

NOTICE OF FINAL DECISION TO APPROVE A PERMIT MODIFICATION

The Tennessee Department of Environment and Conservation's (TDEC) Division of Solid Waste Management (DSWM) has made a final decision to approve a Class 3 Permit Modification for Southern Wood Piedmont Company's (SWP) Post-Closure Permit, TNHW-123; EPA ID Number: TND 00 332 7400. The modification will allow SWP to implement a final remedy for Area of Concern A, Chattanooga Creek, at their closed plant site located at 403 West 33rd Street, Chattanooga, Hamilton County, Tennessee 37406. The modification was effective as of November 17, 2011. The approval followed a 45-day comment period from September 30 to November 15, 2010. The only comments received were from EPA, which are addressed in the DSWM's Response to Comments document.

The purpose of the modification was to add a site-wide final remedy to SWP's permit and to revise some of their groundwater monitoring requirements. Final remedy for Chattanooga Creek follows a USEPA CERCLA cleanup of creosote contaminated creek sediments and stream banks, which included installation of a streambed liner. As creosote residuals remain below the liner, the modification requires SWP to provide controls that will prevent recontamination of the creek. The draft modification required SWP to perform annual sampling and analysis of Chattanooga Creek for verification purposes. In response to EPA's concerns, it was agreed to supplant monitoring of surface water with sampling and analysis of the liner and underlying streambed. This will allow for earlier detection of any possible migration of creosote to the creek sediments above the liner.

This permit modification is issued under the authority of the Tennessee Hazardous Waste Management Act of 1977, as amended, Tennessee Code Annotated, Section 68-212-101 et seq., and Tennessee Rule Chapter 1200-01-11, Hazardous Waste Management.

A copy of the final permit modification, including the Response to Comments document, is available for public inspection at the Hamilton County Bicentennial Library; 1001 Broad St.; Chattanooga, TN 37402 (423-757-5310). These materials are also available for public inspection during normal business hours, 8:00 a.m. to 4:30 p.m., Monday through Friday, except legal holidays, at the TDEC Chattanooga Environmental Field Office; Public Access Area, Chattanooga State Office Building; Suite 550, 540 McCallie Ave.; Chattanooga, TN 37402; (423-634-5745) and at the TDEC Division of Solid Waste Management's Central Office; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; (615-532-0780).

For further information, contact: Mr. Clayton Bullington; TDEC, Division of Solid Waste Management; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535; telephone 615-532-0859, or e-mail Clayton.Bullington@tn.gov.

TDEC is committed to principals of equal opportunity, equal access, and affirmative action. Contact the EEO/AA Coordinator at 1-888-867-7455 or the ADA Coordinator at 1-866-253-5827 for further information. Hearing impaired callers may use the Tennessee Relay Service (1-800-848-0298).

Persons who wish to be on DSWM's mailing list should request a Mailing List Request form by calling or writing: Public Participation Officer; Division of Solid Waste Management; TDEC; 5th Floor, L & C Tower; 401 Church Street; Nashville, TN 37243-1535 (615-532-0798); or e-mail Solid.Waste@tn.gov.

RIGHTS OF APPEAL

The administrative and judicial review of this final permit is pursuant under the Tennessee Uniform Administrative Procedures Act, T.C.A. Sections 4-5-317 and 4-5-222, the Hazardous Waste Management Act, T.C.A. 68-212-113, and Tennessee Rule 1200-1-11-.07(7)(k).

NOTICE ISSUED: December 13, 2011

RESPONSE TO COMMENTS
Southern Wood Piedmont Company
Chattanooga, Tennessee

This document has been prepared in accordance with Tennessee Rule 1200-01-11-.07(7)(j). It has resulted from the Tennessee Division of Solid Waste Management's (DSWM) issuance of a draft permit modification to Southern Wood Piedmont Company (SWP), located at 403W 33rd Street, Chattanooga, Tennessee 37401, EPA Identification Number TND003327400. The proposed permit modification will require Southern Wood Piedmont Company to implement a final remedy for Area of Concern (AOC) A, Chattanooga Creek. Final remedy for AOC A, follows a USEPA CERCLA cleanup of creosote contaminated creek sediments and creosote contamination from Chattanooga Creek stream banks. The creek remediation achieved all cleanup goals to the specified performance standards and is considered to be adequately protective of human health and the environment. In accordance with their existing corrective action permit, SWP submitted a report of the cleanup with recommendations for further action.

The proposed modification to the post-closure/corrective action permit requires SWP to implement institutional controls that will prevent development in the wetlands and protect the vegetation along the creek. It also requires SWP to perform regular inspections to assure the institutional controls are maintained and that creek waters remain unaffected. For verification, SWP is, under the permit, required to perform quarterly visual inspections of the creek and annual sampling and analysis of the protective stream channel cap and underlying Chattanooga Creek sediments. All other solid waste management units and areas of concern at the facility already have final remedy requirements incorporated into SWP's permit.

Part A of this document describes the efforts made by the (DSWM) and Southern Wood Piedmont Company to obtain public input. Part B summarizes and responds to all significant comments received.

A. Public Involvement Opportunities

On May 4, 2010, the facility conducted a public meeting at Bethlehem Community Center, 200 W. 38th Street, Chattanooga, TN. The public meeting addressed the final remedy for the portion of Chattanooga Creek that bisects the SWP property, which is located at 403 West 33rd Street, Chattanooga, TN 37406. The public notice of the meeting included the establishment of a 60-day comment period (April 8 through June 8, 2010). The purpose of the public meeting was to inform the community of SWP's April 7, 2010 modification request to incorporate the final remedy for Area of Concern (AOC) A, Chattanooga Creek, into their permit and to revise some of their current groundwater monitoring requirements. Only one person from the community and a representative from the DSWM attended SWP's meeting. No comments were received at the meeting or during the 60-day comment period.

After review of SWP's Class 3 Permit Modification Request and writing the draft permit modification, the DSWM issued a public notice of the issuance of the draft modification in the September 30, 2010 edition of the Chattanooga Times Free Press. Several 30-second announcements of the action, referencing the notice published in the newspaper,

were also provided over Chattanooga radio stations WGOW-FM and WOGT-FM. The notice advised that copies of the draft permit and associated materials were available for review at DSWM's Central Office in Nashville, the DSWM's Chattanooga Field Office, and the Hamilton County Bicentennial Library. The notice also established a 45-day public comment period (ending November 15, 2010) and described how interested persons could comment in writing on the proposed action or request a public hearing.

B. Public Comment/Response Summary

Only the United States Environmental Protection Agency (EPA) submitted comments on the Draft Class 3 Permit Modification. EPA's comments and the DSWM's responses are provided below as one general comment and response.

EPA encouraged the DSWM to evaluate and develop longer-term source control strategies for the NAPL in the subsurface soils of the floodplain and oxbow section of Chattanooga Creek at the SWP facility. EPA believes that additional active corrective measures are necessary to mitigate potential subsurface NAPL migration and contaminant diffusion through the protective creek cap and into the overlying sediments.

After consultation, Southern Wood Piedmont, EPA and the DSWM agreed to replace the surface water sampling permit requirement with direct monitoring of the creek sediments and the Aquablok® cap. This monitoring is similar to the post-cleanup monitoring of Chattanooga Creek that was being performed by EPA's CERCLA Program. This will allow substantially better monitoring of, and quicker corrective action response to, any NAPL that has the potential to migrate through the creek cap and re-contaminate the sediments overlying the cap.

COMMENTS

Comment from the United States Environmental Protection Agency: The proposed permit modification would allow a final remedy for AOC A (a portion of Chattanooga Creek) that only requires SWP place institutional controls (e.g. deed restrictions) on part of its creek property, perform quarterly visual inspections for Non-Aqueous Phase Liquid (NAPL) in Chattanooga Creek, and conduct annual sampling of the creek at the upstream and downstream boundaries of the SWP property. EPA believes that the proposed remedy for AOC A is insufficient.

The Superfund Program completed a decade-long CERCLA Remedial Action in Chattanooga Creek in September of 2008. This work was funded by a group of potentially responsible parties (PRPs) which included SWP. The contractors conducting the remedial work on behalf of the PRPs encountered significant amounts of NAPL as they excavated the oxbow portion of the creek. The physical characteristics of the NAPL were very different from the coal-tar impacted sediments that were encountered elsewhere in the creek. Given its proximity to SWP and its characteristics, EPA believes this NAPL is a “creosote-like” relic of SWP’s wood-treating operations. In an effort to minimize the potential for NAPL to re-contaminate the restored creek channel, the Superfund Program required the PRPs to install an Aquablok® protective isolation barrier (e.g. cap) over 5,750 linear feet of the remediation area. Aquablok® is a patented solid aggregate that is coated with a clay polymer, and when hydrated, it expands into a cohesive, low permeability barrier.

We believe the Aquablok® cap was always considered to be a temporary solution that allowed the CERCLA cleanup to proceed, and should not be the sole engineering control to guard against potential re-contamination of the creek by the NAPL. EPA has observed historic soil banked NAPL contamination and believes that additional active corrective measures are necessary to mitigate potential subsurface NAPL migration and contaminant diffusion through the cap. A conceptual design for a passive NAPL recovery system with conveyance pipes and sumps was developed during active creek remediation, but the system was not implemented due to lack of consensus between SWP and the other PRPs on the Chattanooga Creek Cleanup Committee over matters of attribution and O&M requirements.

An October 15, 2008, letter from EPA’s Superfund Division Director to TDEC’s Senior Director of Land Resources encouraged the TDEC DSWM to evaluate and develop longer term source control strategies for the documented NAPL present in the subsurface soils of the floodplain and oxbow section of Chattanooga Creek adjacent to the SWP facility. EPA does not believe the proposed modifications to SWP’s post-closure and corrective action permit adequately address the above concerns.

The Division of Solid Waste Management’s Response:

As noted by EPA, the Draft Class 3 Permit Modification to TNHW-123 would require SWP to install and maintain institutional controls, perform visual inspections for NAPL, and conduct surface water sampling. In consideration of the current site status at SWP and the existing corrective action permit conditions in their post-closure permit, the DSWM believed that those proposed conditions were sufficient as a remedy for AOC A, Chattanooga Creek. The existing corrective action requirements for responses to releases to the environment mirror EPA’s Hazardous and Solid Waste Amendments (HSWA) permit conditions. However, there are special

notification requirements for AOC A, which will allow the DSWM to require quicker response actions if necessary. The full nature and extent of residual NAPL in the stream bank is already defined. If a release is detected, the DSWM will immediately require SWP to perform appropriate interim measures as required by the existing corrective action permit conditions.

Instead of the surface water sampling, which would indicate a release had already occurred, SWP will be required to use solid phase extraction (SPE) technology to monitor the Aquablok® cap and underlying sediments. The analytical results will indicate the potential for re-contamination of the creek sediments and will allow the DSWM to require SWP to address the potential contamination prior to the contaminants infiltrating the sediments overlying the cap. These sampling and analysis procedures and reporting requirements are presented in Attachment 7F of the final permit. Along with the justification below and as agreed to by SWP, EPA and the DSWM, this SPE sampling will timely identify any need for active corrective action at SWP.

The DSWM has reevaluated boring data collected by SWP in the 1980's from their property in and along Chattanooga Creek, including the surrounding floodplain. The early data correlates with findings of the CERCLA Remedial Action and the July 2006 results of the direct-push coring (to top of bedrock) performed by Environmental Planning Specialists (EPS). Contaminants found at the site consist of K001 wood-preserving constituents, including free-phase dense non-aqueous phase liquid (DNAPL) creosote and its dissolved derivatives. Site-specific dissolved chemicals include various phenolics, polynuclear aromatic hydrocarbons (PAHs) and single ring aromatics.

Sixteen of the twenty-three sediment cores from the 1986-87 borings of Chattanooga Creek were found to have a zone of oil-saturated sediment. The zone, 0.5 to 3.3 feet thick, was located at the base of the sediment column, right on top of the bedrock confining layer. DNAPL was found from the source, which is near well cluster C-7, to about 400 feet downstream. The source was a direct discharge of wood-preserving (creosote) process wastewater by the facility's original owners from 1925 to 1940. Further downgradient of the source, the investigation found NAPL in significant amounts throughout the reach of the oxbow. It was also found at SWP's upgradient property line, 1200 to 1600 feet upstream of any known or suspected SWP source.

To verify that the contamination was limited to stream sediments and accumulations as stream bank deposits, forty-two test borings were conducted within the floodplain sediments adjacent to Chattanooga Creek in April 1987. Samples retrieved from the test borings were visually examined for "free oil." The bore holes were also left open for at least 24 hours to allow observation of oil accumulation at the top of rock. Oil was observed in only two of the forty-two borings, and this was only at the top of rock. Soil/sediment samples from the bottom levels of the test borings were analyzed for K001 constituents for verification purposes. The results of the exploration indicated that the oil at the top-of-rock has migrated only short distances from the locations where found beneath Chattanooga Creek. This limited horizontal migration pattern has been noted at every unit with a DNAPL release at SWP.

The 2006 investigation, which consisted of thirty-six borings to the top of bedrock along the banks of the creek, verified that the DNAPL was only in the depositional areas. According to EPS, the contractor performing the study for SWP, "the cores were visually inspected for the presence of DNAPL, which was found as oily water. The relative amount of oil to water in the "DNAPL" appeared to increase with depth (where DNAPL was encountered) extending into a gravel layer at the base of the bank sediments (immediately overlying the bedrock)."

As proven by the soil boring and well drilling programs at SWP, it is documented that there are no past or ongoing releases of DNAPL to Chattanooga Creek from SWP's plant site. Past and current deposits of DNAPL in Chattanooga Creek sediments and stream banks were from the facility's direct discharges to the creek and from other facilities upstream with similar discharges. The conclusion is that DNAPL at the SWP site does not tend to move horizontally after migrating downward to a confining layer; therefore, the extent of DNAPL beyond the areas of release is not expected and has been shown to be limited.

To assess surface water quality at Chattanooga Creek in the vicinity of the facility, samples were collected by SWP in 1985 at locations along the creek and at flowing drainage features within the low swampy area down-gradient from the plant. The samples were analyzed for K001 wood-preserving constituents. No evidence of wood preserving constituents in surface water, in either the on-site drainage features or in Chattanooga Creek, was found.

As part of the remedy, the DSWM considered EPA's recommendation for a passive NAPL recovery system (a plan that was not implemented by CERCLA at the time of the Chattanooga Creek sediment removal). Past experience at the SWP site has shown that this type of recovery will have minimal effect on removing any remaining possibly mobile DNAPL, which is limited to the thin basal gravel layer. That layer is lower than the reconstructed elevation of the creek bottom. Considering all site conditions, and by replacing the permit requirement for surface water sampling with direct monitoring of the creek sediments and the Aquablok® cap, the DSWM asserts that the selected remedy will adequately provide long-term protection of human health and the environment and not diminish the Chattanooga Creek CERCLA Remedial Action.

To further support the decision to not pursue the passive recovery system as part of the remedy recommended by EPA, the DSWM has included below the basis for the proposed remedy for AOC A. The area of concern consists of that portion of Chattanooga Creek and the surrounding floodplain that is located within Southern Wood Piedmont Company's property boundary.

1. Reforestation of the cleared areas along the creek will assist in establishing and maintaining long-term bank stability for the remediated stream channel. Erosion along this stretch of Chattanooga Creek is controlled by the low gradient and the Tennessee River dams located up and down river of the creek confluence. Migration of meanders in the oxbow area is also inhibited by the oxbow channel's breach, which did not exist at the time of contaminant deposition. The breach does not completely cut off flow around the oxbow channel; some flow continues through the oxbow, including minor contributions from the surrounding swamplands.
2. The non-aqueous phase liquid (NAPL) did not migrate into the banks from the creek. It was flowing in the creek along with sediments and debris until they were deposited in areas of very low stream velocity, i.e., the inside of meander bends. As the creek cut further into the outside of the bends, the width of the depositional sides increased. The deposits that filled the space on the accumulation side of the meander bends consisted of a basal gravel bar, which graded upward to include sand, silt and clay. Throughout the depositional column, debris and NAPL being transported from upstream were deposited along with the alluvium. The viscous NAPL tends to attenuate to the finer alluvium. However, the permeable basal gravel could allow for mobility of NAPL if a continuing source existed.

3. The feasibility study performed by EPA for Chattanooga Creek determined that only the sediments in the creek posed a threat to human health. No other media required remedial action. 4C's cleanup was limited to visual polycyclic (polynuclear) aromatic hydrocarbon (PAH) contamination with a maximum removal of 3 feet of the existing creek bank. This left PAHs in the wider depositional areas of the creek and in the floodplain alluvium. 4C's remedy achieved all cleanup goals to the CERCLA-specified performance standards and is considered to be adequately protective of human health and the environment.
4. The remnant, non-aqueous phase liquid (NAPL) is only mobile in cut banks, as occurred and as documented during the dredging phase of 4C's cleanup. Prior to dredging, no releases to the creek were noted. Any NAPL found in creek banks is along the depositional side of creek meanders. It is not found in straight reaches or in the area of meanders where natural stream erosion is taking place.
5. Only limited NAPL removal from the soil and/or sediment overburden is achievable by means other than dig-and-haul. Other on-site attempts of NAPL removal from the overburden/bedrock interface by SWP have had little success. The dense NAPL is heavier than water and investigations have shown that the movement of this material in the overburden is essentially vertical from the source, attenuating to the soil as it moves in a column until it reaches an impermeable barrier. At that point, if a continuing source is available, horizontal movement can occur and the dense NAPL will pool in low areas of the barrier. By installing trenches with sumps, SWP has tried to collect and remove the NAPL from low areas at the overburden/bedrock interface. These attempts to recover this NAPL from areas with similar deposits have been largely unsuccessful at removing significant amounts of NAPL.
6. An attempt to excavate any remnant NAPL left in place behind the restored channel will destabilize the reconstructed banks. Since 4C's channel dredging activities, the oxbow has already undergone significant natural recovery.
7. Where fractures are present beneath the creek, DNAPL has penetrated the top of rock confining layer. During the 1990s, SWP successfully performed voluntary DNAPL removal from the shallow, high-conductivity fractured rock aquifer in the vicinity of the Oxbow. Open borehole wells were used as sumps for accumulation of DNAPL. For seven years (when weather and flooding conditions allowed), on a monthly, and then a quarterly basis as accumulations waned, the DNAPL was pumped from the wells. In 2000, when the accumulations had dwindled to the point that recovery of DNAPL was insignificant, SWP ceased further recovery activities.
8. The Division has reviewed SWP's response to "Chattanooga Creek NAPL Assessment, Chattanooga, Tennessee" (USEPA 2006). The case made by NewFields Environmental Forensics raises questions to the NAPL fingerprinting done by EPA, which claims to identify SWP as the sole responsible party for the contamination in the Oxbow. The history and process operations of the Coke Plant, a facility upstream of SWP, suggests a plausible source of a large amount of creosote-like NAPL being dumped into Chattanooga Creek. Stream mechanics, as described in the document, provide good evidence for NAPL migration from locations upstream of SWP property boundary and deposition of NAPL in the area of the oxbow.