water, and other soils. Alternative 2 and 4 are the only alternatives that prescribe use of a treatment technology. The proposed remedy, Alternative 4, would actively treat the creosote source through the use of in-situ bioremediation. Bioremediation is not effective on CCA constituents, so removal or asphalt capping would be required. In situ treatment is more advantageous than complete removal of the soil prior to treating as required in Alternative 2, because there is less physical handling of the contaminated media, which reduces the potential to transfer contaminants to air and/or surface water.

D. Complying with Standards for Management of Waste

All corrective measure alternatives must comply with applicable Federal and State regulations and policy. Because the proposed remedy would involve the excavation and disposal of hazardous waste, ATS must comply with all applicable land disposal restrictions standards set forth at 40 C.F.R. Part 268.

In the Tram Track Area, to prevent further creosote contamination from the wood treating operations, drip pads will be installed at the opening of the wood treating cylinders in

accordance with West Virginia Code of State Regulations, Title 47-Series 35, Section 7.

E. Long-Term Reliability and Effectiveness

Alternatives 1 and 2 will eliminate long-term risks and exposure to human health and the environment, since each of these alternatives involve the excavation, removal and destruction of contaminants through treatment.

Asphalt capping as considered under Alternative 3, would provide long-term reductions in the amount of water that would otherwise be absorbed by and pass through the contaminated soils. This will reduce the generation of contaminated leachate that would migrate to the groundwater. Because mobile polycyclic aromatic hydrocarbons ("**PAHs**") (i.e., acenaphthene, anthracene, naphthalene) and metals will not be treated in Alternative 3, the contaminated soils that constitute a principal threat would remain at the Facility and would pose potential long-term risks of exposure. The cap's effectiveness would be evaluated through long-term monitoring. The cap would require long-term maintenance, and portions of it might need to be replaced in the future.

Alternative 4, which is a combination of treatment technologies, would eliminate long-term risks and exposure from creosote due to in-situ treatment with bioremediation. The remaining CCA constituents would be either removed or capped, depending on site conditions. All capped areas would be approved by EPA and WVDEP. Any capped area would have the same long-term reliability and effectiveness as described in Alternative 3.

F. Reduction of Toxicity, Mobility or Volume of Waste

Alternatives 2 and 4 would effectively treat the waste to reduce the toxicity, mobility, and volume of waste. Alternative 2 is less effective then Alternative 4 in reducing the volume of waste due to the large quantities of contaminated elutriate, the mixture of water, surfactants, and contaminants that is recovered in the soil flushing process, requiring treatment.

Alternative 1 would remove the contaminants for off-site disposal, thereby reducing the toxicity and mobility from the site.

Alternative 3 would achieve no reduction in toxicity, mobility or volume of waste.

G. Short-Term Effectiveness

Alternative 3 would contain the treated soils and reduce the possibility of direct human contact with contaminants more quickly than any other alternative. Alternative 4, which will require some portion of the Facility to be capped, would be the second most effective, followed by Alternative 1 and Alternative 2 which would have the least short-term effectiveness.

H. Implementability

Implementability of any corrective measure alternative is related to the activities required to make such alternative operational.

Alternative 3 would have the least amount of administrative difficulties (i.e., requirement for state/local permits) that could delay implementation. However, asphalt capping activities could be delayed by seasonal conditions, such as temperature and rainfall.

Following Alternative 3, would be Alternatives 1 and 4 with both similar and unique implementing problems. Alternatives 1 and 4 would both require adequate capacity at an off-site incinerator or landfill for the excavated waste. In the case of Alternative 1, the amount of soil removed would be approximately 7,200 cubic yards as compared to about 2,000 cubic yards for Alternative 4. Alternative 4 would require a pilot study for the bioremediation of creosote, prior to full implementation. Alternative 1 would require backfill to replace the excavated soil or extensive regrading.

Alternative 2 would be the least implementable due to the administrative difficulties, such as air and water permits for the soil washing system as well as the necessity for bench- and pilot- scale testing. Soil washing requires site infrastructure needs such as power, roads, water, construction of foundations, and the storage of supplies. These needs are associated with the substantial amount of equipment associated with this activity.

I. Cost

Alternatives 3 and 4 have the lowest costs. Alternative 1 and 2 are considerably more expensive than the proposed remedy, Alternative 4.

In summary, EPA has preliminarily identified Alternative 4 as the preferred remedy because it would provide the best balance among the alternatives with respect to the evaluation criteria. EPA believes the proposed remedy would be protective of human

health and the environment; attain media cleanup standards; control the sources of releases so as to reduce or eliminate to the maximum extent practicable, further releases that may pose a threat to human health and the environment; provide long-term reliability and effectiveness and short-term effectiveness; and comply with standards for management of wastes.

XI. Public Participation

On August 16, 1996, EPA placed an announcement in the Braxton Democrat and Citizens' News to notify the public of EPA's preferred corrective measure alternative and of the location of the Administrative Record. Copies of this Statement of Basis will be mailed to anyone who requests a copy. The Administrative Record, including this Statement of Basis, is available for review during business hours at the following two locations:

U.S. Environmental Protection Agency
Region III (3HW90)
841 Chestnut Building
Philadelphia, Pennsylvania 19107
Telephone Number: (215) 566-3435
Attn: Mr. Michael A. Jacobi (3HW90)

and

Sutton Public Library
450 Fourth Street #C
Sutton, West Virginia 26601
Telephone Number: (304) 765-7224

EPA is requesting input from the public on the four corrective measure alternatives and on EPA's preliminary identification of Alternative 4 as the preferred corrective measure alternative. The public comment period will last thirty (30) calendar days beginning August 16, 1996 and ending September 17, 1996. Comments on, or questions regarding, EPA's preliminary identification of a preferred corrective measure alternative may be submitted to:

Mr. Michael A. Jacobi (3HW90)
U.S. EPA, Region III
841 Chestnut Building
Philadelphia, PA 19107
(215) 566-3435
FAX (215) 566-3113

Following the thirty (30) day public comment period, EPA will hold a public meeting on EPA's preferred corrective measure if sufficient public interest indicates that a meeting would be valuable for distributing information and communicating ideas. After evaluation of the public's comments, EPA will prepare a Final Decision Document and Response to Comments which identifies the selected Corrective Measure Alternative. The Response to Comments will address all significant written comments and any notable oral comments generated if a public meeting is held. This Final Decision Document and Response to Comments will be made available to the public. If, on the basis of such comments or other relevant information, significant changes are proposed to be made to the corrective measures alternative identified by EPA in this Statement of Basis, EPA may seek additional public comments.

Upon consideration of public comments, EPA will select a final corrective measure alternative for the Facility. The final corrective measure alternative will be implemented using available legal authorities, including but not limited to RCRA Section 3008(h), 42 U.S.C. §6928(h).

8/9/96
Date

Thomas C. Voltaggio, Director
Hazardous Waste Management Division