AMENDED RECORD OF DECISION
SUMMARY OF REMEDIAL ALTERNATIVE SELECTION

ESCAMBIA WOOD TREATING COMPANY SUPERFUND SITE

OPERABLE UNIT 2 (GROUNDWATER)

PENSACOLA, ESCAMBIA COUNTY, FLORIDA

PREPARED BY:

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA, GEORGIA

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DECLARATION FOR THE AMENDMENT TO THE RECORD OF DECISION

Site Name and Location

This Amended Record of Decision (AROD) is for the Escambia Wood Treating Company (ETC) Superfund site, operable unit 2 (groundwater), which is located at 3910 North Palafox Street in the city of Pensacola in Escambia County, Florida. The U.S. Environmental Protection Agency (EPA) site identification number for the ETC Superfund site (the Site) is FLD008168346.

Statement of Basis and Purpose

This AROD modifies the groundwater remedy selected by the EPA in the Site's September 29, 2008 Record of Decision (ROD). This AROD selects additional actions to address additional non-aqueous phase liquid (NAPL) contamination discovered in the former wastewater pond and landfill known as solid waste management unit 10 (SWMU 10) that cannot be addressed with in-situ chemical oxidation (ISCO), the 2008 ROD "Source Plume" remedial technology. This AROD also redefines the "Source Plume" in the 2008 ROD as the "Source Area" and the "Highly Adsorbed Phase Area" and updates the Conceptual Site Model (CSM), contaminants of concern (COCs) and cleanup levels. This AROD leaves remaining portions of the 2008 ROD remedy unchanged. The integration of the selected remedy in the 2008 ROD and the actions in this AROD are shown in Table 1.

The remedy in this AROD is selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Contingency Plan (NCP). This decision is based on the Administrative Record for the Site. This decision is the final remedy for the Site. Following completion of the remedial action, the Site will be ready for reuse. The State of Florida, as represented by the Florida Department of Environmental Protection (FDEP), has been the support agency during the remedial investigation and feasibility study (RI/FS) process for the Site. In accordance with 40 Code of Federal Regulations (CFR) Section 300.430, as the support agency, FDEP has provided input during the process.

Site Assessment

The response action selected in this AROD is necessary to protect the public health or welfare and the environment from actual or threatened releases of hazardous substances to the environment.

Description of Selected Remedy

The updated CSM presented in this AROD (Section 3) explains how the Source Plume is now characterized and divided into the Source Area and the Highly Adsorbed Phase Area. This AROD selects additional actions to address the NAPL using more aggressive technologies for the Source Area and Highly Adsorbed Phase Area, and supersedes the 2008 ROD remedy for the former Source Plume. This AROD leaves remaining portions of the 2008 ROD remedy unchanged.

The selected remedy for the Source Area combines extraction and in-situ treatment technologies. First, a highly aggressive, thermally enhanced extraction technique called steam enhanced extraction (SEE) will remove the majority of NAPL, with additional extraction and in-situ techniques applied as necessary. If needed, surfactant enhanced aquifer remediation (SEAR) could be used following, or in conjunction with, the thermally enhanced extraction. After the SEE reaches treatment objectives (to be finalized in the design), additional extraction using SEAR could be used, followed by ISCO and in-situ enhanced bioremediation (ISEB) as necessary. The removal of NAPL from the aquifer will satisfy the EPA's preference for treatment and will treat and remove principal threat waste from the aquifer.

The selected remedy for the Highly Adsorbed Phase Area is extraction using SEAR followed by ISCO and ISEB. After SEAR extraction, the approach will change to a treatment train of in-situ treatment technologies, using ISCO then ISEB.

These actions complement the overall cleanup strategy selected by the 2008 ROD, which is aggressive treatment of areas that act as a source for continued groundwater contamination and active in-situ treatment of groundwater contaminated above selected natural attenuation criteria. A key objective of the aggressive treatment is to address principal threat waste and create aquifer conditions suitable for ISEB. The selected remedy for OU2, as amended by this action, is compatible and works in conjunction with the completed remedy for OU1 (soil). Following completion of the remedy for OU2, the remedy will be protective of human and ecological receptors and will attain unlimited use and unrestricted exposure criteria. The amended selected remedy is also compatible with the anticipated future use(s)

of the Site – commercial, industrial or manufacturing redevelopment. The major components of the amended selected remedy include:

- Excavation and removal of the existing sheet pile wall.
- Installation and operation of the SEE system within the Source Area.
- Extraction of groundwater to be treated and re-injected into the subsurface. Recovered NAPL will be sent off site for treatment and disposal.
- Implementation of ISEB treatment within the Source Area. SEAR and ISCO could also be used to polish and treat hot spots within the Source Area, if necessary.
- Installation of injection/extraction wells over the Highly Adsorbed Phase Area.
- Implementation of SEAR, ISCO and/or ISEB within the Highly Adsorbed Phase Area. Monitor results and re-apply treatment, as necessary.
- Installation of performance monitoring wells to monitor the effectiveness of the treatment.
- Maintenance of institutional controls to prevent the disturbances of the subsurface soils and groundwater usage until remedial goals are met within the SWMU 10 area.

The proximity of the Site to another active CERCLA site (the Agrico Chemical Company Superfund site) to the southwest requires close coordination and consultation with risk managers for that site.

Statutory Determinations

The selected remedy is protective of human health and the environment, complies with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action (unless justified by a waiver), and is cost effective. This remedy uses permanent solutions and alternative treatment technologies to the maximum extent practicable and satisfies the statutory preference for remedies that employ treatment to reduce toxicity, mobility or volume as a principal element in conjunction with the remedy for OU1 (soil). The remedy eliminates human and ecological exposure to contaminated groundwater, permanently controls the mobility of the contaminants, and is protective of groundwater resources. Of the groundwater contaminants being addressed, naphthalene is the most significant. The NAPL in the SWMU 10 area is acting as continuing source material for groundwater contamination and is considered a principal threat waste. The selected remedy will remove and properly dispose of NAPL or destroy residual NAPL in the aquifer.

This remedy will take more than five years from construction start to attain unlimited use and unrestricted exposure criteria. Accordingly, a policy review will take place within five

years of construction of the remedy to make sure it remains protective of human health and the environment as the cleanup progresses.

Data Certification Checklist

The following information is included in the Decision Summary, Part 2 of this AROD. Additional information can be found in the Site's Administrative Record.

- Chemicals of concern (COCs) and their respective concentrations (Section 3.2).
- Baseline risk represented by the COCs (Section 3.2).
- Cleanup levels established for COCs and the basis for these levels (Section 4.3).
- How source materials constituting principal threats are addressed (Section 4.2 and 7.5).
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater applied in the Baseline Risk Assessment for Human Health (Section 3.2.1).
- Potential land and groundwater use that will be available at the Site as a result of the selected remedy (Section 4.2).
- Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected (Section 4.2).
- Key factor(s) that led to selecting the remedy (i.e. describe how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) (Section 5).

Authorizing Signatures

for Franklin E. Hill, Director — Date 9/29/15

Superfund Division

U.S. Environmental Protection Agency, Region 4

DECISION SUMMARY FOR AMENDMENT TO 2008 OU2 ROD FOR ESCAMBIA WOOD TREATING COMPANY SITE

1. Introduction to the Site and Statement of Purpose

1.1 Site Name and Location

The Escambia Wood Treating Company (ETC) Superfund site (the Site) is located in the city of Pensacola in Escambia County, Florida. Figure 1 shows the Site's location. Figure 2 shows the Site's vicinity. The U.S. Environmental Protection Agency (EPA) site identification number for the Site is FLD008168346. The EPA is the lead agency at the Site and is supported by the Florida Department of Environmental Protection (FDEP). Previous Superfund work at the Site includes the completed cleanup of the soil operable unit (OU1) and a previous Record of Decision (ROD) for OU2, signed on September 29, 2008.

The Site includes the 26-acre former ETC facility, about 70 acres of nearby properties and the groundwater plume area. The ETC facility manufactured treated wood products from 1942 to 1982. The owners abandoned the facility in 1991. Soil contamination was addressed as OU1; the properties are ready for commercial and industrial reuse.

1.2 Statement of Purpose

This Amended Record of Decision (AROD) adds additional actions to those selected by the EPA in the Site's September 29, 2008 ROD to address additional NAPL contamination discovered in solid waste management unit 10 (SWMU 10) that cannot be addressed with in-situ chemical oxidation (ISCO), the 2008 ROD "Source Plume" remedial technology. This AROD selects more aggressive technologies to address the contamination in the "Source Area" and "Highly Adsorbed Phase Area" and supersedes the 2008 ROD remedy for the area called the "Source Plume." This AROD leaves remaining portions of the 2008 ROD remedy unchanged. The integration of remedial technologies from the 2008 ROD and the actions in this AROD is shown in Table 1. This AROD also updates the Conceptual Site Model (CSM) and clarifies contaminants of concern (COCs) and cleanup levels.

1.3 Summary of Circumstances Leading to ROD Amendment

During the construction of the OU1 (soil) cleanup in late 2008 and early 2009, EPA contractors discovered additional contamination in the former wastewater pond and landfill known as SWMU 10. The contamination found was more severe than expected and would

not be addressed by the Source Plume technologies in the 2008 ROD. From 2008 to 2013, EPA investigations identified an estimated 200,000 to 300,000 gallons of creosote NAPL in the SWMU 10 area. Section 3 contains a detailed discussion of the field studies conducted to understand the contamination.

1.4 Administrative Record Availability

This AROD will become part of the Administrative Record file for the Site, in accordance with National Contingency Plan (NCP) §300.825(a)(2). The Administrative Record is available for review at the Genealogy Branch Library, 5740 North Ninth Avenue, Pensacola, Florida 32504. The Genealogy Branch Library's hours of operation are Tuesday to Saturday, 10 a.m. to 6 p.m. This is part of EPA's requirements under §117 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and §300.435(c)(2)(ii) of the National Contingency Plan (NCP).

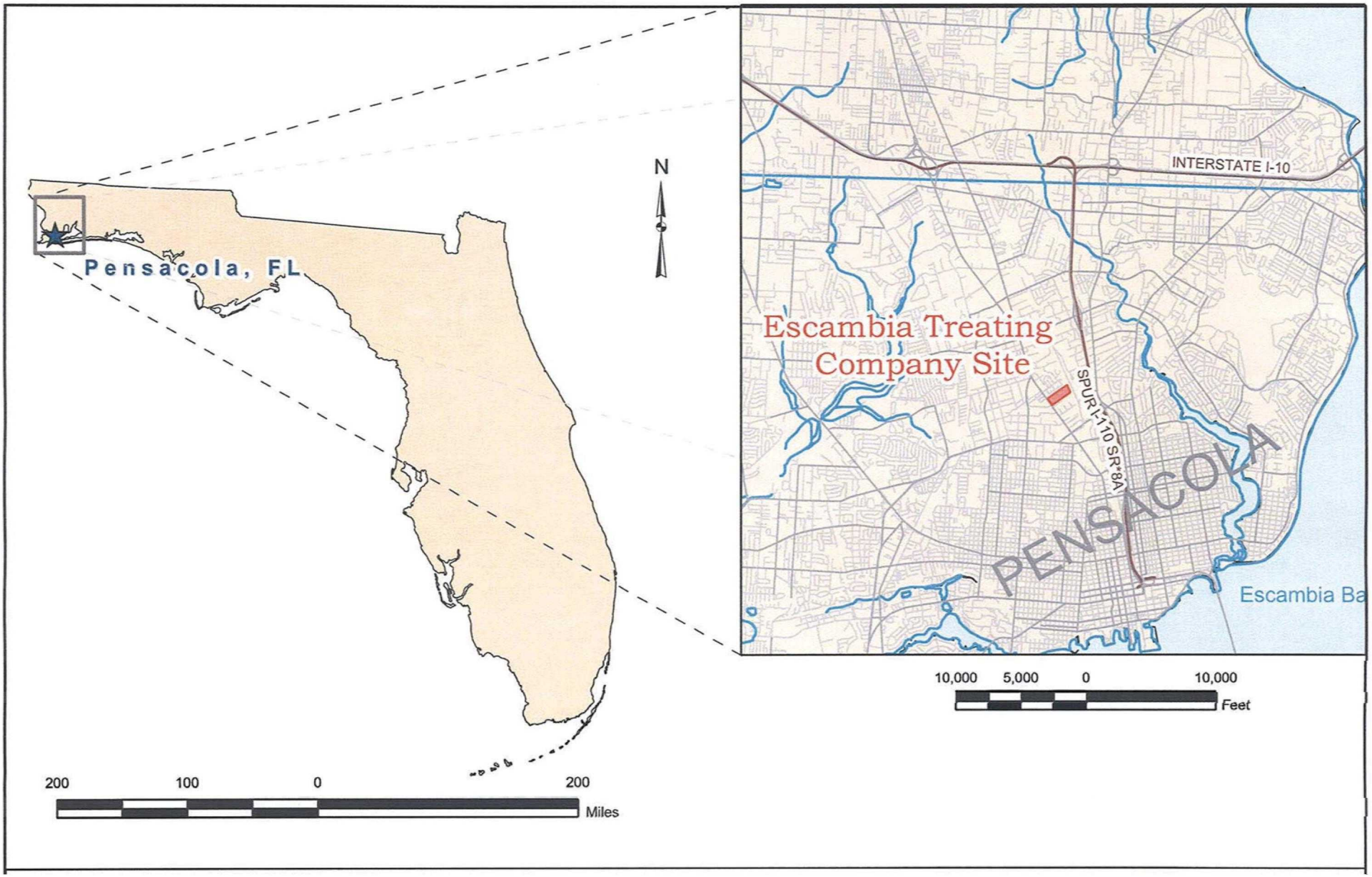

Figure 1. Site Location Map

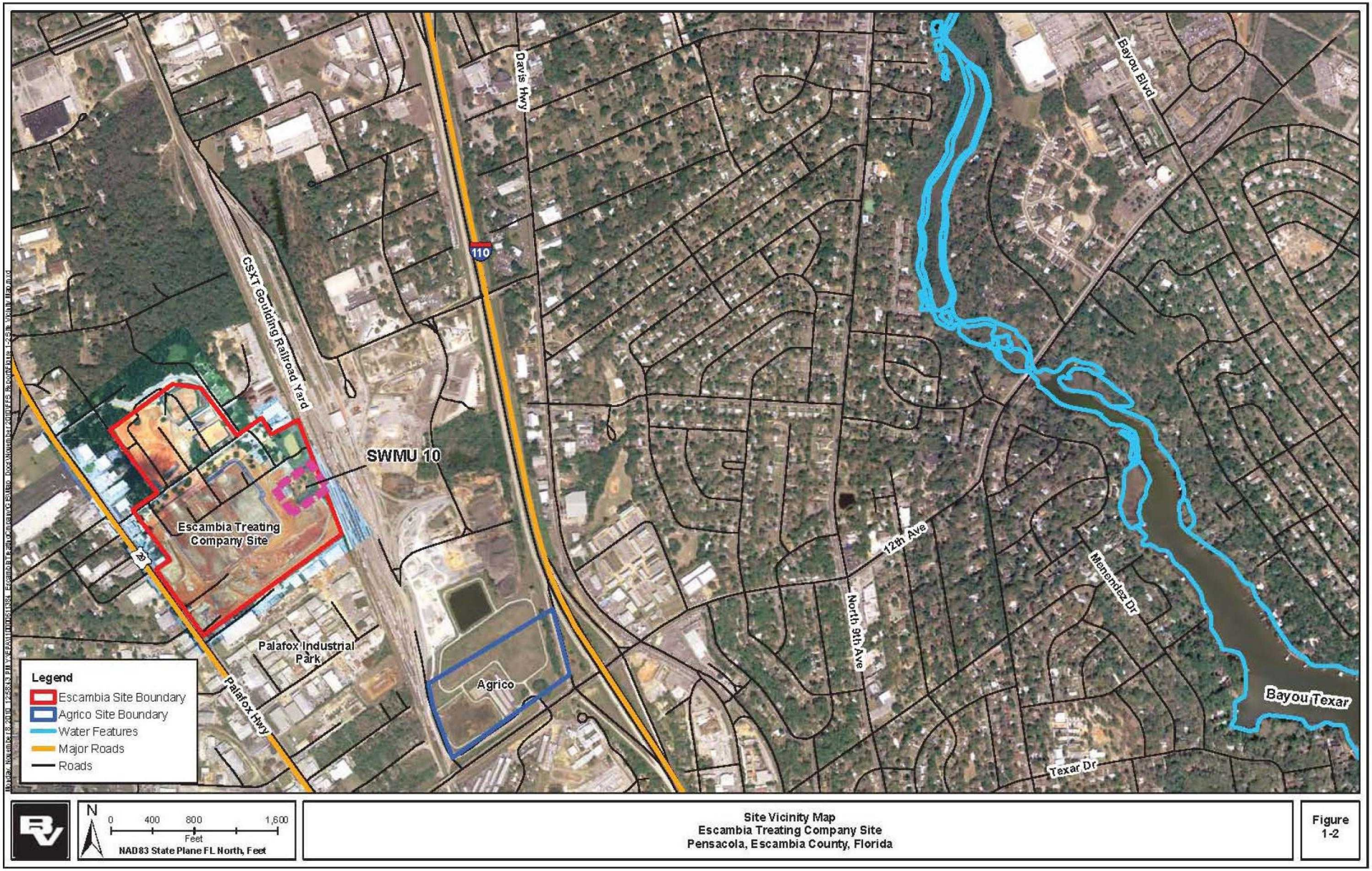

Figure 2. Site Vicinity Map

2.0 Site History, Contamination and Original Selected Remedy

2.1 Brief Summary of Contamination Problems and Site History

The Site is the former location of a wood-preserving facility that operated from 1942 to 1982. The ETC facility treated wood products such as pilings and telephone poles with creosote and pentachlorophenol. From 1942 to about 1970, coal-tar creosote was used as the primary wood preservative. The facility began using pentachlorophenol dissolved in No. 6 diesel fuel for some treatment activities in 1963. Pentachlorophenol was used for all treatment activities from 1970 to 1982. ETC ceased operations in October 1982 and conducted partial removal actions at the Site in 1985 and 1988. From 1985 to 1989, various violations were noted at the facility. Enforcement actions were taken by the EPA and FDEP.

In June 1990, the EPA conducted a site inspection and identified 31 SWMUs and two Areas of Concern. The 1990 Facility Assessment Report assigned the name "SWMU 10" to a former waste impoundment used to dispose of spent wood-treating chemicals during the 1940s and 1950s. The SWMU 10 impoundment covered an area of about 1.5 acres in the northeastern portion of the facility just west of the CSX railroad. During the mid-1960s, ETC started filling the impoundment with soils, various solid wastes, fly ash and treated wood debris. Liquids in the impoundment were not removed before SWMU 10 was taken out of service.

2.2 Previous EPA Cleanup Actions

2.2.1 EPA Removal Action

ETC filed for bankruptcy and abandoned the Site in 1991. The EPA initiated an extensive soil removal action at the Site from 1991 to 1992 to stabilize the Site. About 225,000 cubic yards of contaminated soil were excavated and stockpiled at the Site under a secure liner system.

2.2.2 OU1 Soil Interim Remedial Action – Residential Relocation

In 1994, EPA placed the Site on the Superfund program's National Priorities List (NPL) and started the Site's remedial investigation and feasibility study (RI/FS). Some nearby residents requested permanent relocation from the area. In 1995, the EPA nominated the Site to become part of a National Relocation Evaluation Pilot. On February 12, 1997, the EPA signed an Interim ROD, selecting an interim remedial action of voluntary permanent relocation for 358 households affected by the Site. The federal government acquired 158 single-family homes, a 200-unit apartment complex and 11 vacant residential lots.

2.2.3 OU1 Soil Final Remedial Action – On-site Disposal in Containment Cell and Residential Relocation

The EPA conducted soil investigations in multiple phases from 1991 to 1998. In 1998, the EPA completed a RI/FS Report. In the report, the EPA officially divided the Site into two OUs. OU1 addressed contaminated soils in adjacent or nearby areas impacted by the Site. OU2 addressed groundwater impacted by site contaminants.

Based on input from FDEP and the community, the EPA conducted additional soil investigations and prepared an updated FS in 2005. On February 13, 2006, the EPA signed the final ROD for OU1. The soil cleanup strategy was to treat principal threat wastes through solidification/stabilization and to permanently isolate contaminated soil in an on-site containment system. The 2006 ROD also extended the National Relocation Evaluation Pilot to an additional 46 households in the Clarinda Triangle neighborhood.

OU1 remedial action construction began in October 2007 and finished in June 2010, except for minor closeout items. The OU1 remedy resulted in the construction on site of an 18-acre, 550,000 cubic yard subsurface containment cell that was lined and capped. The excavations within SWMU 10 were extended to a depth of about 5 feet below the water table to excavate NAPL-impacted soil to the extent readily accessible with standard soil excavation techniques. After the OU1 remedial action, the SWMU 10 excavation was about 40 feet deep. The volume of the excavation was about 120,000 cubic yards.

Permanent relocation of Clarinda Triangle households began in December 2006 and finished in 2009. A handful of property owners and residents opted not to participate in the relocation. In total, the National Relocation Evaluation Pilot successfully relocated over 500 people to comparable replacement housing.

During OU1 planning and construction, the EPA worked with the local government and community to maximize the reuse potential of the Site. The Site's remedy is compatible with commercial and industrial uses and manufacturing. The soil cleanup is designed so that businesses can locate directly on top of the containment cell without creating a health concern for workers. The remedy for OU1 is complete. It is not affected by this AROD.

2.2.4 OU2 Groundwater Investigations

There have been many groundwater sampling investigations at the Site since 1982. Detailed groundwater reports are available in the Administrative Record. More than 100 wells have been sampled during the investigation effort and sampling continues. The EPA completed an OU2 RI Report in 2004. From 2005 to 2007, the EPA conducted additional investigations to explore cleanup options in more detail. The EPA presented these results and the cleanup alternatives for the

groundwater in the 2008 OU2 FS. The EPA issued a Proposed Plan for OU2 in June 2008 and, after considering public comments, selected the OU2 remedy in the Site's September 29, 2008 ROD.

2.3 Selected Remedy from 2008 ROD

Remedial action objectives (RAOs) are the desired outcome of a cleanup action. RAOs for OU2 were developed based on site data, site-specific risk and fate and transport evaluations, and review of applicable or relevant and appropriate requirements (ARARs). The RAOs for groundwater identified in the 2008 OU2 ROD are not changed by this action.

- Prevent further contamination of groundwater by aggressive treatment of the source area and principal threat wastes.
- Prevent future human exposure to contaminated groundwater by treating the aquifer to meet health-based cleanup standards.
- Eliminate the potential for the future degradation of natural resources (Bayou Texar) from site-related contaminants.
- Restore groundwater to its beneficial use, which is drinking water.

The 2008 ROD divided the groundwater contamination into three areas, based on concentration: the Source Plume, the High Concentration Plume and the Dilute Plume. The 2008 OU2 remedy selected three technologies based on the level of contamination, to be applied in sequence from most aggressive to least aggressive. The most aggressive component of the 2008 remedy is ISCO, for areas with naphthalene concentrations of above 7,000 micrograms per liter (µg/L) and the areas containing small amounts of non-dissolved naphthalene or other creosote compounds. A second active component is ISEB, through oxygen injection for the area containing naphthalene concentrations between 140 µg/L and 7,000 µg/L. Monitored natural attenuation (MNA) was selected for the area containing naphthalene concentrations below 140 µg/L. Figure 3 illustrates the conceptual layout of the 2008 ROD.

Cleanup Terms

In-situ Chemical Oxidation (ISCO)
Injects oxidizing compounds such as potassium permanganate that chemically react with the contaminants to yield low toxicity byproducts.

In-situ Enhanced Bioremediation (ISEB) Adds oxygen to groundwater to increase the activity of naturally occurring aerobic microorganisms that are degrading contaminants.

Monitored Natural Attenuation (MNA)
Monitors or tests the progress of natural attenuation processes that can degrade contaminants in soil and groundwater.

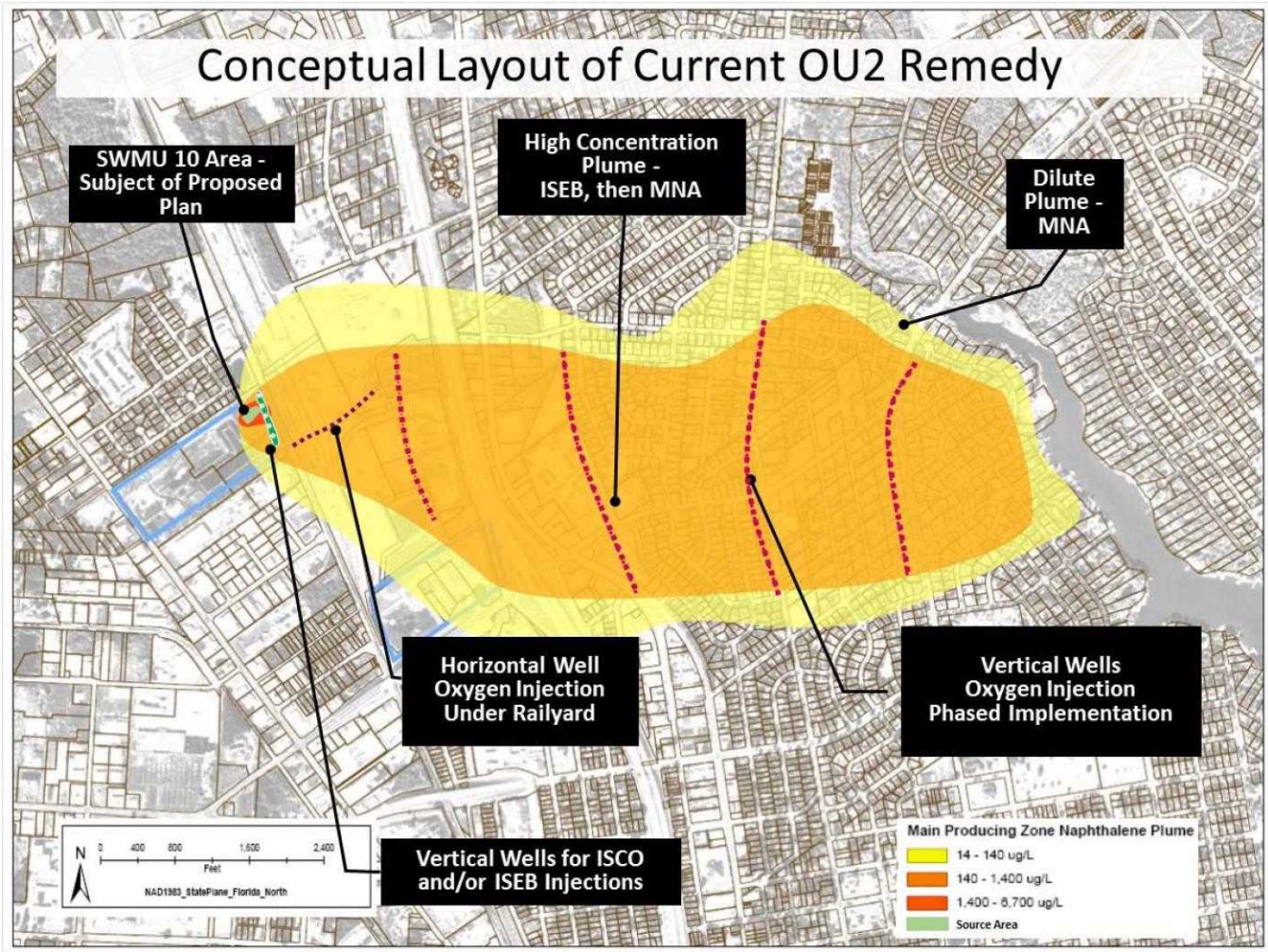

Figure 3. Conceptual Layout of 2008 OU2 Remedy

The components of the 2008 OU2 remedy include:

- Installation of vertical and horizontal injection and extraction wells.
- ISCO and ISEB using vertical and horizontal wells in source plume areas.
- ISEB in high concentration plume areas.
- MNA in dilute plume areas.
- Operation and maintenance (O&M) activities.
- Institutional controls.
- Five-year reviews.

2008 OU2 Remedy for the Source Plume: ISCO and ISEB Using Vertical and Horizontal Wells

The Source Plume area is addressed using a combination of two technologies – ISCO technology supplemented by in-situ aerobic bioremediation. A line of vertical wells installed parallel to the railroad tracks along the west boundary of the CSX rail yard are the injection points for a chemical oxidant. ISCO will address the most highly contaminated ground water and any residual (un-

dissolved) contaminants present in the Source Plume zone. A key objective of this component is to address principal threat waste aggressively and create aquifer conditions suitable for ISEB.

Growth and metabolism of native microbes is enhanced by aeration of groundwater through a series of horizontal wells placed under the CSX rail yard. The aerated groundwater migrates through the aquifer by natural, west-to-east groundwater flow. Efficiency of the system is increased by installing vertical extraction wells downgradient of the rail yard and returning extracted water back to the injection wells.

2008 OU2 Remedy for High Concentration Plume Area: ISEB

The High Concentration Plume area is addressed by ISEB and consists of injecting of a bioremediation amendment through a series of vertical injection wells strategically placed throughout the area. Native microbes already present in the sand and gravel aquifer, after an acclimation period under enhanced aerobic conditions, will more effectively degrade the dissolved contaminants. This approach complements the ISCO and ISEB components.

2008 OU2 Remedy for Dilute Plume: MNA

The Dilute Plume relies on natural attenuation processes. The Dilute Plume is defined as the area of the plume with contamination below FDEP's natural attenuation default criteria (NADCs). The activities associated with this alternative are monitoring and reporting of MNA parameters within the dilute contaminant concentration zone.

3.0 Basis for AROD

This AROD is based on new information obtained since 2008. The inability of the 2008 ROD Source Plume ISCO remedy to address free-flowing dense non-aqueous phase liquid (DNAPL) is documented in the June 2010 Technical Memorandum "Presentation and Discussion of Select DNAPL Remedial Technologies," which also considers and eliminates ISCO as a potential remedial option to address the free-flowing DNAPL found in SWMU 10. The presence of free-flowing NAPL prompted the EPA to conduct additional studies that improved the understanding of the extent of contamination, including volume, location and movement within the aquifer.

Other changes in this AROD are based on discussions with EPA and FDEP staff to revise the list of COCs to be more inclusive and to reflect data collected since the initial risk assessment. The new information led the EPA to develop and evaluate additional actions for the groundwater cleanup. This section summarizes these efforts, which are discussed in more detail in the supporting documents in the Site's Administrative Record – the June 2010 Technical Memorandum "Presentation and Discussion of Select DNAPL Remedial Technologies" and the July 2014 "Focused Feasibility Study, Escambia Wood Treating Company Site OU2, SWMU 10."

3.1 Additional Contamination

During OU1 soil cleanup in late 2008 and early 2009, EPA contractors identified additional contamination in the SWMU 10 excavation, which is located in the Source Plume area. The contamination found was more significant than expected. Source Plume technologies in the 2008 ROD could not address it. This led the EPA to conduct a series of investigations from 2008 to 2013 to characterize the extent of contamination in the SWMU 10 area. The EPA used the results to refine the CSM, which is the formal statement of the EPA's understanding of the Site and contamination. The refined CSM includes updated estimates of the contaminant mass and volume in the SWMU 10 area. Groundwater information was used to calculate the rate of contaminants moving through the groundwater or the "flux" of contaminants. These efforts are summarized below and are the basis for this amendment.

The EPA's investigations from 2008 to 2013 focused on developing a three-dimensional understanding of the contamination in the SWMU 10 area. The investigations consisted of 52 direct push soil borings and temporary wells, 45 Tar-specific Green Optical Screening Tool (TarGOST®) soil borings, 10 sonic-drilled borings, and 10 sonic-drilled borings that were used to install wells. The EPA continued sampling the monitoring well network, which currently includes more than 60 monitoring wells. This fieldwork is summarized in two documents included in the Administrative Record and available at the Site's information repository, the June 2010 Technical Memorandum and the July 2014 Focused Feasibility Study (FFS).

3.1.1 Updated CSM

In the 2008 ROD, the Site's CSM divided the groundwater contamination into three areas, or Contaminated Media Zones, based on concentration. These were the Source Plume, the High Concentration Plume and the Dilute Plume. The updated CSM replaced the Source Plume with two new Contaminated Media Zones: the Source Area and the Highly Adsorbed Phase Area. All four of the Contaminated Media Zones are summarized below, shown in Figure 4 and described in the following sections.

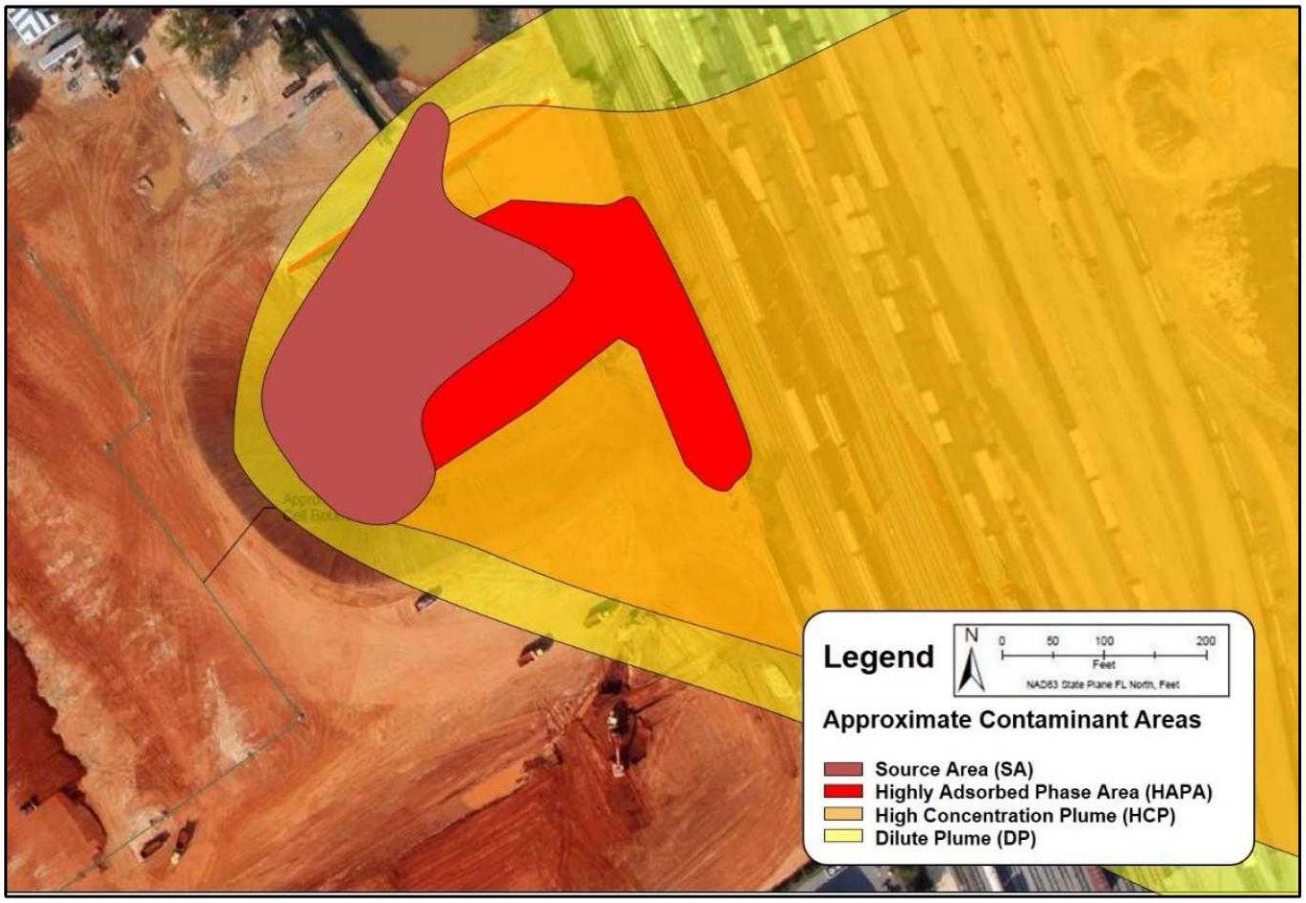

Figure 4. Approximate Locations of the Source Area, the Highly Adsorbed Phase Area, the High Concentration Plume and the Dilute Plume.

Source Area

The Source Area contains thick areas of heavy NAPL contamination. This consists of both mobile free-flowing NAPL and non-mobile residual NAPL on soils that are heavily stained. In this area, NAPL is found in lateral lenses ranging in thickness from 4 feet to over 50 feet. The Source Area includes about 200,000 cubic yards of the aquifer and contains an estimated 200,000 gallons of NAPL. The EPA considers the NAPL in the Source Area to be a principal threat waste.

Highly Adsorbed Phase Area

The Highly Adsorbed Phase Area contains soils that have adsorbed non-mobile NAPL or dissolved contamination above 7,000 µg/L of naphthalene. The soils with adsorbed contaminants tend to be 2 feet thick or less. The residual NAPL in these soils is not flowing but still represents a substantial continuous source for groundwater contamination.

High Concentration Plume

The High Concentration Plume is the area containing no residual NAPL and dissolved naphthalene contamination less than 7,000 µg/L of naphthalene but above FDEP's NADC criterion of 140 µg/L. This area requires some active treatment to reach concentrations that will allow the remedy to achieve groundwater cleanup levels.

Dilute Plume

The Dilute Plume area is defined by concentrations of dissolved naphthalene less than 140 µg/L, which is FDEP's NADC for naphthalene. The NADC level for naphthalene was used to define the Dilute Plume in the CSM. The selection of MNA as an appropriate remedy was made based on EPA's MNA guidance, as documented in the 2008 ROD.

3.1.2 Updated Contaminant Volume Estimates

The mass and volume of NAPL was estimated using data from TarGOST®, soil boring and direct push investigations and is presented in the July 2014 "Focused Feasibility Study, Escambia Wood Treating Company Site OU2, SWMU 10." The estimated volume of the Source Area is about 200,000 cubic yards. This includes aquifer material that is not heavily impacted by NAPL. A more precise NAPL-impacted volume estimate of the Source Area was prepared and indicates that about 114,500 cubic yards of the Source Area is impacted with mobile or residual NAPL. A similar evaluation of the Highly Adsorbed Phase Area indicates that about 17,500 cubic yards of the area is impacted with residual NAPL.

The NAPL-impacted aquifer material in the Source Area and the Highly Adsorbed Phase Area together contain an estimated mass of 1,738,000 pounds of NAPL. Converting the mass to a NAPL volume results in an estimate of about 200,000 gallons of NAPL. These estimates are approximations due to a number of assumptions and uncertainties. One source of uncertainty is the presence of NAPL filling the pores in the aquifer material. Depending on the amount of pore-filling NAPL present, the actual volume of NAPL may be between 200,000 and 300,000 gallons.

3.1.3 Mass Flux Estimate

A "mass flux" estimate was also incorporated in the updated CSM in the July 2014 FFS. The mass flux refers to the rate of contaminant mass moving across a defined area, such as a plume cross-section, expressed as mass per time per area. Mass flux estimates provide a quantitative measure of the mass of contamination that passes a set location during a period of time.

The OU2 plume was examined at several transects for each of the four aquifer layers. Transects were analyzed using data from January 2004, January 2009, March 2010, July 2011 and May 2012. Historical data was used for much of the mass flux analysis. Since 2012, additional sampling has been conducted but the data have not yet been included in the mass flux calculations. The EPA expects to install additional wells to refine the mass flux analysis in four zones, which will become a key tool to evaluate the extent of the groundwater contamination and the progress of the cleanup. Mass flux calculations are included in Section 3.8.2 of the July 2014 FFS.

3.2 Updates to Risk, COCs and Cleanup Levels

The overall risk posed by the Site and future land use assumptions are unchanged from those documented in the 2008 ROD. Based on recent data from new monitoring wells near the Source Area, the EPA determined it was necessary to revise the list of site COCs. Two creosote constituents, fluorene and phenanthrene, will be added to the list of COCs.

The 2008 ROD divided the list of COCs into "site wide" and "source and highly contaminated zone" cleanup levels. This AROD will combine the COC lists into one table of COCs and cleanup levels for the entire groundwater OU. These changes are summarized in Section 4.3.

3.2.1 Risk Summary and Current and Future Land Use

In 2002, the EPA conducted a baseline risk assessment (BRA) to determine if site contamination could pose an unacceptable risk to human health or the environment if no cleanup actions were taken. Human health and ecological risks are summarized below.

Human Health Risks

The human health risk assessment (HHRA) concluded that no excess health risk is associated with the current use scenario because drinking water is supplied to the affected area by a public water supply that is not impacted by the Site. The EPA is not aware of any private or public drinking water supply wells in use within the site contaminant plume.

The HHRA determined that, in the future, water supply wells for residential use may be installed and that unacceptable risk could exist for future child residents and future child/adult residents. Most of the risk came from naphthalene, which had a hazard quotient of 84, followed by 2-methylnaphthalene, with a hazard quotient of 7. Potentially complete naphthalene exposure routes

are the ingestion of groundwater and inhalation of vapors released while showering. The levels of COCs in groundwater exceed federal and state maximum contaminant levels (MCLs).

Ecological Risks

The major ecological feature of concern near the Site is Bayou Texar. In 2002, a screening-level ecological risk assessment (SLERA) was conducted for groundwater at the Site. None of the chemicals retained in the risk assessment were detected in surface water or sediment samples collected from Bayou Texar. Only non-site related contaminants were found in Bayou Texar. Also, 68 storm water culverts were found to discharge into Bayou Texar. It was determined that any contribution of site-related contaminants to overall ecological risk in Bayou Texar is not measureable. Therefore, the SLERA process was not continued. While no current impacts to Bayou Texar were identified, the EPA notes that addressing the human health risks associated with groundwater contamination will also fully mitigate the potential for future site-related impacts to Bayou Texar.

The current CSM depicts that groundwater discharges into surface water at Bayou Texar. It is unlikely that the plume is discharging into Pensacola Bay. Because the surface water is tidally influenced, there is a flushing effect in the tidally influenced zone of the aquifer - twice a day the tide introduces more oxygenated water into this zone. The result is a higher rate of natural attenuation in the tidally influenced zone of the aquifer. By the time groundwater leaves the aquifer and enters surface water, the site-related contaminants appear to be consumed by natural attenuation.

Current and Future Land Use

Historically, land use surrounding the Site included residential, commercial and recreational uses. Current land uses within a half-mile of the former facility includes homes, a school, churches, commercial businesses and light manufacturing. The completed OU1 soil remedy is compatible with commercial or industrial redevelopment. Future land use above the OU2 plume is expected to remain largely unchanged.

Groundwater beneath the Site is not currently used for public water supplies. However, it is part of an aquifer that, in other areas, is a source for public water supplies. Regionally, this aquifer is used as a potable water supply. In the area of the OU2 plume, potable wells have been abandoned due to groundwater contamination from the Site as well as from other Superfund and state cleanup sites, gas stations and dry cleaners. Institutional controls will remain in place as needed to restrict the use of groundwater.

3.3 Focused Feasibility Study (FFS) for OU2, SWMU 10

Since the discovery of flowing NAPL at the Site, the EPA and FDEP had many discussions regarding potential additional remedial actions. The initial identification and discussion of potential remedial technologies to address this additional contamination was presented in a July 2010 Technical Memorandum. Following additional investigation, the 2014 FFS was developed to narrow the

cleanup options and present combinations of the evaluated technologies that may be successful. EPA's priority was to develop additional actions that would be compatible with the 2008 remedy. These documents are available in the Site's Administrative Record. The proposed additional actions are summarized below.

3.3.1 Proposed Alternative SWMU 10 Alternative S1

No Action

Estimated Capital Costs: $0
Estimated O&M Costs: $210,000
Estimated Present Worth Cost: $210,000
Estimated Construction Timeframe: none
Estimated Time to Achieve Cleanup Levels and RAOs: not applicable

The EPA evaluates the No Action alternative to use as a baseline for comparison if no remedial actions are taken. Under this alternative, no remedial action beyond the action selected in the 2008 ROD would be implemented. The SWMU 10 area would remain in its present condition and no further action would be implemented. For comparison, costs are estimated for six five-year reviews of the Site's remedy, each consisting of a site visit, groundwater sampling and analysis, and report preparation.

3.3.2 Proposed Alternative SWMU 10 Alternative S2

Source Area and Highly Adsorbed Phase Area: Containment with Barrier Wall and Cap

Estimated Capital Costs: $11,000,000
Estimated O&M Costs: $1,000,000
Estimated Present Worth Cost: $12,000,000
Estimated Construction Timeframe: 6 to 9 months
Estimated Time to Achieve Cleanup Levels and RAOs: 10-11 years in Source Area and Highly Adsorbed Phase Area, 30 years in High Concentration Plume and Dilute Plume per 2008 ROD

Alternative S2 is a containment approach using a wall and cap to isolate the contamination from the aquifer and from potential human or environmental exposure. A large amount of the SWMU 10 area, including the Source Area, the Highly Adsorbed Phase Area and part of the Dilute Plume, would be contained by a vertical barrier wall of very low permeability material. The top of the containment area would be capped to prevent water infiltration. Barrier walls are typically built into or "keyed" into a low-permeability horizontal layer of the aquifer to prevent groundwater from entering under the wall and contamination from moving outside the wall. The barrier wall would be extended to a depth of around 180 feet and keyed into the upper portions of the low-permeability Pensacola Clay. This alternative would not provide active treatment inside the containment system and therefore

would not attain cleanup levels inside the containment area. The depth of the containment (180 feet) may lead to potential technical difficulties; this depth is at the limits of the technology. This action would also not achieve of restoring the groundwater to its beneficial use. The ARARs for this alternative are described in the ARARs tables presented in Appendix B.

3.3.3 Proposed Alternative SWMU 10 Alternative S3

Source Area: Containment using deep soil mixing
Highly Adsorbed Phase Area: SEAR, ISCO* and *ISEB

Estimated Capital Costs: $23,000,000
Estimated O&M Costs: $2,000,000
Estimated Present Worth Cost: $25,000,000
Estimated Construction Timeframe: 6 to 12 months
Estimated Time to Achieve Cleanup Levels and RAOs: 10-11 years in Source Area and Highly Adsorbed Phase Area, 30 years in High Concentration Plume and Dilute Plume per 2008 ROD

Alternative S3 combines a containment approach in the Source Area with groundwater extraction and in-situ treatment in the Highly Adsorbed Phase Area. In the Source Area, deep soil mixing would be used to mix Portland cement into the aquifer using large specialized augers to solidify the aquifer into a low permeability matrix.

In the Highly Adsorbed Phase Area, SEAR would use surfactants, polymers and co-solvents to increase the mobility of contaminants. A system of extraction wells would be installed and used to pump groundwater out of the aquifer. After SEAR extraction, the approach in the Highly Adsorbed Phase Area would change to a treatment train of in-situ treatment technologies, using ISCO then ISEB. ISCO can be enhanced by using surfactants or co-solvents to either enhance the free phase removal of NAPL mass, thereby lowering the amount of oxidant required, and/or promoting NAPL dissolution to make it more available for subsequent oxidation.

At the Site, an ISEB treatability study showed 50 percent to 90 percent reductions in dissolved naphthalene concentrations. ISEB and ISCO are components of the selected remedy for the dissolved groundwater plume in the 2008 OU2 ROD. Alternative S3 provides containment of contaminants in the Source Area and active treatment and destruction of contaminants in the Highly Adsorbed Phase Area. The ARARs for this alternative are described in the ARARs tables presented in Appendix B.

3.3.4 2014 Proposed Alternative SWMU 10 Alternative S4

Source Area: SEE and ISEB with SEAR/ISCO, if necessary.
Highly Adsorbed Phase Area: SEAR, ISCO and ISEB

Estimated Capital Costs: $7,000,000
Estimated O&M Costs: $7,000,000
Estimated Present Worth Cost: $14,000,000.
Estimated Construction Timeframe: 12 to 24 months
Estimated Time to Achieve Cleanup Levels and RAOs: 11-12 years in Source Area and Highly Adsorbed Phase Area, 30 years in High Concentration Plume and Dilute Plume per 2008 ROD

Alternative S4 combines extraction and in-situ treatment technologies. In the Source Area, a highly aggressive thermally enhanced extraction technique (SEE) would remove the majority of NAPL, with additional extraction and in-situ techniques applied as necessary. The first step in this alternative would be SEE, in which steam is injected into the aquifer to heat the NAPL and increase its mobility for extraction by recovery wells. The mobilized liquids and volatilized vapors are recovered via multiphase extraction wells and treated with standard oil water separation and vapor recovery technology. Any dissolved phase constituents can be separated and typically treated with tray counter-current air stripping or carbon.

This technology would require the construction of a treatment system consisting of wells, pipes and pumps to collect vapor and liquids, aboveground treatment systems for vapors and liquids, a temporary waste storage facility, a system of wells, pipes and pumps to inject steam and reagents into the aquifer, and a steam plant. The injection and extraction well systems would be designed to accommodate steam, surfactants, chemical oxidants and oxygen/air injections.

Steam injection is typically economical and suitable for small, highly contaminated NAPL areas. For this reason, an integrated approach using surfactants, chemical oxidation and/or ISEB is a viable multi-component remediation strategy. The increased temperatures in the aquifer will enhance supplemental treatment technologies such as enhanced and natural biodegradation, chemical oxidation, and surfactant and co-solvent extraction. The transition between remedy components will be determined in the design. After the SEE reaches treatment objectives (to be finalized in the design), additional extraction using SEAR could be used, followed by ISCO and ISEB as necessary. Treatment objectives will be determined by experts during design to provide operational flexibility and efficiency of the system.

In the Highly Adsorbed Phase Area, extraction using SEAR followed by ISCO and ISEB would also be used as described in Alternative S3. Under Alternative S4, the contaminants in the SWMU 10 area would be extracted for treatment followed by in-situ treatment of residual contaminants. Future restrictions on land reuse would be minimal after the cleanup levels and RAOs have been met. However, groundwater use restrictions would need to be in place until groundwater cleanup levels and restoration is achieved.

Present worth cost estimates are used to compare actions with expenses that occur over multiyear timeframes. This accounts for the increase in costs for labor and materials that occur from year to year. A key variable of the present worth cost estimate is the "discount rate", which is the rate costs

are expected to increase and is comparable to the rate of inflation. The cost estimates used in the 2014 FFS were developed using a 5 percent discount rate. Appendix A presents a table that uses a 7 percent discount rate for the present worth cost estimate. This analysis was performed at the request of internal EPA stakeholders so the present worth calculations would be consistent with EPA guidance documents.

4.0 Description of Original and Amended Remedial Alternatives

The difference between the 2008 remedy and the actions in this AROD is shown in Table 1.

This section describes the original selected groundwater remedy from 2008 and presents the actions selected by this AROD to address the Source Area and the Highly Adsorbed Phase Area. In compliance with EPA guidance, the EPA evaluated four proposed alternatives to address the SWMU 10 area. That detailed comparison part of the Site's July 2014 FFS, summarized in Section 3.3 of this AROD. The EPA is also using this AROD to:

- Revise the list of site COCs and cleanup levels.
- Explain how the cleanup addresses inorganic contaminants not directly released by the Site.
- Explain the limitations of EPA's authority to address non-site-related releases such as those from gas stations or dry cleaners even if they are in the plume area.

Section 4.3 explains how this AROD affects the Site's RAOs and the expected cleanup outcomes.

Table 1. Comparison and Integration of Remedial Components from the 2008 ROD and the AROD Remedy

2008 OU2 ROD		*Effect of AROD*	AROD Remedy	
Contaminant Zone	Remedial Technology		Contaminant Zone	Remedial Technology
Source Plume	ISCO and ISEB	*contaminant zone divided into two zones*	Source Area	SEE and ISEB with SEAR and or ISCO, if necessary
			Highly Adsorbed Phase Area	SEAR added to 2008 ROD remedy of ISCO and ISEB
High Concentration Plume	ISEB	*unchanged*	High Concentration Plume	ISEB
Dilute Plume	MNA	*unchanged*	Dilute Plume	MNA

New Remedial Technologies in the AROD

Steam Enhanced Extraction (SEE)
Steam is injected into the aquifer to heat the NAPL and increase its mobility for extraction by recovery wells. The mobilized liquids and volatilized vapors are recovered via multiphase extraction wells and treated with standard oil water separation and vapor recovery technology.

Surfactant Enhanced Aquifer Remediation (SEAR)
Developed to increase the solubility and mobility of NAPL and enhance the removal rate achievable with pumped groundwater. SEAR uses surfactants, polymers and co-solvents to increase the mobility of contaminants. SEAR can be considered a chemical enhancement to pump-and-treat systems in which a surfactant solution is pumped through a contaminated zone by introduction at an injection point and removal from an extraction point.

4.1 Original Selected Remedy from 2008 ROD

The 2008 OU2 remedy included three technologies based on the level of contamination in different areas of the aquifer. These components were to be applied in sequence from most aggressive to least aggressive. The most aggressive component of the remedy was ISCO for areas with naphthalene concentrations of above 7,000 µg/L and areas containing small amounts of non-dissolved naphthalene or other creosote compounds. A second active component included ISEB through oxygen injection for the area containing naphthalene concentrations between 140 µg/L and 7,000 µg/L. MNA was selected for the area containing naphthalene concentrations below 140 µg/L.

Major components of the 2008 OU2 remedy include:

- Installation of vertical and horizontal injection and extraction wells.
- ISCO and ISEB using vertical and horizontal wells in source plume areas (now referred to as the Source Area and the Highly Adsorbed Phase Area).
- ISEB in high-concentration plume areas.
- MNA in dilute plume areas.
- O&M activities.
- Institutional controls.
- Five-year reviews.

Estimated Capital Cost:	$12,120,000
Estimated O&M Cost:	$3,991,000
Estimated Present Worth Cost:	$16,120,000

4.2 Description of EPA's Selected SWMU 10 Area Remedy

This AROD selects Alternative S4 to address SWMU 10 and supplement the 2008 remedial action. Alternative S4 calls for:

- *Source Area:* SEE and ISEB with SEAR/ISCO, if necessary.
- *Highly Adsorbed Phase Area:* SEAR, ISCO and ISEB.

Figure 5 shows the layout of SWMU 10 remedy components.

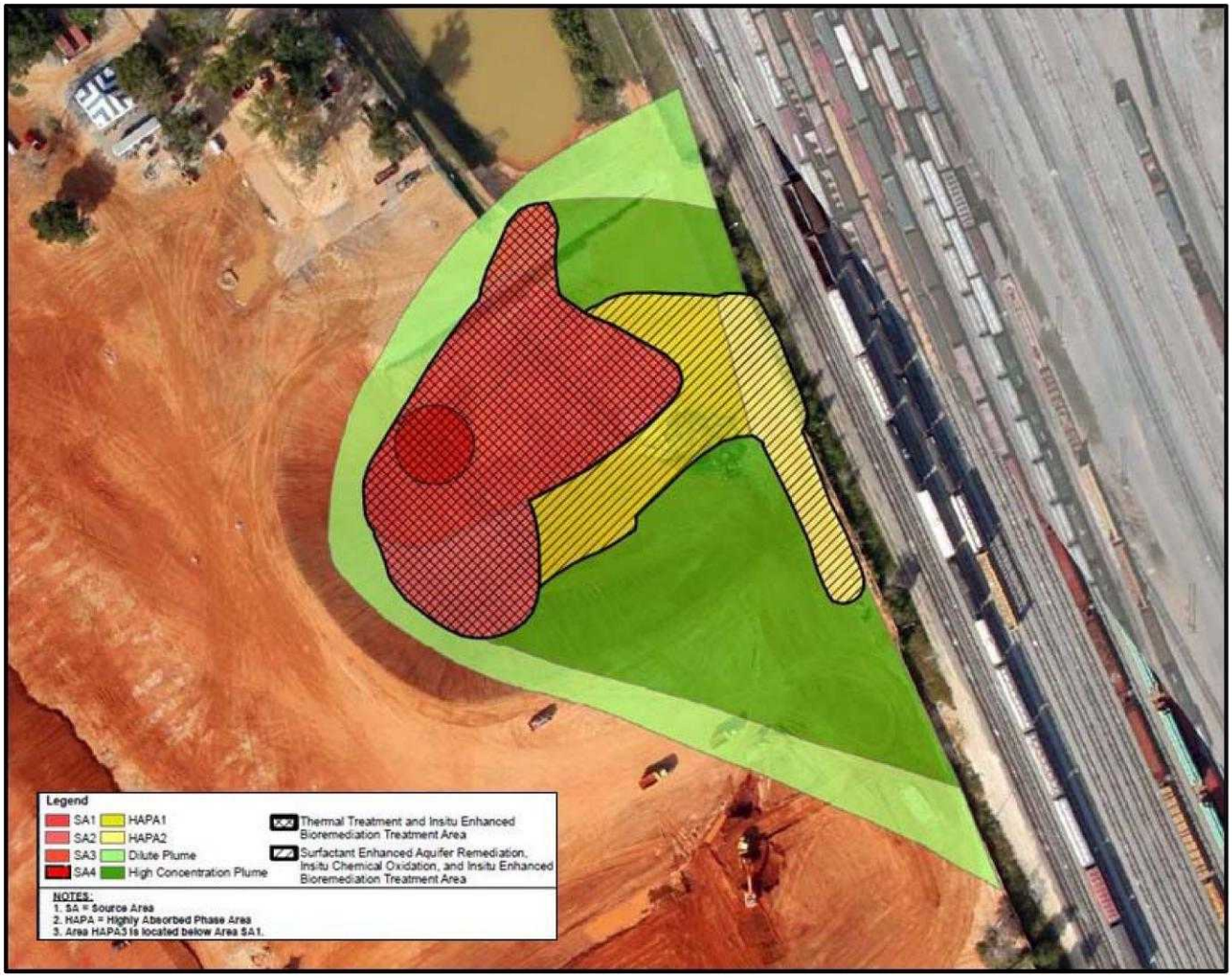

Figure 5. Layout of SWMU 10 Selected Remedy Components

The selected remedy for the Source Area combines extraction and in-situ treatment technologies. First, a highly aggressive thermally enhanced extraction technique (SEE) will be used to remove the majority of NAPL, with additional extraction and in-situ techniques applied as necessary. Other approaches to thermal enhancement may be considered as well. A vapor collection system at the ground surface will be a component to prevent fugitive vapor emissions from leaving the area and from causing exposure for nearby residents or workers. Dissolved phase constituents will be

separated and treated with tray counter-current air stripping, carbon or other technology. If needed, SEAR could be used following or in conjunction with the thermally enhanced extraction.

This technology will include the construction of a treatment system consisting of wells, pipes and pumps to collect vapor and liquids, aboveground treatment systems for vapors and liquids, a temporary waste storage facility, a system of wells, pipes and pumps to inject steam and reagents into the aquifer, and a steam plant. The injection and extraction well systems will be designed to accommodate steam, surfactants, chemical oxidants and oxygen/air injections.

Steam Injection is typically economical and suitable for small, highly contaminated NAPL areas. For this reason, an integrated approach utilizing surfactants, chemical oxidation and/or ISEB is a viable multi-component remediation strategy. The increased temperatures in the aquifer will enhance treatment technologies such as enhanced and natural biodegradation, chemical oxidation, and surfactant and co-solvent extraction. The transition between remedy components will be determined in the design. After the SEE reaches treatment objectives (to be finalized in the design) additional extraction using SEAR could be used, followed by ISCO and ISEB as necessary. The removal of NAPL from the aquifer will satisfy the EPA's preference for treatment and will remove principal threat waste from the aquifer.

The selected remedy for the Highly Adsorbed Phase Area is extraction using SEAR followed by ISCO and ISEB. A system of extraction wells will be installed and used to pump groundwater out of the aquifer. After SEAR extraction, the approach in the Highly Adsorbed Phase Area will change to a treatment train of in-situ treatment technologies, using ISCO then ISEB.

The EPA will use the design process to incorporate remedies for the Source Area and the Highly Adsorbed Phase Area with the 2008 ROD remedies for the High Concentration Plume and the Dilute Plume areas. The construction strategy will be a central focus of the design process. The construction strategy could be phased to address the most severe SWMU 10 contamination first, with the goal of removing NAPL and reducing the mass of contaminants flowing downgradient. The mass flux measurements are a tool to measure progress of the cleanup in down gradient plume areas. The timing of a phased approach will be refined during remedial design. Phasing the remedial action in smaller pieces could expedite implementation and could create the opportunity for cost savings. The SWMU 10 remedy's cost estimate is $14,000,000.

Under this selected remedy, the contaminants in the SWMU 10 area will be extracted for treatment followed by in-situ treatment of residual contaminants. Future land use restrictions will be minimal after the cleanup levels and RAOs have been met. Groundwater use restrictions will need to be in place until groundwater cleanup levels and restoration are achieved.

Components of the Selected Remedy – Alternative S4

Activities associated with this source alternative include (but are not limited to):

1. Excavation and removal of an existing sheet pile wall to enable construction and for physical safety.
2. Installation and operation of the SEE system within the Source Area, including injection/extraction wells, transfer pipes, a steam plant and treatment systems.
3. Treatment and re-injection of extracted groundwater into the subsurface. Recovered NAPL will be sent off site for treatment and disposal.
4. Implementation of ISEB treatment within the Source Area. SEAR and ISCO could also be used to continue treatment in the Source Area, as necessary.
5. Installation of injection/extraction wells in the Highly Adsorbed Phase Area.
6. Performing SEAR, ISCO and/or ISEB within the Source Area and the Highly Adsorbed Phase Area. Monitor results and re-apply treatment, as necessary.
7. Installation of performance monitoring wells to monitor the effectiveness of the treatment.
8. Continuation of institutional controls to prevent the disturbances of the subsurface soils and groundwater use until remedial goals are met within the SWMU 10 area.

Estimated Capital Costs: $7,000,000
Estimated O&M Costs: $7,000,000
Estimated Present Worth Cost: $14,000,000.
Estimated Construction Timeframe: 12 to 24 months
Estimated Time to Achieve Cleanup Levels and RAOs: 11-12 years in Source Area and Highly Adsorbed Phase Area, 30 years in High Concentration Plume and Dilute Plume per 2008 ROD

4.3 Remedial Action Objectives and Cleanup Levels

RAOs
The RAOs for the Site are not changed by this AROD. The 2008 ROD remedy alone would not be able to achieve RAOs with the large amount of NAPL found since 2008. The 2008 remedy and the remedy selected in the AROD will achieve groundwater cleanup levels and RAOs.

COCs and Cleanup Levels
This AROD revises site COCs and cleanup levels by combining the two COC tables in the 2008 ROD into one site-wide COC table and by adding two creosote-related compounds.

4.3.1 Addition of Fluorene and Phenanthrene as COCs

The development of COCs takes place during the risk assessment phase of the RI. The EPA uses a formal process to identify chemicals which pose a risk based on the data available. In this case, some creosote-related chemicals did not reach the threshold for being included as COCs based on the data available in 2002. More recent data from new wells near the source area have shown two creosote-

related compounds, fluorene and phenanthrene, above Florida groundwater cleanup target levels (GCTLs). The EPA and FDEP agree to add these two compounds to the list of COCs for the Site. The inclusion of fluorene and phenanthrene does not change the technologies used, the expected scope or the cost of the cleanup.

4.3.2 Consolidation of COCs and Cleanup Levels from 2008 ROD

In the 2008 ROD and in draft versions of the 2014 FFS, site COCs were presented in two tables. Eight COCs were identified for the entire plume area and eight COCs were identified for the source plume area. This was done because some contaminants are only found near the source area. Based on comments from FDEP, the EPA revised the FFS so that those 16 COCs would be listed in one table and those cleanup levels would be applied for all site-related groundwater contamination. If any contaminants are encountered that originate from non-site-related releases, such as gas stations or other waste sites in the area, the EPA cannot use CERCLA authority from the Site to address those releases. However, the enhanced biodegradation created by the Site's groundwater remedial action may have a beneficial effect on non-site-related contamination.

Taking into account the addition of fluorene and phenanthrene, there are now 18 COCs for groundwater at OU2, listed below in Table 2. The EPA's objective (reflected in the Site's RAOs) is to address the risks posed by the groundwater contamination from the Site and to restore groundwater to beneficial use. During cleanup, the EPA will regularly review the groundwater data, current risk information and current ARARs to ensure the continued protectiveness of the remedy.

Table 2. OU2 Groundwater COCs and Cleanup Levels

COC	Cleanup Level (µg/L)	Basis for Cleanup Level
1,1-Biphenyl	350	Based on Table 7, Technical Report, F.A.C 62-777
1,2,4-Trimethylbenzene	350	Based on Table 7, Technical Report, F.A.C 62-777
1,3,5-Trimethylbenzene	350	Based on Table 7, Technical Report, F.A.C 62-777
1-Methylnaphthalene	28	FDEP GCTL
2-Methylnaphthalene	10	Site-specific calculation HQ = 1
2,4-Dimethylphenol	140	FDEP GCTL
3- or 4-Methylphenol	3.5	FDEP GCTL
Acenaphthene	420	Based on Table 7, Technical Report, F.A.C 62-777
Benzene	1	FDEP MCL/GCTL/
Benzo(a)pyrene	0.2	FDEP GCTL/Federal MCL
Carbazole	1.8	FDEP GCTL
Dibenzofuran	28	FDEP GCTL
Fluorene	280	FDEP GCTL
Naphthalene	10	Site-specific calculation HQ = 1
Nitrobenzene	3.5	FDEP GCTL
Pentachlorophenol	1	Federal MCL and FDEP GCTL/MCL
Phenanthrene	210	FDEP GCTL
Phenol	2,100	Based on Table 7, Technical Report, F.A.C 62-777

Notes:
µg/L micrograms per liter
FDEP Florida Department of Environmental Protection
GCTL Groundwater cleanup target level
HQ Hazard quotient
MCL Maximum contaminant level
FDEP-recommended level based on Table 7 of the Technical Report for Chapter 62-777, Florida Administrative Code, dated February 2005
Remedial levels include applicable criteria specified by Florida Administrative Code (F.A.C.) Chapters 62-777 and 62-550.

4.3.3 EPA's Determination Regarding Inorganic Constituents

EPA's sampling has identified several inorganic constituents – aluminum, iron, manganese, nickel, vanadium and copper – in the area of site-related groundwater contamination. While these constituents were not part of the release of COCs from the Site, the site-related COCs could indirectly change groundwater chemistry and lead to concentrations of naturally occurring inorganic constituents above levels of concern. However, the same changes in groundwater chemistry could be caused by non-site-related conditions. The distribution of inorganic constituents does not correlate with site-related contamination. Risk is not driven by inorganic constituents. The EPA believes it would be inappropriate at this site to include naturally occurring inorganic constituents as COCs, so cleanup levels will not be selected for naturally occurring inorganic constituents.

The FDEP is concerned about and may take actions to investigate naturally occurring inorganic constituents in the area of documented site-related contamination after CERCLA cleanup levels are achieved. The EPA will provide access to monitoring wells and will share data to support any FDEP investigations.

The EPA's approach to these naturally occurring inorganic constituents is for the EPA to complete the OU2 cleanup for site-related COCs and to allow the groundwater chemistry to revert to normal conditions. Both the groundwater chemistry and the levels of these naturally occurring inorganic constituents are important parameters for any groundwater cleanup effort and will be monitored closely. If groundwater chemistry does not return to normal conditions after the remedial actions, the EPA and FDEP could conduct additional CERCLA studies and risk assessments. The five-year review process is designed to assure that remedies remain protective and incorporate new risk information.

4.3.4 EPA's Determination Regarding Non-Site Related Constituents

There may be other releases in the plume area such as gas stations or dry cleaners, but the releases to which the EPA has the authority to respond are those releases attributable to site operations. EPA's response authority under Section 104(a)(1) of CERCLA is tied to releases or threatened releases of hazardous substances. The Site extends as far as the extent of contamination attributable to those releases [See 40 CFR §300.400(e)]. Similarly, the NPL is a list of releases, not a list of sites. Only those releases included on the NPL shall be considered eligible for Fund-financed remedial action (40 CFR §300.425(b)). At the Site, the EPA is authorized to spend public money to clean up only those releases attributable to the Site. If any other releases or groundwater contamination are found during the cleanup, the EPA will refer that contamination to the appropriate state or federal assessment or cleanup program.

4.3.5 Clarification about Dioxin in Groundwater

The EPA has not found dioxin in groundwater above drinking water standards. The highest detection of dioxin in groundwater was 0.00014 ng toxicity equivalence (TEQ)/L, detected in a sample from MW23I. This is well below the MCL of 0.03 ng TEQ/L. Some confusion on this issue was caused by a 2006 technical memo which contained an error in the tables section that was misinterpreted throughout the document. The EPA addressed this confusion in the response to comments in the Responsiveness Summary part of the 2008 ROD. The units for the state and federal standards for dioxin were reported in micrograms per liter (µg/L) while the dioxin results were reported in nanograms per liter (ng/L) (1 µg/L equals 1,000 ng/L). As a result, the analytical results appeared to be 1,000 times greater than they actually are. Because this issue was raised again during the public meeting during the public comment period associated with this AROD, the EPA prepared a figure illustrating the error in the table. It is included in the Responsiveness Summary portion of this AROD.

4.4 Explanation of Changes in Expected Outcomes

The 2008 groundwater remedy would not have been able to achieve site RAOs because the 2008 ROD Source Plume ISCO remedy could not address free-flowing DNAPL identified after the 2008 ROD was signed. The 2008 remedy and the additional actions selected in this AROD will achieve groundwater cleanup levels and achieve the RAOs. The amended remedy will be protective in the short and long term, will be cost-effective and implementable, and will comply with ARARs.

The expected outcome is that with this AROD, 200,000 to 300,000 gallons of NAPL will be removed from the aquifer in the next 5 to 10 years and that over the 30+ years millions of gallons of contaminated groundwater will be cleaned up to health-based drinking water standards.

5.0 Evaluation of Remedial Alternatives

The EPA is required by guidance to compare the remedy selected in this AROD with the 2008 ROD selected remedy. This AROD selects remedies for the Source Area and the Highly Adsorbed Phase Area that supersede only the Source Plume portion of the 2008 ROD remedy and leave the rest of the 2008 ROD remedy unchanged. Therefore, this section compares the AROD selected remedy to the 2008 ROD Source Plume remedy, which consists of ISCO and ISEB.

The EPA is required to examine remedial alternatives with respect to nine criteria described in the NCP, CERCLA, and the Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (EPA, 1988). This section discusses the nine criteria as they apply to the remedy selected in this AROD. The first two criteria are threshold criteria and must be met for an alternative to be considered further. The next five criteria are balancing criteria for weighing the merits of those that meet the threshold criteria. The final two criteria are used to modify EPA's Proposed Plan based on state and community input.

Because the 2008 ROD Source Plume remedy was selected before free-flowing DNAPL was found in SWMU 10, it does not include a technology that would effectively address free-flowing NAPL. While the 2008 ROD Source Plume remedy does not meet the threshold criteria, the nine-criteria analysis is presented below.

1. *Overall Protection of Human Health and the Environment:* Eliminates, reduces or controls health and environmental threats through institutional or engineering controls or treatment.
2. *Compliance with Applicable or Relevant and Appropriate Requirements (ARARs):* Complies with federal/state standards and requirements that pertain to the Site or justifies a waiver.
3. *Implementability:* Technical feasibility and administrative ease of conducting a remedy, including factors such as availability of services.
4. *Short-Term Effectiveness:* Length of time to achieve protection and potential impact of implementation.
5. *Long-Term Effectiveness and Permanence:* Protection of people and environment after cleanup is complete.
6. *Reduce Toxicity, Mobility or Volume by Treatment:* Use of treatment to reduce the harmful effects of principal contaminants and their ability to move in the environment.
7. *Cost:* Benefits weighed against cost.
8. *State Acceptance:* Consideration of state's opinion of the preferred alternative.
9. *Community Acceptance:* Consideration of public comments.

5.1 Threshold Criteria

1. Overall Protection of Human Health and the Environment

SWMU 10 Alternative S4 provides protection of human health and the environment. SEE and SEAR involve the physical removal of more contaminants and therefore provide greater overall protection of human health and the environment than the other evaluated remedies. The 2008 ROD Source Plume remedy would not achieve protection of human health and the environment because ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10.

2. Compliance with ARARs

SWMU 10 Alternative S4 meets location-specific ARARs. SWMU 10 Alternative S4 meets chemical-specific ARARs. SWMU 10 Alternative S4 is capable of meeting activity-based ARARs, which include well installation, groundwater injections, water treatment and waste disposal. The 2008 ROD Source Plume remedy would not achieve protection of human health and the environment because ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10.

5.2 Balancing Criteria

3. Long-Term Effectiveness and Permanence

This criterion has particular importance for the Source Area remediation due to this RAO: "Prevent further contamination of ground water by aggressive treatment of the source area and principal threat wastes." SWMU 10 Alternative S4 physically removes or destroys contaminants and provides the long-term effectiveness and permanence. The 2008 ROD Source Plume remedy does not meet the threshold criteria and would not provide long-term effectiveness and permanence. ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10.

4. Reduction of Toxicity, Mobility and Volume through Treatment

Alternative S4 physically removes or destroys contaminants in the Source Area and the Highly Adsorbed Phase Area and provides the greatest reduction of mass, volume and concentration of contaminants. The 2008 ROD Source Plume remedy does not meet the threshold criteria and would not address the toxicity, mobility and volume of NAPL contamination. ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10.

5. Short-Term Effectiveness

The short-term effectiveness criterion considers the amount of time until a remedy effectively protects human health and the environment and considers the adverse effects the remedy may pose to the community, workers and the environment. SWMU 10 Alternative S4 removes contamination and can attain cleanup levels throughout the plume. However, the recovery of the plume area as a whole will still require decades. Technologies that involve extraction present more potential for accidental exposure to contaminants. SWMU 10 Alternative S4 involves the extraction,

transportation and destruction or disposal of a much greater volume of hazardous material, which reduces the short-term effectiveness. The 2008 ROD Source Plume remedy does not meet the threshold criteria and would not be effective in the short term. ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10.

6. Implementability

Implementing remedial alternatives involves design, planning, construction, installation and operation of the remedial action. The overall reliability, operational flexibility and efficiency must also be considered. The extent and depth of NAPL contamination within the Source Area makes the implementation difficult. SWMU 10 Alternative S4 is implementable, even though steam injection and the accompanying extraction and treatment systems are complicated. The technology is well understood, and the characteristics of the Site are within the capabilities of the technology. SWMU 10 Alternative S4 also can be installed in a short time and with minor site disruption. The 2008 ROD Source Plume remedy does not meet the threshold criteria so implementability is not evaluated.

7. Cost

To compare cost between remedies with different time frames for construction, the "net present cost" was calculated using a discount rate of 5 percent in the FFS. Cost estimates at this stage are order-of-magnitude approximations and are expected to be within -30 percent to +50 percent of the final costs. The estimated net present worth cost of SWMU 10 Alternative S4 is $14,000,000. The 2008 OU2 ROD cost estimate was about $16,000,000.

Section 3.2.5 presents an evaluation of the net present value using a 7 percent discount rate as suggested by EPA guidance. The use of a 7 percent discount rate versus a 5 percent discount rate means that costs incurred further in the future will appear less costly. In the final analysis, the relative cost effectiveness of these remedies is unchanged because all the alternatives shared a similar spending profile. The spending is focused in the early years of remedial construction, with less spending occurring in the later years.

The Selected Remedy satisfies the nine criteria. The 2008 ROD Source Plume remedy does not meet the threshold criteria of protection of human health and the environment and compliance with ARARs because ISCO alone is not effective against the newly discovered DNAPL contamination in SWMU 10. The selected remedy was evaluated against other alternatives in the 2014 FFS and was judged to be is the most cost effective of those alternatives that achieves the threshold criteria.

5.3 Modifying Criteria

8. State/Support Agency Acceptance

FDEP has been involved in the process and has expressed support for SWMU 10 Alternative S4. FDEP's comments are included in Section 6.

9. Community Acceptance

The local government, private citizens, area advocacy groups and former technical advisors from community groups have expressed support for Alternative S4. Community comments received during the Proposed Plan comment period are included in the Responsiveness Summary.

6.0 Support Agency Comments

The support agency, FDEP, provided input and comments throughout the preparation and drafting of the AROD. The EPA has made every effort to accommodate FDEP comments where possible. FDEP comments dated August 6, 2015 related to the discharge of the plume into surface water, the FDEP's desire for cleanup levels for surface water, and the FDEP's request for non-health cleanup levels for COCs, pursuant to Chapter 62-777, F.A.C.

Discharge of groundwater into surface water

Prompted by comments from FDEP, the EPA adjusted the CSM to show that all groundwater is discharging into surface water at Bayou Texar. However, no plume COCs have been detected in surface water samples. FDEP's comment is that the plume contaminant behavior in sediment and at the sediment/surface water interface is not well understood, and that it is possible that natural processes, including biodegradation and chemical absorption, are occurring that reduce dissolved contaminant concentrations to below detection limits in the surface water samples. FDEP commented that FDEP does not concur with the conclusions of the SLERA and considers it premature due to incomplete delineation of the plume front along Bayou Texar.

FDEP concurs that plume remediation will provide the greatest benefit to future surface water quality.

FDEP's position is that the entire groundwater thickness is discharging into surface water at Bayou Texar. The plume migrates along the bottom 65 feet of the Sand and Gravel Aquifer to Bayou Texar, where deep groundwater is moving upward into Bayou Texar. The plume contaminant behavior in sediment and at the sediment/surface water interface is not well understood, and it is possible that natural processes, including biodegradation and chemical absorption, are occurring that reduce dissolved contaminant concentrations to below detection limits in surface water samples periodically collected from the bayou. Because the surface water is tidally influenced, there is a flushing effect and increased biodegradation in the surface water column twice a day when the tide introduces more oxygenated water. The result is a higher rate of natural attenuation in surface water and no detection of site contaminants in surface water samples.

Protection of surface water

The EPA understands and shares the concerns about protecting surface water. The EPA investigated surface water impacts in Bayou Texar and found no exposure pathway. Based on feedback from the FDEP and the community, the EPA added an RAO that is focused on preventing the potential degradation of natural resources: "Eliminate the potential for the future degradation of natural resources (Bayou Texar) from site-related contaminants." By achieving the site cleanup, the EPA will ensure that there is not an impact to surface water.

Applying FDEP regulations to surface water

The FDEP asked the EPA to include Surface Water Cleanup Target Levels as groundwater cleanup levels where lower than the proposed AROD groundwater cleanup goals. CERCLA cleanups are based on identifying exposure, calculating risk, selecting an RAO that will eliminate that risk, and finally selecting a cleanup level that will be protective of human health and the environment. There is no evidence of exposure to surface water receptors at this site. The EPA believes it is inappropriate to add cleanup levels for an exposure pathway that is not complete. In an effort to address FDEP concerns, the EPA recently installed a new monitoring well located very close to Bayou Texar to monitor shallow groundwater as it moves through the aquifer. The EPA's groundwater sampling will attain detection limits that will produce data usable by the FDEP for comparison against FDEP Surface Water Cleanup Target Levels. The EPA has offered pore water sampling stations and offered to conduct surface water sampling. If EPA or FDEP finds new evidence of an exposure pathway to surface water, the EPA will investigate and adjust the cleanup levels to ensure the cleanup is protective of all exposure pathways.

The FDEP proposed that Florida Statute 376.30701(2)(g)2 should apply to this CERCLA decision. The requirement of Florida Statute 376.30701(2)(g)2 is that the cleanup levels for groundwater where surface water is exposed to contaminated groundwater (i.e., discharging) shall be based upon the more protective standard (groundwater quality standard versus surface water quality criteria) and that compliance with the surface water standard be measured in the groundwater immediately adjacent to the surface water.

The FDEP proposal is in conflict with EPA policy for restoring groundwater to its beneficial use and protecting surface water resources, as well as measuring attainment of chemical-specific ARARs. EPA believes that MCLs (or more stringent state standard) that are deemed relevant and appropriate requirements and establish the cleanup level for restoration of groundwater should be measured and attained in the groundwater throughout the plume. [EPA OSWER Dir. 9283.1-33 "Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration" (June 26, 2009)] Similarly, CWA ambient water quality criteria that are used to assess impacts (i.e., pollution) to surface water or establish acceptable concentration of a pollutant in a surface water should be measured/attained in the actual surface water body. See 53 Fed. Reg. 51440, (Dec. 21, 1988), Where ARARs must and TBCs should be attained. Also, F.AC. 62-302.530 Table: Surface Water Quality Criteria indicates that the surface water quality criteria be met instream except within the zones of mixing. The EPA believes the cleanup levels for groundwater should be attained in the groundwater. Accordingly, the regulation and statute recommended by FDEP will not be included since EPA believes it is not appropriate, although it might be relevant considering the circumstances at the site. Notwithstanding, EPA can evaluate contaminated groundwater in those most down-gradient wells (adjacent to surface water) against State water quality criteria as part of the remedy performance monitoring that is provided to FDEP.

Applying FDEP regulations for non-health-based standards

The FDEP's regulations allow for Groundwater Cleanup Levels based on non-health qualities such as taste and odor. The EPA selects remedies based on risks to human health and the environment. The EPA has adjusted the cleanup levels of some COCs to reflect FDEP-recommend health-based levels.

7.0 Statutory Determinations

Pursuant to Section 121 of CERCLA and the NCP, the lead Agency must select remedies that are protective of human health and the environment, comply with ARARs, are cost effective, and that utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity or mobility of hazardous wastes as a principal element and CERCLA includes a bias against off-site disposal of untreated wastes. Pursuant to 40 CFR Section 300.430(f)(5)(ii), the following sections discuss how the amended remedy selected in this AROD meets these statutory requirements.

7.1 Protection of Human Health and the Environment

The amended selected remedy will be protective of human health and environment. Contaminants will be removed from the aquifer and properly disposed or will be chemically destroyed in the aquifer by chemical reactions or by naturally occurring microorganisms. Long-term monitoring will ensure that the risks to human and ecological receptors continue to diminish and that RAOs are achieved.

7.2 Compliance with ARARs

Remedial actions for cleanup of hazardous substances must comply with requirements and standards under federal or more stringent state environmental laws and regulations that are ARARs to the hazardous substances or particular circumstances at a site or obtain a waiver, per Section 121(d) of CERCLA. (See also 40 C.F.R. § 300.430(f)(1)(ii)(B)). ARARs include only federal and state environmental or facility siting laws/regulations and do not include occupational safety or worker protection requirements. Compliance with OSHA standards is required by 40 C.F.R. § 300.150. Therefore, the CERCLA requirement for compliance with or wavier of ARARs does not apply to OSHA standards.

The amended selected remedy will comply with all ARARs, which are specified in Appendix B, ARARs Tables. ARARs are divided into three categories for ease of identification: chemical-specific ARARs, action-specific ARARs and location-specific ARARs.

"Applicable" requirements are those cleanup standards, controls and other substantive environmental protection requirements, criteria or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant or contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state requirements that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable, per 40 CFR 300.5.

"Relevant and appropriate requirements" are those cleanup standards, standards of control or other substantive environmental requirements, criteria or limitations promulgated under federal environmental or state environmental or facility citing laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location or other circumstance found at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Chemical-specific ARARs are usually health- or risk-based restrictions on the amount or concentration of a chemical that may be found in or discharged to the environment. Chemical-specific ARARs set levels that are considered protective of human health and the environment because they place restrictions on the concentration of the chemicals of interest in the designated media. Chemical-specific ARARs also may indicate acceptable levels for discharge if discharge occurs as part of a remedial action. If a chemical has more than one such requirement that is an ARAR, compliance should generally be to the more stringent level. The EPA has identified chemical-specific ARARs for many of the COCs in groundwater based on FAC 62-550.10, Table 1 and 62-777.170, Table 1, respectively.

Action-specific ARARs establish controls or restrictions on the activities that are part of the remedy. They are triggered by the specific activity rather than a specific contaminant. Action-specific ARARs may establish performance levels, actions or technologies as well as specific levels for discharged or residual contaminants. The EPA has identified action-specific ARARS for hazardous waste identification, transport and disposal, fugitive air emissions, well installation, groundwater injections, and other activities.

Location-specific ARARs prevent damage to unique or sensitive areas such as floodplains, historic places, wetlands and fragile ecosystems, and restrict other activities that are potentially harmful because of where they take place. Location-specific ARARs establish restrictions on concentrations of constituents or on conducting activities solely because they are in any of those unique or sensitive areas. No location-specific ARARs have been identified.

7.3 Cost Effectiveness

The amended selected remedy in this AROD is the most cost-effective alternative considered. The amended selected remedy provides the best overall protection in proportion to cost, and meets all other CERCLA requirements. Section 300.430(f)(1)(ii)(D) of the NCP requires the EPA to evaluate the cost-effectiveness by comparing all of the alternatives that meet the threshold criteria, overall protection of human health and the environment, and compliance with ARARs, against three additional balancing criteria: long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, and short-term effectiveness. Based on this evaluation, the amended selected remedy is the most cost-effective alternative.

7.4 Permanent and Alternative Treatment Solutions

Of the alternatives that are protective of human health and the environment and that comply with ARARs, the EPA has determined that the amended selected remedy is the most efficient and effective alternative when evaluated using the five balancing criteria while also considering: 1) the statutory preference for treatment as a principal element; 2) the bias against off-site treatment and disposal; and 3) state and community acceptance. The amended selected remedy offers the highest level of long-term effectiveness and a significant reduction in volume and mobility. Long-term monitoring will ensure that RAOs are met.

7.5 Preference for Treatment as a Principal Element

The amended selected remedy in this AROD meets the statutory preference for remedies that employ treatment as a principal element. The amended selected remedy uses extraction to remove NAPL acting as a principal threat waste from the Source Area and the Highly Adsorbed Phase Area and uses chemical oxidation and biodegradation to destroy contaminants in the aquifer.

7.6 Five-Year Review Requirement

CERCLA Section 121 and 40 CFR Part 300 require a review of remedial actions at least every five years if the remedial action results in hazardous substances, pollutants or contaminants remaining in place above levels that allow for unlimited use and unrestricted exposure. Because this remedy will result in hazardous substances, pollutants or contaminants remaining on site above levels that allow for unlimited use and unrestricted exposure, a statutory review will take place within five years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment. Five-year reviews will continue until such time as the regulatory criteria are met.

7.7 Documentation of Significant Changes

Pursuant to CERCLA 117(b) and NCP 300.430(f)(3)(ii), the AROD must document any significant changes made to the Preferred Alternative discussed in the Proposed Plan. There are no significant changes between Preferred Alternative discussed in the Proposed Plan and the selected remedy in this AROD.

The EPA accepted FDEP's suggestion to include two creosote compounds, fluorene and phenanthrene, in the list of COCs for the Site. The inclusion of fluorene and phenanthrene does not change the technologies used or the expected scope or cost of the cleanup.

8.0 Responsiveness Summary and Public Participation Compliance

The EPA identified and proposed the preferred remedial alternative in the Proposed Plan. The preferred remedial alternative did not differ from the amended selected remedy in this AROD. In accordance with 42 U.S.C. §117 (a) and 40 C.F.R. §300.45 (c)(2)(ii)(D), the opportunity for a public meeting was provided during the public comment period. The public meeting was advertised in the Proposed Plan announcement post cards sent to individuals and other interested parties. The start of the public comment period was advertised in the *Pensacola News Journal* on August 12, 2014. The public comment period was from August 13 to September 15, 2014. A public meeting took place on Tuesday, August 19, 2014, at the New Hope Missionary Baptist Church in Pensacola. About 30 people attended. Appendix D contains the public meeting transcript. Comments received during the public comment period are summarized in Section 8, the Responsiveness Summary, and included as Appendix C of this AROD. The Administrative Record and Information Repository are available to the public at EPA Region 4's Superfund Record Center and at the Genealogy Branch Library, 5740 North Ninth Avenue, Pensacola, Florida 32504.

Public involvement is a central component of the EPA's work at Superfund Sites. This section documents public comments on the Proposed Plan. The transcript from the Proposed Plan Public Meeting is attached as Appendix D.

8.1 Comment Letters

Public comments are summarized below. The EPA provided responses to specific comments as appropriate. Comment letters are attached in Appendix C.

- **Letter dated September 10, 2014, from Keith Wilkins, Director of Escambia County Community and Environment Department.**
  Comment Summary:
  - Commenter supports Alternative S4.

- **Letter dated September 11, 2014, from Peter H. Dohms, Environmental Consultant.**
  Comment Summary:
  - Commenter endorses the Proposed Plan.

- **Letter dated September 12, 2014, from Wilma Subra, Subra Company, and Francine Ishmael and Frances Dunham, Citizens Against Toxic Exposure.**
  Comment Summary:
  - Commenters express support for Alternative S4 as appropriate for the Source Area and for the Highly Adsorbed Phase Area.
  - Appropriate installation of injection, extraction and monitoring wells are critical.
  - Implement the remedy quickly and efficiently to prevent the further contamination of the groundwater by free phase materials.

- Air emissions of volatile organic compounds and semi-volatile organic compounds must be controlled and monitored during the remedial action. Mobilized NAPL must be captured effectively so it does not migrate out of the Source Area during the remedial action.
- Contamination extends into multiple parts of the aquifer. Cleanup goals should be attained in all contaminated parts of the aquifer.

- **EPA Response:** The EPA shares these concerns. Many of these issues, such as controlling vapors and preventing additional NAPL or dissolved contamination, are central to the cleanup strategy. During the remedial design and remedial action, the EPA will work with the community and the commenters to ensure these concerns are addressed.

- **Letter dated September 15, 2014, from Mary Gutierrez, Executive Director, Earth Ethics Incorporated.**
  Comment Summary:
  - Commenter supports Alternative S4.
  - Commenter requests air quality monitoring stations off site as a precaution.
  - Commenter requests that a map of monitoring wells and air monitoring stations be provided to stakeholders prior to remedial action.

  - **EPA Response:** The EPA will consider off-site air monitoring stations. The EPA does anticipate air monitoring near the extraction operations as part of the worker safety program. Site workers have a higher potential for exposure than people located off site.

  - The EPA will provide site stakeholders with maps of monitoring wells and air monitoring stations during the remedial design and remedial action.

8.2 Comments during the Public Meeting

Comment from Francine Ishmael and EPA response:
In response to a question about dioxin in groundwater from Francine Ishmael, the remedial project manager (RPM) misspoke about the detection of dioxin in groundwater. The RPM stated that the EPA has not found dioxin in groundwater but should have added "above levels of concern." The RPM corrected this misstatement in an email, which is included in Appendix C. The issue of dioxin in groundwater is also discussed in Section 4.3.5 of this AROD.

The EPA sampled for dioxins in groundwater and did not find dioxins above any drinking water standards. The EPA did detect some dioxins in some groundwater samples. The EPA would include dioxin as a COC for groundwater if the data indicated there was a risk of exposure to dioxin through the groundwater exposure pathway.

Comment from Bea Thomas:
Bea Thomas spoke about concerns about a landfill site in another part of Escambia County.

EPA's response:
The EPA referred Ms. Thomas to FDEP.

Appendix A. Proposed Alternative S4 Priced Using a 7 Percent Discount Rate

Summary of Present Worth Analysis					
Year	Capital Cost	Annual O&M Cost	Total Cost	Discount Factor (7%)	Present Worth
0	$ 6,756,060	$ 5,363,586	$ 12,119,646	1.000	$ 12,119,646
1	-	$ 587,556	$ 587,556	0.935	$ 549,365
2	-	$ 99,216	$ 99,216	0.873	$ 86,616
3	-	$ 99,216	$ 99,216	0.816	$ 80,960
4	-	$ 99,216	$ 99,216	0.763	$ 75,702
5	-	$ 155,760	$ 155,760	0.713	$ 111,057
6	-	$ 99,216	$ 99,216	0.666	$ 66,078
7	-	$ 99,216	$ 99,216	0.623	$ 61,812
8	-	$ 99,216	$ 99,216	0.582	$ 57,744
9	-	$ 99,216	$ 99,216	0.544	$ 53,974
10	-	$ 65,760	$ 65,760	0.508	$ 33,406
11	-	$ 9,216	$ 9,216	0.475	$ 4,378
12	-	$ 9,216	$ 9,216	0.444	$ 4,092
13	-	$ 9,216	$ 9,216	0.415	$ 3,825
14	-	$ 9,216	$ 9,216	0.388	$ 3,576
15	-	$ 65,760	$ 65,760	0.362	$ 23,805
16	-	$ 9,216	$ 9,216	0.339	$ 3,124
17	-	$ 9,216	$ 9,216	0.317	$ 2,921
18	-	$ 9,216	$ 9,216	0.362	$ 3,336
19	-	$ 9,216	$ 9,216	0.296	$ 2,728
20	-	$ 65,760	$ 65,760	0.277	$ 18,216
21	-	$ 9,216	$ 9,216	0.258	$ 2,378
22	-	$ 9,216	$ 9,216	0.242	$ 2,230
23	-	$ 9,216	$ 9,216	0.226	$ 2,083
24	-	$ 9,216	$ 9,216	0.211	$ 1,945
25	-	$ 65,760	$ 65,760	0.197	$ 12,955
26	-	$ 9,216	$ 9,216	0.184	$ 1,696
27	-	$ 9,216	$ 9,216	0.172	$ 1,585
28	-	$ 9,216	$ 9,216	0.161	$ 1,484
29	-	$ 9,216	$ 9,216	0.15	$ 1,382
30	-	$ 65,760	$ 65,760	0.141	$ 9,272
Totals	$ 6,756,060	$ 7,277,670	$ 14,033,730		$ 13,403,368
			Total Present Worth Cost		**$ 13,403,368**

Appendix B. ARARs Tables

Appendix 1 Table 1 Potential Chemical-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Chemical-Specific ARARs			
Action/Media	**Requirement**	**Prerequisite**	**Citation**
Classification of ground water	All ground water of the state is classified according to the designated uses and includes the following: Class G-I – Potable water use, ground water in single source aquifers which has total dissolved solids content of less than 3,000 mg/l. Class G-II – Potable water use, ground water in single source aquifers which has total dissolved solids content of less than 10,000 mg/l, unless otherwise classified by the Florida Environmental Regulation Commission.	Groundwater within the state of Florida – **applicable**	F.A.C. 62-520.410
Restoration of ground water as a potential drinking water source	All ground water (except for Class G-IV) shall meet the minimum criteria for ground water specified in F.A.C. 62-520.400(1)(a)-(f).	Ground water within the state of Florida with designated beneficial use(s) of Class G-I or Class G-II – **relevant and appropriate**	F.A.C. 62-520.400 Minimum Criteria for Ground Water
	Class I and Class II ground water shall meet the primary drinking water standards listed in FAC 62-550.310 for public water systems, except as otherwise specified.		F.A.C. 62-520.420(1) Standards for Class - I and Class – II Ground Water
	Shall not exceed the maximum contaminant level (MCL) listed in Table 4 VOLATILE ORGANIC CONTAMINANTS. (These standards may also apply as ground water quality standards as referenced in Chapter 62-520, F.A.C.)	Supply of water to public water system, as defined in F.A.C. 62-550.200 (17) – **relevant and appropriate**	F.A.C. 62-550.310 Primary Drinking Water Standards
Restoration of groundwater as a potential drinking water source	Specifies Groundwater Cleanup Target Levels (CTLs) for site rehabilitation. FAC 62-777.170 Table I lists the default Groundwater Criteria.	Rehabilitation (i.e., remediation) of site contaminated groundwater – **relevant and appropriate**	F.A.C. 62-780.150(5) F.A.C. 62-777.170(1)(a)

Appendix 1 Table 1 Potential Chemical-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Chemical-Specific ARARs			
Action/Media	**Requirement**	**Prerequisite**	**Citation**
Restoration of groundwater as a potential drinking water source	Requires that a lifetime excess cancer risk level of 1.0E-6 and a hazard index of 1 or less shall be used in establishing alternative contaminant cleanup target levels for groundwater or soil.	Establishment of Alternative cleanup target levels (CTLs) for contaminants of concern at the Site – **relevant and appropriate**	F.A.C. 62-780.650(1)(d)

ARAR = applicable *or* relevant and appropriate requirement
CFR = Code of Federal Regulations
F.A.C. = Florida Administrative Code, Chapters as specified
F.S. = Florida Statutes
TBC = To Be Considered guidance

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
General Construction Standards — All Land-disturbing Activities (i.e., excavation, clearing, grading, etc.)			
Control of storm water runoff from soil disturbing activities	Must comply with the substantive provisions in the "Generic Permit for Stormwater Discharge from Large and Small Construction Activities," document number 62-621.300(4)(a), issued by the FDEP and effective February 17, 2009. Requires development storm water pollution prevention plan and implementation of best management practices and erosion and sedimentation controls for stormwater runoff to ensure protection of the surface waters of the state. *Note*: Plan would be part of CERCLA document such as Remedial or Removal Action Work Plan.	Stormwater discharges from large and small construction activities to surface waters of the State as defined in Section 403.031, F.S. – **applicable**	F.A.C. 62-621.300(4)(a) *Generic Permit for Stormwater Discharge from Large and Small Construction Activities*
Control of storm water runoff from soil disturbing activities	No discharge from a stormwater discharge facility shall cause or contribute to a violation of water quality standards in waters of the state.	Construction activity (e.g., alteration of land contours or land clearing) that results in creation *of stormwater management system* as defined in F.AC. 62-25.020(15) – **applicable**	F.A.C. 62-25.025 *Regulation of Stormwater Discharge*

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Erosion and sediment control best management practices shall be used as necessary during construction activity to retain sediment on site. These practices shall be designed by an engineer or other competent professional experienced in the fields of soil conservation or sediment control according to specific site conditions and shall be shown or noted on the plans of the stormwater management system. *Note*: Plan would be part of CERCLA document such as Remedial or Removal Action Work Plan.		F.A.C. 62-25.025 (7)
Control of Fugitive Dust	No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.	Land disturbing activity that has potential for unconfined emissions of particulate matter – **applicable**	F.A.C. 62-296.320(4)(c) General Pollutant Emission Limiting Standards

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Monitoring and Injection Wells – Installation, Operation, and Abandonment			
Groundwater Monitoring Well Installation	Before construction of new ground water monitoring wells, a soil boring shall be made at each new monitoring well location to properly determine monitoring well specifications such as well depth, screen interval, screen slot, and filter pack.	Installation of groundwater monitoring well to detect migration of contaminants – **relevant and appropriate**	F.A.C. 62-532.600(6)(g)
	Provides detailed guidance to assist in monitoring well design and material specifications for construction of groundwater monitoring well.	Installation of groundwater monitoring well to detect migration of contaminants – **to be considered**	FDEP, Monitoring Well Design and Construction Guidance Manual (2008)
Construction and repair of groundwater well	Well casing. Well liner shall be in accordance with the substantive requirements specified in F.A.C. 62-532.500(1)(a) through(i) as appropriate	Installation of water well as defined in F.A.C. 62-532.200 – **relevant and appropriate**.	F.A.C. 62-532.500(1)
	Wells shall be constructed to meet the following criteria specified in F.A.C. 62-532.500(2)(a), (b), and (d)		F.A.C. 62-532.500(2)
Plugging and Abandonment of Groundwater Monitoring Wells	All abandoned wells shall be plugged by filling them from bottom to top with neat cement grout or bentonite and capped with a minimum of one foot of neat cement grout. An alternate method providing equivalent protection shall be approved by the Department and EPA.	Abandonment of water well as defined in F.A.C. 62-532.200 – **relevant and appropriate**	F.A.C. 62-532.500(4)
Groundwater Monitoring for Monitored	A minimum of two monitoring wells is required[1]: • At least one well shall be located at the	Groundwater monitoring as part of the remedy relying on natural attenuation – **relevant and appropriate**	F.A.C. 62-780.690(8)(a) Natural Attenuation with Monitoring

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Natural Attenuation (MNA) remedy	downgradient edge of the plume; and • At least one well shall be located in the area(s) of highest groundwater contamination or directly adjacent to it if the area of highest groundwater contamination is inaccessible (for example, under a structure).		
	The designated monitoring wells shall be sampled for analyses of applicable contaminants no more frequent than quarterly.[1]	Groundwater monitoring as part of the remedy relying on natural attenuation – **relevant and appropriate**	F.A.C. 62-780.690(8)(b)
	Water-level measurements in all designated wells and piezometers shall be made within 24 hours of initiating each sampling event.[1]	Groundwater monitoring as part of the remedy relying on natural attenuation – **relevant and appropriate**	F.A.C. 62-780.690(8)(c)
Injection of In-Situ Chemical Oxidation (ISCO) or Enhanced Bioremediation (ISEB) amendments into groundwater or injection of treated groundwater	An injection activity cannot allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of the primary drinking water standards under 40 CFR part 141, other health based standards, or may otherwise adversely affect the health of persons. This prohibition applies to well construction, operation, maintenance, conversion, plugging, closure, or any other injection activity.	Class V wells [as defined in 40 CFR § 144.6(e)] – **relevant and appropriate**	40 CFR § 144.82(a)(1)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Wells must be closed in a manner that complies with the above prohibition of fluid movement. Also, any soil, gravel, sludge, liquids, or other materials removed from or adjacent to the well must be disposed or otherwise managed in accordance with substantive applicable Federal, State, and local regulations and requirements.		40 CFR § 144.82(b)
General Criteria for Class V well used for underground injection (e.g., ISCO or ISEB amendments or treated groundwater)	A well shall be designed and constructed for its intended use, in accordance with good engineering practices.	Operation of Class V well Group 4 (wells associated with aquifer remediation projects) – **relevant and appropriate**	F.A.C. 62-528.605(1)
	May not cause or allow fluids to migrate into underground source of drinking water which may cause a violation of a primary or secondary drinking water standard contained in Chapter 62-550, F.A.C., or minimum criteria contained in Rule 62-520.400, F.A.C., or may cause fluids of significantly differing water quality to migrate between underground sources of drinking water.		F.A.C. 62-528.605(2)
Construction of Class V well used for underground injection (e.g., ISCO or ISEB	Shall be constructed so that their intended use does not violate the water quality standards of Chapter 62-520. F.A.C., at the point of discharge, except where specifically allowed in subsection65-522.300(2), F.A.C.	Operation of Class V well Group 4 (wells associated with aquifer remediation projects) – **relevant and appropriate**	F.A.C. 62-528.605(3)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
amendments or treated groundwater)			
	All drilled wells shall, at a minimum, meet the casing and cementing requirements for water well construction set forth in Chapter 62-532, F.A.C.		F.A.C. 62-528.605(7)
Operation of Class V well used for underground injection (e.g., ISCO or ISEB amendments or treated groundwater)	Shall be used or operated in a manner that it does not present a hazard to an underground source of water.	Operation of Class V well Group 4 (wells associated with aquifer remediation projects) – **relevant and appropriate**	F.A.C. 62-528.610(1)
	Pretreatment for fluids injected through existing wells shall be performed if necessary to ensure the injected fluid does not violate applicable water quality standards in Chapter 52-520, F.A.C.		F.A.C. 62-528.610(3)
Monitoring of Class V well used for underground injection (e.g., ISCO or ISEB amendments or treated groundwater)	The need for monitoring shall be determined by the type of well, nature of injected fluid, and the water quality of the receiving and overlying aquifers. Note: The monitoring parameters and frequency will be specified in a CERCLA document such as Remedial or Removal Action Work Plan.	Operation of Class V well Group 4 (wells associated with aquifer remediation projects) – **relevant and appropriate**	F.A.C. 62-528.615(1) and (2)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Plugging and abandonment of Class V well used for underground injection (e.g., ISCO or ISEB amendments or treated groundwater)	Prior to abandoning Class V wells, the well shall be plugged with cement in a manner that will not allow movement of fluids between underground sources of water. Placement of the cement shall be accomplished by any recognized and approved method.	Operation of Class V well Group 4 (wells associated with aquifer remediation projects) – **relevant and appropriate**	F.A.C. 62-528.625(3)
Post-Active Remediation Monitoring for groundwater treatment system	Unless otherwise provided in CERCLA Remedial/Removal Action Work Plan, the following shall be performed as follows: • A minimum of two monitoring wells is required with at least one located at the downgradient edge of the plume; and at least one located in the area(s) of highest groundwater contamination or directly adjacent; • Designated monitoring wells shall be sampled quarterly for contaminants that were present[1]; • Water-level measurements in all designated wells and piezometers shall be made within 24-hour of initiating each sampling event[1].	Operation of an active remediation system – **relevant and appropriate**	F.A.C. 62-780.750(4)(a) through (c)
Operation of Groundwater Treatment Systems			

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Operation and Monitoring of soil and groundwater treatment systems (e.g., SVE)	A separate air permit will not be required if the total air emissions from all on-site remediation equipment system(s) do not exceed 5.5lbs/day for any single HAP or 13.7 lbs/day for total HAPs. *Note*: Although permit not required under CERCLA 121(e)(1) for on-site response actions, the specified thresholds are relevant to application of other air emissions requirements.	Operation of an active remediation system that emits contaminants into the air – **relevant and appropriate**	F.A.C. 62-780.700(3)(f)(3.)
Operation and Monitoring of groundwater treatment system including groundwater monitoring wells	Unless otherwise provided in CERCLA Remedial/Removal Action Work Plan, the following shall be obtained or determined during the active remediation: • Water level data collected from all designated wells, piezometers, and staff gauge locations each time monitoring and recovery wells are sampled (water-level measurements shall be made within 24-hour period) • Total volume of any free product recovered and the thickness and horizontal extent of free product • Total volume of groundwater recovered from each recovery well • Concentrations of applicable contaminants based on analyses performed on the effluent from the groundwater treatment system • Concentrations of applicable contaminants based on analyses	Operation of an active remediation system – **relevant and appropriate**.	F.A.C. 62-780.700(12)(a) through (e)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	performed on the untreated groundwater from select recovery wells		
Operation and Monitoring of soil and groundwater treatment system (e.g., SVE) including groundwater monitoring wells	Unless otherwise provided in CERCLA Remedial/Removal Action Work Plan, the following shall be obtained or determined during the active remediation: • Concentrations of recovered vapors from a vacuum extraction system and post-treatment emissions Additional sampling may be performed based upon the estimated time of breakthrough as follows: 1. Concentrations of recovered vapors from individual wells shall be determined using an organic vapor analyzer with a flame ionization detector, or other applicable field detection device in order to optimize airflow rate and contaminant recovery; 2. The influent and effluent samples shall be analyzed for contaminants using an appropriate analytical method; and 3. The samples shall be collected using an appropriate air sampling protocol specified in Chapter 62-160, F.A.C.	Operation of an active remediation system utilizing activated carbon off-gas treatment – **relevant and appropriate**.	F.A.C. 62-780.700(12)(i)
Corrective action for leaks during operation of soil or groundwater treatment	If effluent concentrations or air concentrations exceed specified or prescribed levels or plume migration occurs during remediation system start-up of during operation of the treatment systems, then corrective actions shall be taken.	Operation of an active remediation system – **relevant and appropriate**.	F.A.C. 62-780.700(14)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
system (e.g., SVE)			
Post-Active Remediation Monitoring for groundwater treatment system	Unless otherwise provided in CERCLA Remedial/Removal Action Work Plan, the following shall be performed as follows: • A minimum of two monitoring wells is required with at least one located at the downgradient edge of the plume; and at least one located in the area(s) of highest groundwater contamination or directly adjacent; • Designated monitoring wells shall be sampled quarterly for contaminants that were present; • Water-level measurements in all designated wells and piezometers shall be made within 24-hour of initiating each sampling event.	Operation of an active remediation system – **relevant and appropriate**.	F.A.C. 62-780.750(4)(a) through (c)
General standards for process vents used in treatment of VOC contaminated soil and groundwater	Select and meet the requirements under one of the options specified below: • Control HAP emissions from the affected process vents according to the applicable standards specified in §§ 63.7890 through 63.7893. • Determine for the remediation material treated or managed by the process vented through the affected process vents that the average total volatile organic hazardous air pollutant (VOHAP) concentration, as defined	Process vents as defined in 40 CFR § 63.7957 used in site remediation of media (e.g., soil and groundwater) that could emit hazardous air pollutants (HAP) listed in Table 1 of Subpart GGGGG of Part 63 and vent stream flow exceeds the rate in 40 CFR §63.7885(c)(1) – **relevant and appropriate**.	40 CFR § 63.7885(b) F.A.C. 62-204.800(11)(b)(59)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	in § 63.7957, of this material is less than 10 (ppmw). Determination of VOHAP concentration will be made using procedures specified in § 63.7943. Control HAP emissions from affected process vents subject to another subpart under 40 CFR part 61 or 40 CFR part 63 in compliance with the standards specified in the applicable subpart.		
Emission limitations for process vents used in treatment of VOC contaminated soil and groundwater	Meet the requirements under one of the options specified below: • Reduce from all affected process vents the total emissions of the HAP to a level less than 1.4 kilograms per hour (kg/hr) and 2.8 Mg/yr (3.0 pounds per hour (lb/hr) and 3.1 tpy); • Reduce from all affected process vents the emissions of total organic compounds (TOC) (minus methane and ethane) to a level below 1.4 kg/hr and 2.8 Mg/yr (3.0 lb/hr and 3.1 tpy); • Reduce from all affected process vents the total emissions of the HAP by 95 percent by weight or more; or • Reduce from all affected process vents the emissions of TOC (minus methane and ethane) by 95 percent by weight or more.	Process vents as defined in 40 CFR § 63.7957 used in site remediation of media (e.g., soil and groundwater) that could emit hazardous air pollutants (HAP) listed in Table 1 of Subpart GGGGG of Part 63 and vent stream flow exceeds the rate in 40 CFR § 63.7885(c)(1) – **relevant and appropriate**.	40 CFR § 63.7890(b)(1)-(4) F.A.C. 62-204.800(11)(b)(59)
Standards for closed vent systems and control devices	For each closed vent system and control device you use to comply with the requirements above, you must meet the operating limit requirements and work practice standards in Sec. 63.7925(d)	Closed vent system and control devices as defined in 40 CFR § 63.7957 that are used to comply with §	40 CFR § 63.7890(c) F.A.C. 62-204.800(11)(b)(59)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
used in treatment of VOC contaminated soil and groundwater	through (j) that apply to the closed vent system and control device. *NOTE:* EPA approval to use alternate work practices under paragraph (j) in 40 CFR § 63.7925 will be obtained in a CERCLA document	63.7890(b) –**relevant and appropriate**.	
Monitoring of closed vent systems and control devices used in treatment of VOC contaminated soil and groundwater	Must monitor and inspect the closed vent system and control device according to the requirements in 40 CFR § 63.7927 that apply to the affected source. *NOTE:* Monitoring program will be developed as part of the CERCLA process and included in an appropriate CERCLA document.	Closed vent system and control devices as defined in 40 CFR § 63.7957 that are used to comply with § 63.7890(b) –**relevant and appropriate**.	40 CFR § 63.7892 F.A.C. 62-204.800(11)(b)(59)
Waste Disposal — Contaminated Groundwater			
Discharge of treated groundwater to a Wastewater Facility	General Prohibitions: An industrial user shall not introduce into a Wastewater Facility (WWF) any pollutant which causes pass through or interference.	Discharge pollutants into a "Wastewater Facility" (WWF) as defined in FAC 62-625.200(29) by an industrial user (i.e., source of discharge) – **applicable**	FAC 62-625.400(1)(a)
	Specific Prohibitions. The following pollutants shall not be introduced into a WWF:		FAC 62-625.400(2)
	• Pollutants which create a fire or explosion hazard in the WWF		FAC 62-625.400(2)(a)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	• Pollutants which will cause corrosive structural damage to the WWF, but in no case discharges with pH lower than 5.0, unless the WWF is specifically designed to accommodate such discharges;		FAC 62-625.400(2)(b)
	• Solid or viscous pollutants in amounts which will cause obstruction to the flow in the WWF resulting in interference;		FAC 62-625.400(2)(c)
	• Any pollutant, including oxygen demanding pollutants, released in a discharge at a flow rate or pollutant concentration which will cause interference with the WWF;		FAC 62-625.400(2)(d)
	• Heat in amounts which will inhibit biological activity in the WWF resulting in interference, but in no case heat in such quantities that result in the discharge from the treatment plant having a temperature that exceeds 40º C (104º F) unless the Department, upon request of the control authority, approves alternate temperature limits in accordance with Rule 62-302.520, F.A.C.;		FAC 62-625.400(2)(e)
	• Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;		FAC 62-625.400(2)(f)
	• Pollutants which result in the presence of toxic gases, vapors, or fumes within the WWF in a quantity that will cause acute worker health and safety problems; or		FAC 62-625.400(2)(g)
	• Any trucked or hauled pollutants, except at discharge points designated by the control authority.		FAC 62-625.400(2)(h)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Local Limits: Where specific prohibitions or limits on pollutants or pollutant parameters are developed by a public utility in accordance with FAC 62-625.400(3), such limits shall be deemed to be pretreetment standards.		FAC 62-625.400(4)
Waste Characterization – Primary Waste (e.g., excavated soils from well cuttings, purge water) and Secondary Wastes (e.g., contaminated equipment or treatment residuals)			
Characterization of ***solid waste*** (all primary and secondary wastes)	Must determine if solid waste is a hazardous waste using the following method: • Should first determine if waste is excluded from regulation under 40 CFR 261.4; and Must then determine if waste is listed as a hazardous waste under subpart D, 40 CFR Part 261.	Generation of solid waste as defined in 40 CFR 261.2 – **applicable**	40 CFR 262.11(a) and (b) F.A.C. 62-730.160
	Must determine whether the waste is (characteristic waste) identified in subpart C of 40 CFR part 261by either: (1) Testing the waste according to the methods set forth in subpart C of 40 CFR part 261, or according to an equivalent method approved by the Administrator under 40 CFR 260.21; or (2) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.	Generation of solid waste which is not excluded under 40 CFR 261.4(a) – **applicable**	40 CFR 262.11(c) F.A.C. 62-730.160

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous waste – **applicable**	40 CFR 262.11(d) F.A.C. 62-730.160
Characterization of ***hazardous waste*** (all primary and secondary wastes)	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 CFR 264 and 268.	Generation of RCRA hazardous waste for storage, treatment or disposal – **applicable**	40 CFR 264.13(a)(1) F.A.C. 62-730.180(1)
Determinations for management of hazardous waste	Must determine each EPA Hazardous Waste Number (waste code) applicable to the waste in order to determine the applicable treatment standards under 40 CFR 268, et seq. Note: This determination may be made concurrently with the hazardous waste determination required in Sec. 262.11 of this chapter.	Generation of hazardous waste for storage, treatment or disposal – **applicable**	40 CFR 268.9(a) F.A.C. 62-730.183
	Must determine the underlying hazardous constituents [as defined in 40 CFR 268.2(i)] in the characteristic waste.	Generation of RCRA characteristic hazardous waste (and is not D001 non –wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal – **applicable**	40 CFR 268.9(a) F.A.C. 62-730.183

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Determinations for management of hazardous waste	Must determine if the hazardous waste meets the treatment standards in 40 CFR 268.40, 268.45, or 268.49 by testing in accordance with prescribed methods or use of generator knowledge of waste. Note: This determination can be made concurrently with the hazardous waste determination required in 40 CFR 262.11.	Generation of hazardous waste for storage, treatment or disposal – **applicable**	40 CFR 268.7(a) F.A.C. 62-730.183
	Must comply with the special requirements of 40 CFR 268.9 in addition to any applicable requirements in CFR 268.7.	Generation of waste or soil that displays a hazardous characteristic of ignitability, corrosivity, reactivity, or toxicity for storage, treatment or disposal – **applicable**	40 CFR 268.7(a) F.A.C. 62-730.183
Waste Storage – Primary Waste (e.g., excavated soil from well cuttings and purge water) and Secondary Wastes (e.g., contaminated equipment or treatment residuals)			
Temporary on–site storage of hazardous waste in containers	A generator may accumulate hazardous waste at the facility provided that: • waste is placed in containers that comply with 40 CFR 265.171 –173; and • the date upon which accumulation begins is clearly marked and visible for inspection on each container; • container is marked with the words "hazardous waste"; or	Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10 **– applicable**	40 CFR 262.34(a); 40 CFR 262.34(a)(1)(i); 40 CFR 262.34(a)(2) and (3) F.A.C. 62-730.160

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	• container may be marked with other words that identify the contents.	Accumulation of 55 gal. or less of RCRA hazardous waste or one quart of acutely hazardous waste listed in 261.33(e) at or near any point of generation – **applicable**	40 CFR 262.34(c)(1) F.A.C. 62-730.160
Use and management of hazardous waste in containers	If container is not in good condition (e.g. severe rusting, structural defects) or if it begins to leak, must transfer waste from this container to a container that is in good condition.	Storage of RCRA hazardous waste in containers **– applicable**	40 CFR 265.171 F.A.C. 62-730.180(2)
	Must use container made or lined with materials compatible with waste to be stored so that the ability of the container to contain is not impaired.		40 CFR 265.172 F.A.C. 62-730.180(2)
	Containers must be closed during storage, except when necessary to add/remove waste. Container must not opened, handled and stored in a manner that may rupture the container or cause it to leak.		40 CFR 265.173(a) and (b) F.A.C. 62-730.180(2)
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 CFR 264.175(b)	Storage of RCRA hazardous waste in containers with free liquids – **applicable**	40 CFR 264.175(a) F.A.C. 62-730.180(1)
	Area must be sloped or otherwise designed and operated to drain liquid resulting from precipitation, or Containers must be elevated or otherwise protected from contact with accumulated liquid.	Storage of RCRA–hazardous waste in containers that do not contain free liquids (other than F020, F021, F022, F023,F026 and F027) – **applicable**	40 CFR 264.175(c)(1) and (2) F.A.C. 62-730.180(1)
Closure of RCRA container storage unit	At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or	Storage of RCRA hazardous waste in containers in a unit with a containment system – **applicable**	40 CFR 264.178 F.A.C. 62-730.180(1)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed. [Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate in accordance with 40 CFR 261.3(d) of this chapter that the solid waste removed from the containment system is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of parts 262 through 266 of this chapter].		
Storage and processing of non-hazardous waste	No person shall store, process, or dispose of solid waste except as authorized at a permitted solid waste management facility or a facility exempt from permitting under this chapter. No person shall store, process, or dispose of solid waste in a manner or location that causes air quality standards to be violated or water quality standards or criteria of receiving waters to be violated.	Management and storage of solid waste – **applicable**	F.A.C. 62 701.300(1)(a) and (b)
Waste Treatment and Disposal – Primary Waste (e.g., excavated soil from well cuttings, purge water) and Secondary Wastes (e.g., contaminated equipment or treatment residuals)			
Disposal of RCRA hazardous waste in a land-based unit	May be land disposed if it meets the requirements in the table "Treatment Standards for Hazardous Waste" at 40 CFR 268.40 before land disposal.	Land disposal, as defined in 40 CFR 268.2, of restricted RCRA waste – **applicable**	40 CFR 268.40(a) F.A.C. 62-730.183

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
	All underlying hazardous constituents [as defined in 40 CFR 268.2(i)] must meet the UTS, found in 40 CFR 268.48 Table UTS prior to land disposal	Land disposal of restricted RCRA characteristic wastes (D001 –D043) that are not managed in a wastewater treatment system that is regulated under the CWA, that is CWA equivalent, or that is injected into a Class I nonhazardous injection well – **applicable**	40 CFR 268.40(e) F.A.C. 62-730.183
Disposal of RCRA – *hazardous waste soil* in a land–based unit	Must be treated according to the alternative treatment standards of 40 CFR 268.49(c) <u>or</u> according to the UTSs specified in 40 CFR 268.48 applicable to the listed and/or characteristic waste contaminating the soil prior to land disposal	Land disposal, as defined in 40 CFR 268.2, of restricted hazardous soils – **applicable**	40 CFR 268.49(b) F.A.C. 62-730.183
Disposal of RCRA hazardous waste in a land-based unit	To determine whether a hazardous waste indentified in this section exceeds the applicable treatment standards of 40 CFR 268.40, the initial generator must test a sample of the waste extract or the entire waste, depending on whether the treatment standards are expressed as concentration in the waste extract or waste, or the generator may use knowledge of the waste. If the waste contains constituents (including UHCs in the characteristic wastes) in excess of the applicable UTS levels in 40 CFR 268.48, the waste is prohibited from land disposal, and all requirements of part 268 are applicable, except as otherwise specified.	Land disposal of RCRA toxicity characteristic wastes (D004 –D011) that are newly identified (i.e., wastes, soil, or debris identified by the TCLP but not the Extraction Procedure) – **applicable**	40 CFR 268.34(f) F.A.C. 62-730.183
Disposal of RCRA hazardous waste	Must be treated prior to land disposal as provided in 40 CFR 268.45(a)(1)–(5) unless EPA determines under 40 CFR 261.3(f)(2) that the	Land disposal, as defined in 40 CFR 268.2, of restricted RCRA–hazardous debris – **applicable**	40 CFR 268.45(a) F.A.C. 62-730.183

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
debris in a land–based unit (i.e., landfill)	debris no longer contaminated with hazardous waste or the debris is treated to the waste – specific treatment standard provided in 40 CFR 268.40 for the waste contaminating the debris.		
Waste Transportation – Primary and Secondary Wastes			
Transportation of hazardous waste *on–site*	The generator manifesting requirements of 40 CFR 262.20–262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right–of–way.	Transportation of hazardous wastes on a public or private right–of–way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right–of–way – **applicable**	40 CFR 262.20(f) F.A.C. 62-730.160
Transportation of hazardous waste *off–site*	Must comply with the generator standards of Part 262 including 40 CFR 262.20–23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, and Sect. 262.33 for placarding	Preparation and initiation of shipment of hazardous waste off–site –**applicable**	40 CFR 262.10(h); F.A.C. 62-730.160
Transportation of *hazardous materials*	Shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 CFR 171–180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material – **applicable**	49 CFR 171.1(c)

Appendix 1 Table 2 Potential Action-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Action-Specific ARARs			
Action	**Requirement**	**Prerequisite**	**Citation**
Transportation of samples (i.e. contaminated soils and wastewaters)	Are not subject to any requirements of 40 CFR Parts 261 through 268 or 270 when: • the sample is being transported to a laboratory for the purpose of testing; or • the sample is being transported back to the sample collector after testing • the sample is being stored by sample collector before transport to a lab for testing	Samples of solid waste or a sample of water, soil for purpose of conducting testing to determine its characteristics or composition – **applicable**	40 CFR 261.4(d)(1)(i)–(iii) F.A.C. 62-730.030

ARAR = applicable *or* relevant and appropriate requirement
CFR = Code of Federal Regulations
CWA = Clean Water Act
F.A.C. = Florida Administrative Code, Chapters as specified
F.S. = Florida Statutes
HAP =hazardous air pollutant
HMTA = Hazardous Materials Transportation Act
HMR = Hazardous Materials Regulations
RCRA = Resource Conservation and Recovery Act
TCLP = toxicity characteristic leaching procedure
UHCs = underlying hazardous constituents
USDW = Underground Sources of Drinking Water
UTS = Universal Treatment Standards
VOC = volatile organic compound

Appendix 1 Table 3 Potential Location-Specific ARARs
Escambia Wood Treating Company Site, OU2, SWMU 10

Location-Specific ARARs			
Location	**Requirement**	**Prerequisite**	**Citation**
Presence of historic properties (includes artifacts, records, or remains located within such properties)	Must take into account the adverse effects of the undertaking.	Undertaking (action) that will impact historic property on or eligible to be on the National Register of Historic Places – **applicable**	36 CFR 800.1(a) 36 CFR 800.11(b)(2)(ii)
	Determine adverse effects per 36 CFR 800.9 and seek ways to avoid or reduce the effects on the property. [Although not required, consultation with the State Historic Preservation Office is recommended if EPA determines there may be adverse effects or undiscovered resources in the area]		36 CFR 800.5(a) and (e)

[1] The designated number of wells, sampling time frames/frequency, and specific parameters for analyses will be provided in a Monitoring Plan that is included in a CERCLA post-ROD document prepared as part of the Remedial Design or Remedial Action which is approved by the EPA and the FDEP.

Appendix C. Public Comments

Board of County Commissioners • Escambia County, Florida

Keith T. Wilkins, Director
Community & Environment

Clara F. Long, Division Manager
Community Redevelopment Agency

September 10, 2014

Erik Spalvins, Remedial Project Manager
Superfund Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street SW
Atlanta, Georgia 30303

Re: Escambia Treating Company

Dear Mr. Spalvins:

Escambia County has reviewed the U.S. Environmental Protection Agency (EPA) Superfund Proposed Plan for the Escambia Wood Treating Company Superfund Site Operable Unit 2 Ground Water remediation, dated August 2014. Following this review, the County concurs with the data presented in the plan and agrees that the chosen *Alternative 4* provides the best method to achieve the desired remediation of the contaminant plume. The County would like to express its gratitude for the opportunity to comment on the Plan.

Sincerely,

Keith T. Wilkins, Director

KTW:gcg

Peter H. Dohms
Environmental Consultant
1305 West Stirrup Way
Payson, Arizona 85541

September 11, 2014

Mr. Erik Spalvins
Remedial Project Manager
Escambia Treating Company Superfund Project
United States Environmental Protection Agency
Atlanta, Georgia

Via Email

Dear Mr. Spalvins:

Thank you for the opportunity to comment on the Proposed Plan for the Operable Unit 2 (Ground Water) remediation Proposed Plan at the Escambia Treating Company Superfund Site, Pensacola, Florida. As you are aware, I have been closely following developments at ETC for over 20 years and additionally was greatly privileged to work closely with you during the completion of the Operable Unit 1 (Soil) remedy at the ETC site. For the benefit of individuals who might review these comments who are not familiar with my background, I am a Professional Geologist, licensed to offer professional services to clients in Florida, bearing Florida P.G. License #208. I have 47 years of experience as a geologist, including over 30 years of experience in examining ground water and environmental contamination issues, and over 20 years of experience in conducting and overseeing professional work at Superfund sites.

You were kind enough to furnish me with copies of the following four key documents:

- July 2010 Technical Memorandum on SWMU10 Data and Potential NAPL Remedial Alternatives (prepared by the EPA's contractor Black & Veatch);
- Escambia Treating Company OU2 SWMU10 Focused Feasibility Study, July 31, 2014 (prepared by the EPA's contractor Black & Veatch);
- Escambia Treating Company Proposed Plan for SWMU10 Operable Unit 2 August 13, 2014 (EPA document); and,
- Powerpoint slides prepared for your August 19, 2914 public meeting in which the proposed plan was first presented to residents and interested parties in Pensacola.

First and foremost, I am highly gratified that the results of all this work indicate a recognition of the necessity of aggressive intervention to remediate the most terribly degraded volume of a drinking water aquifer I have ever come across in my career. I have been a vocal and (at times) outspoken proponent of additional investigations, examination, delineation, and remedial efforts for the correction of this awful contamination.

Secondly, I agree that different intensities of remedial effort are appropriate for the differing intensities of ground water contamination that are found in the massive, four-mile long contaminant plume. Obviously, the lesser degree of remedial effort proposed for the distal (and diluted) down gradient plume limits would be wholly ineffective in treating the intensely-affected aquifer volumes

located directly beneath SWMU10. It should be equally obvious that the aggressive and complex corrective actions proposed for the area directly beneath SWMU10 would be vast overkill if applied to those same distal plume regions.

Thirdly, it is a matter of both professional and personal satisfaction that you (and your contractor Black & Veatch) are taking into account the details of the stratigraphic environment of the Sand & Gravel Aquifer where it is affected by the ETC ground water contamination. The hydrogeological characteristics of the three principal Sand & Gravel Aquifer horizons (Surficial zone, Low Permeability zone, and Main Producing zone) differ from one another in terms of their geologic composition, their geochemical response to the presence of contaminants, and their hydraulic characteristics. These variabilities, when combined with the differing intensities of contamination (in a spatial sense) have created a truly challenging aquifer environment in which to apply remediation.

In conclusion I am pleased to endorse the Proposed Plan and to congratulate both you and your contractor Black & Veatch for the arduous effort expended to bring it to this point. Please feel free to contact me with any questions that might arise, or for clarification of any point made in this letter.

Very Truly Yours,

(original signed by)

Peter H. Dohms

Peter H. Dohms, P.G.
Florida P.G. License #298
(my license expires 7/31/2016)

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September 12, 2014

Erik Spalvins
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U.S. EPA, Region 4
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Erik Spalvins <Spalvins.Erik@epa.gov>

Subject: Superfund Proposed Plan
Escambia Wood Treating Company (ETC)
Operable Unit 2 – Groundwater, Solid Waste Management Unit 10

It is appreciated that the Environmental Protection Agency (EPA) has expanded the Proposed Plan to address the contaminants in the ground water and soils containing free phase creosote non-aqueous phase liquid (NAPL) and non-mobile residual NAPL. EPA's plan to issue an Amended Record of Decision to address all of the contaminants and their various physical states associated with the Solid Waste Management Unit 10 (SWMU 10) is an appropriate approach.

On October 1, 2006, Citizens Against Toxic Exposure (CATE) submitted comments on the "Technical Memorandum for the Remedial Alternatives for Groundwater at the Escambia Wood Treating Site (OU2)." In the comments, the following was included: "Section 1.3 contaminant migration presents the possibility of free product residual, free phase product and free product source area to exist in the ground water at the ETC site. The re-

medial alternatives fail to specifically address the remediation of the area or areas of free phase materials." It is time that the free phase material be defined as consisting of NAPL and non-mobile residual NAPL in soils which are serving as the source of ground water contamination. The NAPL is present in lateral lenses in four feet to 50 feet thick layers and consists of 200,000 to 300,000 gallons of NAPL creosote. The NAPL creosote is acting as a source area of ground water contamination.

The plans for the remedy are to remove the free phase NAPL and non-mobile residual NAPL that are serving as the source area for the extensive ground water contamination. The remedy of complete removal of the sources of contamination is an appropriate approach, due to the need to return the three aquifer zone layers of contaminated ground water in the area of the Escambia site, and offsite up to 1.5 miles or greater, to their beneficial uses and original quality prior to the Escambia Treating Company locating in Pensacola.

Alternative S4

Alternative S4 for SWMU 10 consists of Steam Enhanced Extraction (SEE) and in-situ Enhanced Bioremediation, with Surfactant Enhanced Aquifer Remediation and in-situ Chemical Oxidation, if necessary. This remedy is the appropriate remedy to be implemented in the source area.

The alternative S4 for the Highly Adsorbed Phase Area (HAPA) consists of Surface Enhanced Aquifer Remediation, in-situ Chemical Oxidation and Enhanced Bioremediation. This is an appropriate remedy for the HAPA.

Critical to the evaluation of the performance of the remedy is the need to install injection and extraction wells over the HAPA and the installation of performance evaluation monitoring wells. These wells are critical to evaluating the progress of the remedial activities.

Possible Continued Contamination Migration

If the source area is not appropriately addressed, the contaminants will continue to leach into the ground water resources both laterally and vertically. This is why CATE members were so concerned in October 2006 with the presence of free phase materials under the area of the old waste water pond and landfill. These materials have continued to leach and contami-

nate additional ground water resources since CATE focused on the source material contamination. It is extremely important that EPA select and implement the appropriate remedy to remove the source area free phase contaminants and perform the remedy as quickly and efficiently as possible.

Other Alternative Remedies

Alternative S4 is the appropriate remedy for SWMU 10. The other proposed alternatives for addressing the contaminants in the Source Area are unacceptable because they would leave the contaminants in place. Even with solidification of the waste or isolation of the waste, the potential threat to groundwater from the waste remaining in place in the Source Area is unacceptable.

Remedial Design

During the remedial design phase of OU-2, SWMU 10, EPA needs to focus on controlling air emissions of Volatile Organic Compounds and Semi-Volatile Organic Compounds and prevent the emissions from being released into the air as the free phase NAPL is mobilized and extracted from the source area. Controlling the toxic air emissions is critical to protecting the health of workers on the Escambia site as well as workers and individuals in the surrounding area. Adequate vapor collection systems and extraction systems, as well as monitoring devices, must be designed and required to be utilized during the remedy implementation phase.

EPA must also ensure during the design phase that techniques are developed and required to be implemented to control the NAPLs when the NAPLs are mobilized and brought to the surface to be recovered. Methods need to be employed that capture the mobilized NAPL waste so that the NAPL waste is not allowed to migrate out of the source area, contaminate additional ground water resources and contribute to additional ground water pollution.

EPA must be required to install and utilize sufficient ground water monitoring wells in all three ground water zones to track contamination movement and insure additional contaminants are not moving into the outer areas of contamination as a result of the implementation of the remedy.

Contaminants of Concern

The contaminants of concern associated with the Ground Water Operable Unit 2 consist of 16 chemicals. Each of the 16 chemicals has a cleanup level in ug/l based on Florida Department of Environmental Protection and Groundwater Cleanup Target Levels. All 16 of these chemical standards must be applied to the Escambia ground water contaminants as cleanup criteria. The chemicals are associated with the creosote and Pentachlorophenol used to treat the wood products, #6 diesel fuel used to dissolve and carry the Pentachlorophenol as a treating chemical and Dibenzofuran, a byproduct of the manufacturing process of Pentachlorophenol. The cleanup levels in ground water range from 0.2 ug/l for Benzo(a)pyrene, a component of creosote, to 140 ug/l for 2,4-Dimethylphenol, a component of Pentachlorophenol.

The ground water contaminants are present in the three aquifer zones impacted by the ETC site. These ground water zones consist of the surficial zone, low permeability zone, and main production zone. All three ground water zones must be remediated to the clean up levels for all 16 chemicals to ensure that the aquifer water quality is returned to its beneficial use of drinking water quality.

We appreciate the opportunity to comment on the proposed plan for the Escambia Wood Treating Company Operable Unit 2 – Ground Water SWMU 10.

Wilma Subra
Subra Company

Francine Ishmael
Frances Dunham
Citizens Against Toxic Exposure

Earth Ethics, Inc.
Environment, education, sustainability, and planning
www.earthethics.us

September 15, 2014

Erik Spalvins, Remedial Project Manager
Superfund Remedial Branch
U.S. EPA, Region 4
Atlanta Federal Center
61 Forsyth St. SW
Atlanta, GA 30303

Subject: Superfund Proposed Plan, Escambia Wood Treating Site, Operable Unit 2 - Groundwater

Dear Mr. Spalvins:

Thank-you for the opportunity to provide comments on the proposed changes to the remedy selected for Operable Unit 2 (OU) 2 – groundwater.

A representative from Earth Ethics, Inc. was present at the Tuesday, August 19th meeting held in Pensacola, Florida. At that time, several questions were posed and answered. These comments are being provided via hardcopy to ensure that Earth Ethics, Inc. initial concerns/questions are captured.

The questions were as follows:

1. With regards to the Steam Enhanced Extraction (SEE) and in situ Enhanced Bioremediation (ISEB) with SEAR/ISCO, if necessary, Earth Ethics, Inc. asked if the system was a closed loop system to ensure that there would be no escape of volatile organic compounds during the extraction process.

   EPA stated that the system used is a closed loop system and that air quality monitoring will be conducted on site to ensure that there would be no VOC's emissions released during the extraction process.

   Recommendation: *Earth Ethics, Inc. would like to request the placement of air quality monitoring stations off site as an extra precautionary method.*

2. With regards to groundwater monitoring during the extraction process, Earth Ethics, Inc. asked if there was groundwater monitoring currently being conducted and if additional monitoring wells would be put in place during the extraction process to ensure that there is no fracturing during the extraction process or incidents to further cause contamination.

   EPA stated that groundwater monitoring has been on going and additional monitoring wells will be put in place to ensure that the extraction process is effective as possible.

Recommendation: *Earth Ethics, Inc. would like to request that prior to moving forward with the extraction process that a map identifying the placement of monitoring wells (and air quality stations) be provided to all stakeholders.*

Based on the information provided at the meeting and a review of the associated literature, Earth Ethics, Inc. supports the use of SWMU 10: Alternative S4: Steam Enhanced Extraction (SEE) and in situ Enhanced Bioremediation (ISEB) with SEAR/ISCO as it is currently proposed.

Please do not hesitate to contact me with any questions you may have.

Mary Gutierrez
Executive Director
Earth Ethics, Inc.
850.549.7472

Spalvins, Erik

From: Spalvins, Erik
Sent: Wednesday, September 10, 2014 11:44 AM
To: Spencer, L'Tonya; fishmael@cate.gccoxmail.com
Subject: RE: Issuance of Proposed Plan for the Escambia Wood Treating Company Superfund Site in Pensacola (sent BCC: to prevent reply all)
Attachments: Escambia treating company unit conversion error in table causes about di....jpg

Francine,

In response to your question at the public meeting about dioxin in the groundwater, I misspoke and should have been more precise. I said we had not found any dioxin in the groundwater – I should have added "above drinking water standards". EPA sampled for dioxins in groundwater and did not find dioxins above any drinking water standards, but EPA did detect some dioxins in some groundwater samples. I will include a paragraph in the ROD Amendment that clarifies my statement and discusses the EPA's findings regarding dioxin in groundwater.

I recalled a similar discussion in 2008 and went back to look at the response to comments section from the 2008 ROD. There was confusion caused by a 2006 technical memo by an EPA contractor. This memo contained an error in the tables section that got misinterpreted throughout the document. EPA addressed this confusion in the response to comments from the 2008 ROD (which is copied below from the 2008 ROD).

After the meeting, Escambia County also contacted me with questions about dioxin detections in groundwater. Last week I created a figure to illustrate the error in the 2006 table for Escambia County and I have attached the figure to this email.

Response 7 from page 98 of the 2008 OU2 ROD:

> "Response 7 – EPA has not and is not ignoring dioxins. EPA has collected many samples for dioxins in groundwater. None of the calculated toxic equivalents (TEQs) exceed the MCL of 0.03 nanograms per liter (ng/L). The highest TEQ, 0.00014 ng/L, as detected in a sample from MW23I.
>
> The 2006 report referenced by commenter is titled "Technical Memorandum for the Remedial Alternatives for Groundwater at the Escambia Wood Treating Site". This report contains an error that has created understandable confusion with regard to dioxins in groundwater. The comparison of analytical data to state and federal standards (MCLs) was not based on consistent units of measurements. The units for the state and federal standards for dioxin were reported in micrograms per liter (µg/L) while the dioxin results were reported in nanograms per liter (ng/L). (1 µg/L equals 1,000 ng/L). As a result, the analytical results appeared to be 1000x greater than they actually are. Consequently, it appeared that there were numerous exceedances of the state and federal dioxin standards when in fact there were none."

Response 21 from page 108 of the 2008 OU2 ROD:

> "Response 21 – The cleanup action for the ETC Site is limited to Site-related compounds. There are number of constituents present in the ground water in the area and some are from other sources. Most of the constituents, although present, do not pose an unacceptable risk. The selection of COCs is summarized in the ROD.

Special note about dioxin: As discussed above, dioxin failed to exceed the screening threshold in the risk assessment and was therefore not considered a COPC. Subsequently, additional ground water samples were collected and analyzed for dioxin. As noted in Response 7, the reporting of this data is a source of understandable confusion in that the units for the state and federal standards were reported in µg/L while the dioxin results were reported in ng/L. (1 µg/L equals 1,000 ng/L). Thus it appeared that there were numerous exceedances of the state and federal standards when in fact there were none." (page 108 of the ETC OU2 2008 ROD)

I apologize for my misstatement and for the confusion on this issue. EPA would include dioxin as a COC for groundwater if the data indicated there was a risk of exposure to dioxin through the groundwater exposure pathway. If you have any questions, feel free to contact me.

Erik

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This is from page 95 of the pdf of the 2006 "Technical Memorandum for the Remedial Alternatives for Groundwater at the Escambia Wood Treating Site". This memo has caused confusion about the prevalence of dioxin in groundwater. The reason for the confusion is the use of inconsistent units in the tables. The regulatory standards are presented in micrograms per liter or µg/L. The results from monitoring wells are presented in nanograms per liter or ng/L, which are 1,000 times lower than µg/L.

Because the regulatory standards are not in the same units as the results from the monitoring wells, they cannot be directly compared. The MCL, for example is 3E-5 µg/L or 0.00003 µg/L. To convert µg/L to ng/L, you multiply by 1,000. So the MCL is 0.03 ng/L.

None of the dioxin toxic equivalents (TEQs) exceed the MCL of 0.03 nanograms per liter (ng/L).
The highest TEQ was found in well MW23I which indicates 0.00014 ng/L and is below the MCL.

These numbers are in ng/L or nanograms per liter.
The MCL for Dioxin is = 0.03 ng/L or 3E-02

Table 1-5
Summary of Groundwater Data- Phase III, 2004
Escambia Treating Company
Escambia County, Flordia

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	MCL SMCL	NAT SWSV	Region 9 PRG TAP Water	FL GWCTL	MW21I 1/23/2004 (90-100)	MW21S 1/23/2004 (60-70)	MW22D 1/22/2004 (191-201)	MW22I 1/22/2004 (60-70)	MW23D 1/23/2004 (188-198)	MW23I 1/23/2004 (130-140)	NWD4D 1/21/2004 (100-120)
DIOXINS/FURSNS (ng/L)											
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN					0.003 U	0.005 J	0.002 U	0.0032 U	0.0022 U	0.0014 U	
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN					0.0011 U	0.00078 U	0.0011 U	0.00097 U	0.0013 U	0.0014 J	
Heptachlorodibenzodioxin (Total)					0.003 U	0.005 J	0.002 U	0.0032 U	0.0016 U	0.0014 U	
Heptachlorodibenzofuran (Total)					0.0018 U	0.0035 U	0.0019 U	0.0019 U	0.0023 U	0.0012 U	
Hexachlorodibenzodioxin (Total)					0.0041 U	0.0029 U	0.0049 U	0.0038 U	0.0035 U	0.0032 U	
Hexachlorodibenzofuran (Total)					0.0012 U	0.00096 U	0.0012 U	0.001 U	0.0016 U	0.0016 J	
OCTACHLORODIBENZODIOXIN					0.0056 U	0.028	0.0078 U	0.0022 U	0.0028 U	0.0047 J	
OCTACHLORODIBENZOFURAN					0.003 U	0.0056 J	0.0024 U	0.0019 U	0.0018 U	0.0038 U	
Pentachlorodibenzodioxin (Total)					0.0016 U	0.0023 U	0.0024 U	0.002 U	0.0025 U	0.0028 U	
Pentachlorodibenzofuran (Total)					0.0018 U	0.0022 U	0.0017 U	0.0028 U	0.0025 U	0.0019 U	
Tetrachlorodibenzodioxin (Total)					0.0021 U	0.0015 U	0.0019 U	0.0022 U	0.0018 U	0.002 U	
Tetrachlorodibenzofuran (Total)					0.002 U	0.0014 U	0.0022 U	0.0022 U	0.001 U	0.002 U	
TEQ (Toxic. Equiv. Value, From I-Tef/89)	3E-05	5E-09	4.50E-07	3.E-05	0	0.00008 J	0	0	0	0.00014 J	
TEQ (TOXIC. EQUIV. VALUE, FROM WHO 98)	3E-05	5E-09	4.50E-07	3.E-05	0.00649086	0.00632736 J	0.00733102	0.00737741	0.00702846	0.00748785	
EXTRACTABLES (µg/L)											
1,1'-Biphenyl			30	**0.5**	10 U	10 U	10 U	10 U	10 U	150 U	[illegible]
2,4-Dimethylphenol		380	73	140	10 U	10 U	10 U	10 U	10 U	150 U	10 U
2,4-Dinitrotoluene		0.11	7.3	**0.05**	10 U	10 U	10 U	10 U	10 U	150 U	10 U
2,6-Dinitrotoluene			3.6	**0.05**	10 U	10 U	10 U	10 U	10 U	150 U	10 U
2-Methylnaphthalene				**28**	10 U	2 J	10 U	10 U	10 U	110 J	190
Acenaphthene		670	37	**20**	10 U	2 J	10 U	10 U	10 U	150 U	44

These numbers are in µg/L or micrograms per liter.
Micrograms per liter (µg/L) is 1000 times higher than ng/L.

Maximum Contaminant Level (MCL) for dioxin in different units.	
The MCL for Dioxin is =	0.00000000003 g/L
The MCL for Dioxin is =	0.00000003 mg/L
The MCL for Dioxin is =	0.00003 µg/L
The MCL for Dioxin is =	0.03 ng/L

Unit	Abbreviation	1 gram equals	1 nanogram equals
gram	g	1 g	0.000000001 g
milligram	mg	1,000 mg	0.000001 mg
microgram	µg	1,000,000 µg	0.001 µg
nanogram	ng	1,000,000,000 ng	1 ng

Appendix D. Public Meeting Transcript

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7 U.S. ENVIRONMENTAL PROTECTION AGENCY
8 SUPERFUND PROPOSED PLAN
9 ESCAMBIA WOOD TREATING COMPANY
10 SUPERFUND SITE
11 OPERABLE UNIT 2 - GROUND WATER
12 PUBLIC MEETING
13 AUGUST 19, 2014
14 NEW HOPE MISSIONARY BAPTIST CHURCH
15 3600 NORTH PALAFOX, PENSACOLA FLORIDA
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25 Rebecca T. Fussell, Court Reporter

1 PRESENTED BY:

2 L'Tonya Spencer, Community Involvement Coordinator/Public Affairs Specialist

3 Erik Spalvins, Remedial Project Manager

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1 MS. SPENCER: Good evening, everybody. My
2 name is L'Tonya Spencer. I'm the Community
3 Involvement Coordinator/Public Affairs Specialist
4 for the Escambia Treating Company site, and we
5 welcome you here tonight to talk about SWMU 10,
6 Operable Unit 2. I think I said SWMU right.
7 First of all, let me say that I'm sorry
8 for the delay. They had our handouts on lockdown,
9 so we had to go get them.
10 Tonight we are going to have the project
11 manager for the site, Erik Spalvins, who is going
12 to do a presentation on SWMU 10. This is the
13 proposed plan, and we are here to talk about what
14 we think will work.
15 And we invited you to this meeting
16 because it's part of our 30-day comment period. If
17 you don't get a chance to get your comments in
18 tonight, you can also send them in in written form,
19 and that information is on the handout that you
20 have.
21 Also, we do have a transcriptionist here.
22 So when we get to the question and answer or if you
23 have a question during Erik's presentation, if you
24 would, stand and say your name. And I have a mic.
25 I will run back here and get my calories burned and

1 let you ask your question or make your statement,
2 and it will be a part of the record.
3 First, I want the State, if you would
4 stand and introduce yourselves, if you want the
5 mic. Do you want the mic?
6 MS. RICHARDSON: My name is Nancy Richardson.
7 I am with the Florida Department of Environmental
8 Protection, and I have been the project manager out
9 there for -- I don't know how many years -- ten
10 years, maybe. I have seen a lot of progress.
11 MS. KULAKOWSKI: My name is Zoe Kulakowski.
12 I'm also with the Department of Environmental
13 Protection, and I'm the hydrogeologist. I have
14 been working on this project for many, many years.
15 MS. SPENCER: And we also want to introduce
16 our local government. Where do we want to start?
17 MR. BARE: Hi. I'm Charles Bare, City of
18 Pensacola Councilman.
19 MR. OLSON: Eric Olson, Assistant City
20 Administrator.
21 MR. WILKINS: I'm Keith Wilkins, the Director
22 of Community and Environment in Escambia County.
23 MS. SPENCER: Did I miss anybody? Absolutely.
24 We have to introduce you.
25 MS. HESTER: I'm Mary Louise Hester with

1 Senator Bill Nelson's office.
2 MS. BATES: I'm Tiffany Bates with Congressman
3 Jeff Miller's office.
4 MS. SPENCER: Okay. Is there anybody else?
5 MR. HAAG: I'm Tim Haag with the Emerald Coast
6 Utilities Authority.
7 MS. SPENCER: And I'm also going to have
8 Francine introduce herself because she's a
9 long-term community leader that I have been working
10 with for years.
11 MS. ISHMAEL: I'm Francine Ishmael. I'm the
12 Director of Citizens Against Toxic Exposure.
13 MS. SPENCER: Anybody else? Okay.
14 What we are going to do is have Erik do
15 his presentation. If you can, hold your questions
16 until the end. Like I said, because we have a
17 transcriptionist, to make sure that we capture all
18 of the comments and questions, if you will just jot
19 your question down until he's done.
20 He promised me that he would make it
21 short. So 20 minutes, 30 minutes?
22 MR. SPALVINS: I hope so. Thank you,
23 everybody.
24 I want to thank the New Hope Missionary
25 Baptist Church for hosting this and for helping us

1 out with this. They have been very helpful. I
2 will go ahead and get started.
3 Okay. Is that better?
4 All right. We already had kind of an
5 introduction in opening remarks.
6 Does that sound okay? I kind of hear a
7 little -- all right.
8 So I think you-all know basically the
9 layout of where we are. We are located down here.
10 This is Pensacola, of course. The Escambia site is
11 here. The Agrico Superfund site, which some of you
12 are familiar with, is down on the other side of the
13 railroad tracks. Then this little green area is
14 the -- oh, thank you. That's the extent of
15 groundwater contamination from the Escambia
16 Treating Company.
17 In the area, we have about six other
18 State waste sites, different types of facilities
19 that are being handled by the State. Of course, we
20 have the American Creosote Works Superfund site,
21 which is located down here. I like to orient
22 things.
23 What I'm going to do is I'm going to very
24 quickly go through the basic details of what we are
25 talking about. Then I will go a little more in

1 depth, and I will stop along the way in case
2 anybody has any questions, if there is a little
3 confusion.
4 The Superfund program is EPA's program to
5 identify, investigate and clean up hazardous waste
6 sites that have been abandoned. The law was passed
7 by Congress in 1980 and amended in '86. We
8 basically conduct two types of actions when we do a
9 clean-up. We have emergency response actions,
10 which are removal actions. Those are 100 percent
11 paid by the Federal Government.
12 We have remedial actions, which are
13 longer-term clean-ups, like the one in Escambia.
14 The clean-up action is 90 percent paid for by the
15 Federal Government and 10 percent paid for by the
16 State.
17 And then after we have finished with most
18 of our -- after we have finished with the clean-up
19 work, if the site continues to have work that needs
20 to be done to keep it safe, that's called
21 operations and maintenance. That's done by the
22 State. So I want to just kind of broadly cover
23 that. We call it the "Superfund pipeline." I
24 don't really like that name, but that's what we
25 call it.

1 The process for these sites is we
2 investigate the site. We call it remedial
3 investigation. Then we decide, okay. This is the
4 problem. What can we do to fix it? So when we
5 look at those different options, we call that a
6 feasibility study, so we are evaluating the
7 feasibility of the options.
8 Then we have the Remedy Selection
9 Process, which is where we pick the remedy for the
10 problem. We document that in a document called the
11 Record of Decision. You will hear that a lot. We
12 abbreviate that as the ROD.
13 This is the stage we are in now. In
14 between here, we have a proposed plan meeting where
15 we present a proposed clean-up plan to the public
16 to get your input and hear what you guys think
17 about it.
18 The remedial design happens after we
19 decide what we are going to do. That's where we
20 figure out exactly how big the pipes are going to
21 be, where the wells go and that kind of stuff.
22 Then we conduct remedial action, which is
23 construction. If we are moving dirt, like we were
24 here a few years ago, then it's excavators and dump
25 trucks. If it's groundwater, then it's usually

1 monitoring wells and injection wells. It's stuff
2 that you don't really see underground, but we are
3 still doing stuff. Once we achieve our goals, we
4 enter the operations/maintenance phase.
5 I will quickly go over the history at the
6 Escambia site because I want to keep it as short as
7 possible so that you guys can ask questions.
8 The site was abandoned in 1991. EPA took
9 some actions to stabilize the site in '91 and '92.
10 We then moved into the longer-term program, the
11 Remedial Action Program, and that's where we have a
12 division of the site into two operable units. We
13 do that to make it into smaller pieces so that it's
14 easier to work with.
15 We did an interim remedy, which was the
16 residential relocation, which was for the
17 communities here and the Escambia Arms Apartments
18 and the other two neighborhoods up north. We call
19 that an interim action, because when we are taking
20 that action, we know we have to come back and do
21 something else later.
22 The final remedy was selected in 2006,
23 and that was to build a containment cell to hold
24 all of this contaminated soil, bury it on the site.
25 And we extended the relocation so that we relocated

1 the folks in Clarinda Triangle as well. Both of
2 those relocations were optional. We had people
3 that opted out and decided not to be a part of it
4 on both of them. But in total, we have relocated
5 about 500 families.
6 Operable Unit 2 is groundwater, and that
7 is what we are here to talk about tonight. In
8 2008, we had a ROD for groundwater, and we selected
9 three different technologies dependent on how bad
10 the contamination was. We were going to use this,
11 that or the other.
12 In late 2008/2009, we found there was
13 more contamination, and it was more severe than
14 those technologies could handle, so that's why we
15 are here today. We have been -- since '08 and '09,
16 we have been investigating this, and we are now at
17 the point where we are ready to recommend a
18 clean-up for that. So let me do a summary of that
19 real quick.
20 So what we call "SWMU 10," it's an
21 abbreviation. It stands for Solid Waste Management
22 Unit No. 10. The reason they have this name is
23 because in 1990 when the site was investigated, the
24 EPA got there, and there were, you know, a place
25 here that had solid waste, a place there that had

1 solid waste, and they numbered these, so these were
2 solid waste management units one, two, three, four,
3 five.
4 Number 10 was a wastewater pond that was
5 used to hold creosote wastewater. And then after
6 they were done using it for that, they filled it
7 and used it as a landfill. That became the source
8 of all the groundwater contamination that we see
9 that goes down to the bayou.
10 I have a lot pictures of what that looks
11 like. It is something wherein we have to deal with
12 this part before we can deal with the rest of it.
13 The reason that we are in this position now is
14 because in '91 when the EPA finished their
15 clean-up, which is us again -- right -- we left a
16 big hole in the ground, and it was filled with
17 water in the bottom, so we couldn't get the
18 equipment in the bottom to sample it to see what
19 was there. So we were working along the edges of
20 it.
21 We developed a remedy that was
22 appropriate for those parts, but once we emptied
23 the bottom of that pit during the clean-up of OU1,
24 we realized -- we could finally get equipment
25 there, and we saw the contamination was much

1 greater than we had anticipated. So we are adding
2 a technology now.
3 What we are proposing is something called
4 "steam-enhanced extraction." The creosote wastes
5 that are down there are like an oily substance, and
6 you can try to pump them out with water, just a
7 regular extraction of water, but it won't come out
8 very quickly. So you can heat it up, and it will
9 move more quickly, just like washing your dishes
10 with hot water versus cold water.
11 So we used the steam and the heat. It
12 reduces the viscosity of the oil, and we were able
13 to remove it. We also have the ability to add
14 surfactants, which are like soaps, or co-solvents
15 to make it come out more quickly.
16 Once we get public input from everybody,
17 which the public comment period ends on
18 September 15th -- once we get everybody's input,
19 the EPA will prepare the final decision and the ROD
20 amendment.
21 And the ROD amendment from this year will
22 be combined with the one from '08, the ROD from
23 '08, and we'll combine those two documents and the
24 technologies that they selected in the clean-up
25 strategy for the site.

1 We hope, depending on the funding
2 situation, that we can start construction in 2016,
3 but the funding situation kind of drives
4 everything. So at that point, I'm going to show a
5 lot more details about everything we discuss. But
6 are there any questions at this moment?
7 All right. Let's go to the details. I
8 like to show these pictures to remind us where we
9 have been. I'm sorry we don't have a bigger image
10 here. But this is what the site looked like in the
11 mid 1980s. This was when the site was being
12 decommissioned. You can still see some buildings.
13 I have bigger versions of this picture.
14 This is what it looked like in 1990.
15 This was a stormwater pond -- I mean, this was a
16 wastewater treatment pond. This was an old
17 building that was back in the back. I'm sure we
18 have folks here that can remember in better detail
19 than what pictures I have here.
20 But they made coal tar. They made
21 treated wood for about 40 years. From '42 to '82,
22 they used creosote for most of that time. But then
23 they switched to pentachlorophenol with diesel fuel
24 for the last. The primary source of this
25 contamination is the wastewater where the liquids

1 were getting onto the ground or where they were
2 stored.
3 I will show you a couple of the pictures
4 of OU1. This is around '92. This is around '93.
5 These are the excavations that were left on this
6 site. This is where the SWMU 10 pond was located.
7 This is where the process area was, where they had
8 the big logs and the timbers on railroad cars, and
9 they would roll them into the pressure vessels and
10 then inject all the wood-treating chemicals with
11 the pressure vessels.
12 We already talked about the relocation
13 briefly. The final soil remedy, we built a
14 550,000-cubic-yard containment cell on site. I
15 have some pictures of that.
16 The main part of the construction was '06
17 to 2010. The EPA bought about 70 acres of
18 residential land as part of the relocation. That
19 is still owned by the Federal Government. We are
20 ready to transfer that to the State. We are
21 waiting on the State to finalize their negotiations
22 with the local government.
23 So the idea is -- and this is something
24 we have been working on since the late '90s. The
25 idea is the EPA goes to the State, and the State

1 goes to the local government, and the local
2 government develops Congress Park, an industrial
3 park, to upgrade jobs.
4 So the status of the soil, the clean-up
5 is we are finished with the soil clean-up. The
6 soil is safe for industrial use, for commercial
7 use, so it's ready to be redeveloped. We are just
8 kind of waiting for the process to happen,
9 administratively.
10 I like this picture because this kind of
11 summarizes -- this is the little picture that shows
12 the site in the '80s, and this is in 2010, I
13 believe. And this shows you what we did. This box
14 that I'm outlining is about the extent of the
15 containment cell that we built. It's 18 acres.
16 It's about 30 feet thick.
17 One of the things the community told us
18 when we were designing this remedy is that they
19 didn't want to have a pile. They wanted it to be
20 level. So EPA and the DEP worked with the chamber
21 of commerce and the city and the county and made
22 sure we built it in a way that could be used for
23 construction later on.
24 The red area here is the SWMU 10 area
25 that we are concerned with today. This is kind of

1 what it looked like in the mid '80s. It has
2 already been filled. It was used as a landfill.
3 This is what it looked like after we were done with
4 OU1.
5 So now we get to the groundwater. The
6 groundwater negotiations began back in '82. EPA
7 was in charge of those investigations from '94 to
8 2007. In 2008, like I said, we decided what the
9 remedy should be for the groundwater plume, and we
10 selected three technologies, institute chemical
11 oxidation, which is injecting something into the
12 aquifer, so you are not moving the water out of the
13 aquifer. You are injecting something into the
14 aquifer. It's in situ, which means it's in place.
15 Chemical oxidation means we put chemicals
16 in there to oxidize stuff. You hear about
17 antioxidants that you have in your diet or
18 OxiClean. OxiClean oxidizes stuff. So we are
19 injecting things that oxidizes chemicals that are
20 in there.
21 Enhanced biodegradation was the
22 less-concentrated material, the less-concentrated
23 plume. The way we were going to execute that was
24 by injecting oxygen into the aquifer so the
25 microbes that are already there can heat the

1 contaminants that are there.
2 We have done pilot studies. We have had
3 really excellent results. I don't want to get into
4 details on that, but I have some information on
5 that if you are interested in that.
6 Then once the contamination gets below a
7 certain point, you can let monitored natural
8 attenuation take it the rest of the way. So this
9 is the layout of how that was going to work, the
10 2008 remedy.
11 We have a small area here, which was
12 going to be the ISCO area, and then this larger
13 orange area, which was going to be where we did the
14 enhanced biodegradation. Then the yellow area is
15 where we were going to eliminate.
16 So we initially had been planning to do
17 several injections, different ways of injections of
18 this area at the railroad track. Under the
19 railroad track, we had an injection line that goes
20 under the railroad's holding yard. We have about a
21 1500-foot line that is about 100 feet deep that we
22 installed that goes under that. We injected oxygen
23 for a period of time. That worked very well.
24 This is what the concept was: The area
25 that we are dealing with is just right here at the

1 very beginning of the contamination.
2 One thing I will say real quick about the
3 size of this plume, what we just saw with the big
4 storm that happened in Pensacola is that the water
5 levels can go up and down. The ponds -- there is
6 more water in those ponds now than there was before
7 these floods because the aquifer has come up.
8 So the aquifer -- the direction of the
9 groundwater, it moves a little bit, a little bit
10 this way and a little bit that way, depending on
11 how much rainfall there is. So when you see a
12 plume this size, the reason it's spread out over
13 such a big area is because over the decades, the
14 groundwater moves this way for a little while, and
15 then it moves a little bit at different angles, so
16 that is just something that I have learned about
17 groundwater.
18 This is a side view of the cross-section
19 of the plume. This is the source area. This
20 represents the excavation, and the railroad is
21 here. The interstate is here. These are the
22 neighborhoods that go down to the bayou.
23 What happens is the groundwater gets
24 contaminated with the source area, and then it
25 flows generally down. Because it moves toward the

1 bayou, it goes down. Then as it gets closer to the
2 bayou, it starts to come up.
3 We have done studies in the bayou. We
4 haven't seen any impact from this site in the
5 bayou. I think the natural degradation is breaking
6 it down before it gets to the bayou. This is
7 another look at that. This is the site. The
8 general clean-up line is here that moves to the
9 bayou, and this is different layers in the aquifer.
10 So the area that we are concerned with
11 here again is represented with this little orange
12 spot. So this is a bigger picture that shows where
13 we found this. It's basically what it looked like
14 in the '80s. This is what it looked like when we
15 excavated it. So this was during the OU1
16 excavation.
17 We were digging in this SWMU 10 area, and
18 we got to the bottom of it. We were pumping water
19 out of it so that we could get to it. So we
20 started excavating. This is black-stained sand.
21 The white color you see around here is the natural
22 color of the sand. The black is from the creosote.
23 I have a bunch of pictures here that I
24 want to show you to kind of show you what it looks
25 like because I can't take you-all down there and

1 show you what it was like.
2 We did several investigations. We did --
3 I don't know -- 70-something soil borings. We used
4 a laser tool. It is called TarGOST. The way that
5 it works is it pushes a rod down into the soil, and
6 a laser comes out of the side of it. When that
7 laser hits the creosote, it reflects back different
8 colors. So it's like the back of a cat's eyes or
9 something. When you hit it with a flashlight, it
10 reflects back at you. It's like that.
11 So we used this. It gives you -- as you
12 push through the -- down through the aquifer, it
13 tells you how much creosote you have. It shows you
14 what the results are and like that. This is one of
15 the soil borings we did in February of '92. This
16 is sand that should be white or brown/tan. And
17 it's just completely saturated with creosote.
18 This is a turkey baster. We were
19 actually able to hold the soil. It comes out in
20 this bag. The geologist was using a turkey baster
21 to move it around. It's really gross. And you can
22 see this one has totally creosote on it. This is
23 what the oil looks like. You just open the soil
24 core. It just kind of puddles.
25 This is a bigger view of that. These

1 soil cores are about -- the section you are looking
2 at here is about five feet long, and it's about six
3 inches in diameter. It comes out looking like
4 that. They cut it open, and you can see the layers
5 of the soil and how the creosote moves in certain
6 layers and not in others. This is an area that is
7 not as stained. This is the clean sand, and there
8 is just a little lens there, for some reason, that
9 it wants to move through.
10 I will show you a quick cross-section of
11 an excavation. This is from here toward the
12 railroad track. This is the ground surface here.
13 These are the wells. All of these different colors
14 indicate different geological strata, layers in the
15 aquifer. And this is the TarGOST result that we
16 get.
17 So the line -- when the line is all the
18 way -- the bigger the line is horizontally, then
19 the greater the signal is from the TarGOST
20 instruments. So it's saying there is a lot more
21 creosote contamination here.
22 So the red areas are the areas we have
23 really the worst creosote contamination. So you
24 can see we have a zone about around here. This is
25 about 80 or 90 feet below ground surface where we

1 have -- the worst creosote pictures that I showed
2 you, this is what we are dealing with.
3 So any questions about that aspect? Yes,
4 ma'am.
5 MS. THOMAS: What town and what area is that
6 located in?
7 MS. SPENCER: Can you state your name, please?
8 MS. THOMAS: My name is Bea Thomas.
9 MR. SPALVINS: Let me show you the map. It's
10 at the very beginning. This map shows it as well.
11 This is Pensacola. This is -- our location right
12 now is down here. This is Palafox Street. This is
13 the former wood treating plant, and the area we are
14 showing you the pictures from is right here. So
15 that's up on Palafox Street. Between the site and
16 the railroad is where we are seeing, and then this
17 is Bayou Texar. Does that answer your question?
18 MS. THOMAS: What site? You're saying the
19 site right here.
20 MR. SPALVINS: The name of the site is the
21 Escambia Wood Treating Company in Pensacola.
22 MS. THOMAS: Really, to be honest about it,
23 Pensacola/Escambia County is in a hot mess. These
24 plants and these landfills and all these places are
25 just killing people, and it has been such a secret

1 that everybody is so greedy in love of money, that
2 it is causing death to innocent people.
3 So what you are telling us here tonight
4 is that there is a problem and issue that you-all
5 are trying to clean up, or you already have cleaned
6 it up or have packed it up or whatever you are
7 trying to do. Let the people know the truth about
8 the real thing. Too many hands are in this. There
9 is too much covering up in Escambia County.
10 Somebody's greed is taking charge of other people's
11 innocent lives. Let's just be honest about it. We
12 are contaminated all over in Escambia County, and
13 nothing is being done.
14 MR. BOWLING: Good afternoon. My name is Eric
15 Bowling. What I would like to ask you about the
16 particular site is that you just stated that your
17 sampling came 80 feet to 90 feet below natural
18 grading, if I followed you correctly?
19 MR. SPALVINS: The worst of the contamination
20 at this site is around that depth, but it continues
21 deeper than that.
22 MR. BOWLING: And the vibration flow is south
23 toward Bayou Texar?
24 MR. SPALVINS: Yes. The plume moves from the
25 site in a southeasterly direction towards the

1 bayou, yes.
2 MR. BOWLING: Now, we are talking about an
3 enormous site for clean-up, especially when we are
4 talking about the groundwater aquifers and all of
5 the actual wells that are siphoned to ground zero
6 at the actual site and through the migration of the
7 site. Do you have a specific plan of how you are
8 going to attack the clean-up?
9 MR. SPALVINS: Yes. What we are here for
10 tonight, the purpose of this meeting is to
11 introduce what we are going to do in the source
12 area, the area right in the head of the
13 contamination.
14 In 2008, we introduced a plan to deal
15 with the groundwater plume. After 2008, we found
16 that we had worst contamination than we expected at
17 the beginning of it. So the technologies that we
18 had chosen in 2008 wouldn't get it clean. That's
19 why we are here today saying, you know what? We
20 need to do something additional, and this is what
21 we propose to do.
22 MR. BOWLING: Was there a follow-up survey
23 done immediately after the flood here because I'm
24 sure the aquifers and the migration are larger than
25 what was presented today?

1 MR. SPALVINS: After the flood, I came down,
2 like, two days later and investigated and visually
3 inspected the site. Then about, I think, a week or
4 two later, we had a group of people from EPA in
5 Athens come down, and we did a groundwater survey
6 where we measured the water levels of the
7 groundwater. And we did every well we have out
8 here. It's more than 60 wells. They go all the
9 way from the site to the bayou and on the other
10 side of the bayou.
11 The basic result of that, the first thing
12 we saw immediately was that the shallow aquifer had
13 raised 15 or 20 feet as a result of the floods.
14 That was more pronounced where there were big
15 stormwater ponds, like the big excavations at the
16 Escambia site. So we know that there was an
17 increase in the water flow.
18 What we saw was the water levels in the
19 surficial aquifer increased over a period of three
20 or four weeks. We were checking them right at the
21 site on a regular basis about every two or three
22 days.
23 So we saw that the water levels were
24 increasing. It took a few weeks before they got to
25 their highest point. Then they started to recede.

1 As the surficial aquifer dropped, the intermediate
2 aquifer and the deep aquifer started to come up.
3 And this is a relationship we would expect to see
4 all over the county.
5 Now, the question about how has it
6 changed in contamination movement, we don't know
7 the answer to that yet, and we may not know an
8 exact answer in terms of ten more pounds or a
9 hundred more pounds went this way or that way just
10 because of the nature or the uncertainty that we
11 deal with, but we have been monitoring the
12 groundwater plume for decades here. We have a lot
13 of data.
14 MR. BOWLING: Well, when we look in this area
15 being 55 to 60 feet, has the contaminant coming in
16 passed your 80 to 90 feet projection?
17 MR. SPALVINS: At the site -- at our site, if
18 I can pull up this picture here, I'll show you a
19 cross-section of the aquifer levels. Because the
20 Escambia site is in the middle of town -- I
21 shouldn't say it's in the middle of town. Because
22 it's located at the higher elevation, it's about
23 90 feet above sea level.
24 And the layers -- the layers of aquifer,
25 we have about 40 -- 40, 45 feet, depending on how

1 much water is down there between the top of the
2 surface and the top of the groundwater. Then we
3 have a surficial aquifer, an intermediate aquifer
4 and a deep aquifer.
5 The deep aquifer goes down about 180 feet
6 at this site. I think I have gone too far ahead.
7 So we do have a clay called Pensacola Clay that is
8 located at the site. It's about 180 feet deep. We
9 did evaluate. We found it in several of our --
10 here you go -- several of our borings. This shows
11 approximately. This is where the Pensacola Clay
12 is. It's about 10 feet thick at minimum. The
13 contamination, the worst of the contamination is
14 much shallower than that. We have gone pretty deep
15 here, and we haven't found detections that low.
16 MR. BOWLING: So right now we can assume that
17 the contamination has gone a depth of 180 feet or
18 past 180 feet?
19 MR. SPALVINS: No, it has not. It has not.
20 MR. BOWLING: But most of your contamination
21 is where, at what level?
22 MR. SPALVINS: Well, maybe if I can get back
23 to the presentation, I have some more pictures, and
24 we can go into more detail. We have a whole series
25 of documents from the information depository, which

1 is with the Genealogy Branch Library that has the
2 detailed test results, pictures and maps. A lot of
3 that detail is there. If you have any questions
4 when we are done, we will come back to that. Okay?
5 Okay. So I have mentioned the studies
6 that we have that support the current decision.
7 These are some of the studies that I'm referring
8 to. We had a technical memo in 2010 that
9 summarized some of our field studies, and it
10 evaluated nine different technologies. That
11 document basically takes a look at several
12 different approaches and says maybe this one or
13 that one is not appropriate for this site.
14 The Focus Feasibility Study is a document
15 that has been evolving. We finished the first
16 draft in 2010. We had some issues and some data
17 gaps where we wanted more information, so we went
18 and did more field work.
19 Like I mentioned before, we have -- we
20 have done over 50 soil borings. We have done the
21 TarGOST study, and a lot of those efforts were done
22 in multiple steps. So we would go out and do 10 or
23 15 soil borings. Then we would evaluate the
24 results, and we would go back and do more soil
25 borings.

1 This is a process we go through step by
2 step to learn more because we always have more
3 questions. So we had money to do additional field
4 work in 2012, which we got started with in 2013.
5 We revised this feasibility study in 2013. We sent
6 it to the State, to the City and to the County and
7 got comments from them and input from them, and
8 then we finished the revision just recently in
9 advance of doing this proposed plan.
10 That Focus Feasibility Study is at the
11 library. It's on a CD. It's a pdf. We had three
12 treatability studies that we conducted to evaluate
13 oxygen, oxygen technologies and also
14 solidification, which is one of the options we
15 looked at for this.
16 In the Focus Feasibility Study, we
17 present an updated conceptual site model. This is
18 a big word that means very simply: Where is the
19 contamination? How bad is it? Where is it moving?
20 It's kind of the do what, why, when and where of
21 the site.
22 So the central site model is that we have
23 a source area that consists of thick areas of
24 free-flowing NAPL. NAPL is non-aqueous phase
25 liquid, so it's a liquid that doesn't dissolve in

1 water. It's an oily waste material left over from
2 the creosote process.
3 Some of these areas are four feet thick.
4 Some of them are 50 feet thick. I showed you the
5 picture of the soil core, and it was five feet
6 wide. It was completely saturated. That's what is
7 in the source area. So we think that we have
8 between 200,000 and 300,000 gallons of this
9 free-flowing waste oil product or oily product in
10 the source area.
11 The highly-adsorbed phase area is the
12 next area. It's less contaminated. It has stained
13 soils with this oily waste, but they are two feet
14 or smaller in thickness. And the oil doesn't flow
15 out of them.
16 So if you took a piece of this soil, it
17 would be -- it would look stained. You would set
18 it, and oil wouldn't ooze out of it. That type of
19 contamination, we call it adsorbed. It's stuck in
20 the soil particles in the sand. It doesn't move
21 out, but it continues to be a real bad problem for
22 creating more groundwater contamination.
23 The high-concentration plume is where you
24 have dissolved contamination, so there is no
25 visible staining, but you can smell that there is

1 contamination. It's above the drinking water
2 standards. This is the area where we have had good
3 success with the enhanced biodegradation. And the
4 dilute plume is where you're only about ten times
5 above the clean-up levels, and monitored natural
6 attenuation is going to get it to be clean.
7 So this is what it looks like from the
8 top down. The source area is the darker area here.
9 It's a three-dimensional shape, but I don't have a
10 good way to show that. There is a widespread area
11 of contamination in the source area near the top,
12 and then as you go deeper, it gets smaller.
13 The highly-adsorbed phase area is in this
14 shape. This is, you know, probably -- you know,
15 there is a line on this drawing, but it's something
16 that is -- it's inexact. It's an estimate. We put
17 lines on a map, but we kind of know there is
18 uncertainty in this because we are putting holes in
19 the ground that are 20 feet or 50 feet apart or
20 100 feet apart, and we are kind of guessing what is
21 in between.
22 Then the dilute plume and the
23 high-concentration plume are represented here with
24 the lighter colors.
25 The Focus Feasibility Study is where we

1 go through the first steps of the Remedy Selection
2 Process. We characterize the contamination. We
3 evaluate the risks. We set objectives for the
4 clean-up. What are we going to achieve with the
5 clean-up?
6 Then we look at the alternatives. What
7 are our choices to clean this up? We get rid of
8 the alternatives that are not going to work or are
9 not going to meet the legal requirements. Then we
10 compare these alternatives. Then EPA presents the
11 preferred alternative.
12 So to summarize the site list, which some
13 folks here mentioned earlier, as far as human
14 health, this is the groundwater. In this area
15 where the plume exists, everybody is on public
16 drinking water. There is no current exposure to
17 this groundwater. This groundwater contamination
18 is too deep for it to be a vapor intrusion problem
19 into people's homes. We do still have a legal
20 requirement to clean up this groundwater and to
21 make it so it could be drunk at some point in the
22 future.
23 So the ecological risks, we looked at the
24 risks of Bayou Texar. We evaluated some studies,
25 and we don't see any current impacts to the bayou,

1 but when we do the clean up, we are going to make
2 sure that there can't be any risks to the bayou
3 because we are going to clean up the groundwater.
4 So the way that we translate this into a resolve of
5 the clean-up is with our remedial action
6 objectives.
7 We have four of those here. Number one,
8 prevent further contamination of groundwater by
9 aggressively treating the source area and principal
10 threat wastes. That is a technical term that means
11 that this is a waste that is so contaminated that
12 it could contaminate a widespread area. That is
13 the principal threat waste. So when you have this
14 oily stuff, it could contaminate a lot of water.
15 That's principal threat waste.
16 We are going to prevent future human
17 exposure to contaminated groundwater by treating
18 the aquifer to meet health-based clean-up
19 standards. So in the future if somebody wants to
20 drink the groundwater, they can because we are
21 going to clean it up.
22 Eliminate the potential for future
23 degradation of natural resources from site-related
24 contaminants. This is like I said, we don't see
25 impacts in the bayou yet, but we are going to make

1 sure that there are none by cleaning this up. The
2 overall goal is to restore the groundwater to its
3 beneficial use, which is you would be able to use
4 it as drinking water.
5 UNKNOWN SPEAKER: (Inaudible) If you are
6 looking at this chart that you gave us with number
7 one, red, and then the second one there compared to
8 the kind of orangey-red and then the third --
9 MR. SPALVINS: Yes.
10 UNKNOWN SPEAKER: -- to the bright orange, if
11 you are looking in terms of space, does that sort
12 of equate?
13 MR. SPALVINS: I'm not sure I understand your
14 question.
15 UNKNOWN SPEAKER: You had those four points.
16 MR. SPALVINS: Oh.
17 UNKNOWN SPEAKER: And what I was asking, would
18 those essentially compare to what is on here in the
19 source area, the highlighted?
20 MR. SPALVINS: On this map, this is the same
21 that is in the proposed plan.
22 UNKNOWN SPEAKER: Yes.
23 MR. SPALVINS: The source area is the darkest
24 area.
25 UNKNOWN SPEAKER: Correct.

1 MR. SPALVINS: And the highly concentrated or
2 the highly-adsorbed phase area is this area.
3 UNKNOWN SPEAKER: So that would go to the
4 second point that you have on that slide?
5 MR. SPALVINS: In terms of remedial action
6 objective, like the goals of clean-up?
7 UNKNOWN SPEAKER: Yes.
8 MR. SPALVINS: Yes. This is the area --
9 UNKNOWN SPEAKER: If I can look at it in a
10 graphic way so that I can picture it in my head,
11 that is four areas, and the lighter orange would be
12 the fourth -- the third phase on your slide?
13 MR. SPALVINS: On this slide?
14 UNKNOWN SPEAKER: On that slide.
15 MR. SPALVINS: Yes. So I think what you are
16 saying is that the source area is this: "Prevent
17 further contamination of groundwater by aggressive
18 treatment." That's what we do in the source area,
19 that's right.
20 The "prevent future human exposure to
21 contaminated groundwater by treating the aquifer,"
22 that covers the entire aquifer that is affected by
23 this plume. That's not -- that's a goal for the
24 entire aquifer.
25 The "eliminate the potential for the

1 future degradation of Bayou Texar," that is really
2 for protection of the bayou, but we are going to
3 achieve that goal over the entire aquifer.
4 UNKNOWN SPEAKER: I just didn't know if that
5 was related.
6 MR. SPALVINS: Right. It's not intended to
7 be, right.
8 UNKNOWN SPEAKER: Is it possible that once we
9 did downgrading towards Texar from the elevation of
10 the initial site that the slurry of oily substance
11 can also leach through because we are going from a
12 semi-solid down to the bayou or Bayou Texar? Then
13 we get what is called leaching. The water
14 topography changes, and that slowly comes through.
15 There is a great deal of leaching, and that can
16 cause problems, too, because those are the places
17 we fish and recreate.
18 MR. SPALVINS: So the oily substance that I
19 talked about, which is the pictures that I showed,
20 that is in this area right under the pond, the
21 former pond. The worst of it is in that dark area,
22 and the other area is in the highlighted area.
23 Now, once you get past that area, we
24 don't see that kind of stained soil anymore. The
25 reason for that is because the oil, the creosote

1 oil does not move through the aquifer very quickly.
2 It gets kind of stuck and bound up in the soil
3 particles.
4 So it's kind of like a grease -- when you
5 are eating a hamburger, and you get some grease on
6 your shirt, there is a little spot of grease here,
7 and no matter how much water you put over it, that
8 grease stain doesn't go anywhere until you do
9 something to it with soap or something like that.
10 So that's the way this works.
11 UNKNOWN SPEAKER: Was anywhere else tested
12 north of Bayou Texar?
13 MR. SPALVINS: Yes.
14 UNKNOWN SPEAKER: We have manufacturers who
15 have injection wells that pump north through the
16 aquifer. So when we had that high -- that
17 high-flood level rain, those injection wells are
18 steady pumping stuff, and much of that stuff could
19 have gone north of the site.
20 MR. SPALVINS: I don't have a picture of all
21 the monitoring wells in the network in this. I
22 don't think I have a picture of it, but I will try
23 to get a picture of it so that I can show you.
24 Well, I may not be able to find one very quickly.
25 I will show you one later.

1 We have wells that are all around the
2 area. We have wells to the north, to the east, to
3 the south. We have wells that are situated all the
4 way around this. Does that answer your question?
5 UNKNOWN SPEAKER: Kind of, sort of.
6 MR. SPALVINS: So let me get back to this. We
7 are almost through this, I swear. We looked at
8 many alternatives in the beginning, but we whittled
9 it down to three alternatives that we evaluated for
10 this.
11 Alternative S2 was containment with a
12 barrier wall. What that means is around the source
13 area and the high-concentrated area, we build a
14 wall around it, and we try to keep this material
15 from moving. The estimated cost of that was about
16 12-million dollars. It would take six to nine
17 months to build.
18 The second or the next one we evaluated
19 was containment in the source area using deep-soil
20 mixing. That's where we would use an auger to mix
21 all the soil from the source area with cement.
22 It's very expensive, but all the contamination is
23 bound up in cement.
24 Outside of that area, in the
25 highly-adsorbed phase area, we would use what the

1 engineers surfactant-enhanced aquifer restoration,
2 which is a big word for we are going to extract
3 using surfactants, like soap, type reactions to
4 pull that stuff out. That was an estimated cost of
5 about 25-million dollars because the deep-soil mix
6 is very costly.
7 Alternative S4 is steam-enhanced
8 extraction where you inject -- you install a
9 network of injection wells and a network of
10 extraction wells, and you gradually heat the
11 aquifer, and you are pumping out of the aquifer at
12 the same time.
13 So you are removing all this stuff. You
14 use the heat and the steam to make it easier for
15 that oily waste to come out of the ground. And,
16 also, once it gets hot enough, it volatilizes some
17 of these things, so we have an extraction system
18 that is pulling out oily material, dissolved
19 materials and vapors. The cost of that is about
20 14-million dollars total.
21 In the highly-adsorbed phase area, we
22 would use a surfactant-type technology to extract
23 the contaminants out of there. This was about a
24 14-million dollar remedy. It would take a couple
25 of years probably to build. That's the one that we

1 are recommending as EPA's referred alternative,
2 steam-enhanced extraction in the source area.
3 The issues with the other ones are: The
4 containment wall, because the clay is so deep at
5 this area -- it's 180 feet deep -- building a wall
6 that can go all the way down there in a continuos
7 manner around it, it may be theoretically possible.
8 The people that make the machinery say it's
9 possible, but it's a little bit at the edge of the
10 capability of that technology. We don't want to do
11 something where we are not sure technically it's
12 possible.
13 With the stabilizing the whole thing and
14 mixing everything up with cement, it's very costly.
15 And at the end of the day, you still have a bunch
16 creosote in the ground.
17 The thing that we think is the primary
18 advantage of using the steam-enhanced extraction is
19 that we are going to pump out all this creosote and
20 get it out of the ground and send it off, and it
21 will be gone. So it will give us the best shot at
22 cleaning up the rest of the aquifer.
23 Yes.
24 UNKNOWN SPEAKER: When you say send it off --
25 MR. SPALVINS: Yes.

1 UNKNOWN SPEAKER: -- does that mean it is no
2 longer our problem or east of that where that
3 contaminated steam is coming out could have a
4 beneficial use?
5 MR. SPALVINS: Well, it's possible that it
6 could be recycled and that it could be used for
7 something. It might be used for fuel. There are
8 some sites where they recycle creosote. They
9 remove creosote here, and they use it to make new
10 creosote for railroad ties. They still make
11 creosote railroad ties.
12 I don't think that is really going to be
13 an option here. I think what will probably happen,
14 is it will leave here. It will be destroyed in an
15 incinerator-type situation where all the compounds
16 will be completely destroyed, and it would be done
17 in a monitored, regulated way so that there are not
18 error omissions happening. We are going to make
19 sure it's disposed of in a safe way.
20 The big difference between what they did
21 in 1940 and what we do now is that we keep track of
22 these things, and we make sure that things are
23 handled the right way. We are not going to give
24 this problem to somebody else.
25 The components of the steam extraction,

1 we extract the groundwater. We treat it. The
2 groundwater, we reject it in the ground. Recovery,
3 we have the enhanced biological treatment after we
4 get done with the extractions. After the
5 extractions are over, then we will inject the
6 oxygen for the microbes to help continue the
7 cleaning.
8 We can use chemical oxidants in there if
9 we would like. We can also use surfactants in
10 there if that helps with the extraction. So we are
11 talking about installing injection and extraction
12 wells over the area. It will look probably like a
13 chemical plant for a couple of years, but we think
14 this is the best option to fix the problem once and
15 for all.
16 So what that would look like, in the red
17 crossed hatched area would be the area we would be
18 doing the steam-enhanced extraction. Like I said,
19 this is a three-dimensional distribution, so our
20 wells would be targeting this in three dimensions
21 with different technologies. And in the yellow
22 area, we will use the surfactant-enhanced
23 extraction to kind of wash the stuff in place and
24 get the stuff out of there.
25 Yes.

1 MR. ROSS: My name is Kyle Ross. I'm curious
2 about the -- a little bit more detail about what
3 these injection/extractions wells will physically
4 look like. You said it will resemble something
5 like a chemical plant. Scope and scale, what is
6 the operation going to look and sound like,
7 anything like that?
8 MR. SPALVINS: There shouldn't be a lot of
9 sound involved. What we would see is we would see
10 a series of injection and extraction wells. They
11 would probably come off the ground about three or
12 four feet and then horizontal pipes that connect
13 one to the other, to the other. So there would be
14 a network. It shouldn't be 50 feet tall. But it
15 should be a series of wells connected with pipes
16 and cables and pumps. There will be a steam
17 boiler, which will be the size of a building.
18 There will be a treatment system that will be the
19 size of a building. It's like a house or something
20 that size.
21 It probably would cover the footprint of
22 the area we are dealing with, so we are talking
23 about a couple of acres, three acres. It will
24 cover that area.
25 This is, again, the picture. Let me just

1 talk briefly about how this is going to work with
2 the 2008 ROD. In the 2008 ROD, we have the dilute
3 plume. Monitored natural attenuation it is not
4 changed by this. The high-concentration plume was
5 enhanced by remediation. That's not changed.
6 In the original ROD, this highly-adsorbed
7 phase area had a different name. We thought that
8 was the worst of it, but we found out it got even
9 worse. So we were adding technology. The chemical
10 oxidation and biodegradation, we are going to add
11 this surfactant-enhanced restoration. Then in the
12 source area, this is all new with the ROD
13 amendment.
14 That, I believe, is the end of my
15 presentation. I'm ready for all questions.
16 MR. BOWLING: Eric Bowling. You say there is
17 a three-phase or a three-component tier to the
18 operation, and then some parts you are using a
19 detergent to actually do soil washing. Then the
20 others, you didn't identify that you are going to
21 use the concrete.
22 MR. SPALVINS: Let me clarify. We had three
23 different alternatives we looked at. One of them
24 was to mix it with concrete. One of them was to
25 put a wall around it, and one of them was to get it

1 out of the ground. The one that we selected --
2 that we proposed is to get it out of the ground.
3 We are not proposing to use the concrete. We are
4 not proposing to build a wall around it. We are
5 proposing to extract it out of the ground.
6 And we are going to use steam to do that.
7 And then at the point where the steam doesn't make
8 sense to use, then we will use the surfactants.
9 It's like soap, but these are chemicals that are
10 engineered for this purpose. There are lots of
11 different names, and there are patents and all
12 this. So I don't know exactly which ones we are
13 going to use. We are going to pick the ones that
14 will work. If we need to use a co-solvent or a
15 solvent, we are going to use that.
16 Basically, this is like a kitchen sink
17 approach, where we have a tool kit, and we are
18 going to use everything in the tool kit to extract
19 this out of the ground.
20 MR. BOWLING: In doing so, have you identified
21 the method that we are going to use to take into
22 consideration the residue from the detergents that
23 is not surfactant?
24 MR. SPALVINS: That will be something that we
25 will make sure that any residues are safe and that

1 they will not be incompatible with the drinking
2 water later on or with the next step in the
3 process.
4 So the process is we heat it. We use
5 surfactants, if we need to. Then we add oxidants
6 to get the microbes going. So we want to make sure
7 that whatever is there going to be good for the
8 microbes to continue to do their job. So there are
9 biodegradable surfactants that will be used, and
10 that is the kind of thing we would be looking at.
11 UNKNOWN SPEAKER: I don't have a question. I
12 just wanted to go back to the slide a little bit.
13 MR. SPALVINS: This one?
14 UNKNOWN SPEAKER: Sorry. That one, I just
15 wanted to see that.
16 MS. BATES: Hi. Tiffany Bates. I have a
17 question. The dollar amounts that are quoted on
18 each one of the proposals, once a decision is
19 agreed upon by the community and the EPA, have
20 these dollars been appropriated yet, or do they
21 still need to be appropriated?
22 MR. SPALVINS: The estimates that we use at
23 this stage because we don't know exactly where
24 everything is, so we expect these estimates are
25 accurate in a broad range. Basic range is minus 30

1 percent plus 50 percent.
2 After we go through the design, then our
3 ability to understand what the range will be, will
4 it get smaller, we won't actually request funding
5 until after the design is finished.
6 And I will tell you that even after we
7 start construction that the costs change. They
8 certainly have, for the other work we have done out
9 here. I will say that we have been fortunate that
10 we have been able to get funding to do the work out
11 here on the other parts of the site. So I think
12 that is a good indicator that we will have a
13 positive outlook for funding. But having said
14 that, the fundings are uncertain.
15 MS. GUTIERREZ: My name is Mary Gutierrez.
16 Has this methodology ever been used before, and if
17 so, where, and how successful was it?
18 MR. SPALVINS: One of the first instances of
19 this technology and wood treater was at the site
20 called Visalia Poleyard, and it was used. It was
21 very effective, and they were able to obtain the
22 groundwater throughout the site. This is the
23 technology that has been used at more and more
24 sites. I can't tell you exactly how many wood
25 treaters there are that this has been used at

1 successfully, but the advantage of this technology
2 is you know you are getting this out. So it's a
3 matter of getting -- moving enough water, moving it
4 with the right amount of steam.
5 MS. GUTIERREZ: And as far as the methodology,
6 you mentioned there would be vapor extraction also,
7 but I'm assuming it's going to be contained. This
8 is not going to be released into the atmosphere?
9 MR. SPALVINS: Right. One of the first steps
10 you have to go through when you do this kind of
11 extraction with heat is that heat makes things more
12 volatile. So the first thing you have to do is you
13 have to have a good hydraulic control to control
14 the groundwater around the area you are treating so
15 that it's not escaping out.
16 Then you have to put like a cap over the
17 system and put a vacuum on it. It's similar --
18 it's similar to like a soil vapor extraction system
19 where you are just putting a vacuum on the soil so
20 that any vapors are getting pulled. It would
21 typically be something that involves a carbon
22 treatment for that kind of operation.
23 MS. GUTIERREZ: I might have one more question
24 after this. So there is going to be ongoing
25 monitoring while this process is going on. Is that

1 going to be through existing wells, or will there
2 be additional wells?
3 MR. SPALVINS: Additional wells and existing
4 wells. We have about 65 now. I plan to put in
5 more probably next year if I can get the funding
6 lined up because it's a big plume, and you always
7 need more information.
8 But at the same time, I don't want to
9 spend a lot of time studying this in depth when we
10 can start doing clean-up. So we have to make a
11 balance making a decision about the clean-up when
12 we don't have perfect information. It costs so
13 much money. Some of these wells are $10,000 a
14 piece. So we can start to do the clean-up and
15 install the wells at the same time.
16 MS. GUTIERREZ: This is my --
17 MR. SPALVINS: I'm sorry. On the extraction,
18 I think that we are talking about more than 50
19 wells, more than 80 wells. We are talking about
20 installing wells that can be used to inject, that
21 also can be used to extract, that can be used to
22 extract oil or water or vapor. So you're
23 installing wells that can be used for multiple
24 purposes and the density. So the wells are maybe
25 going to be 20 feet and created over a couple of

1 acres. So there will be a lot of wells.
2 MS. GUTIERREZ: In regard to the plume -- and
3 maybe Tim can answer this. As far as drinking
4 water wells, there is ongoing monitoring in regards
5 to the wells being -- making sure they are not
6 being contaminated or compromised or things of that
7 nature?
8 MR. SPALVINS: So the water supply is handled
9 by ECUA, and they have a robust monitoring system.
10 I have been to their lab. It's a great monitoring
11 lab. They built it just a few years ago. And they
12 monitor all of their production wells to make sure
13 they are meeting all of the groundwater standards.
14 We have wells that are between this plume
15 and the next ECUA well, and we don't have any
16 evidence that it's moving that direction.
17 So having said that, there are a lot of
18 different sources of groundwater contamination in
19 Pensacola. This town was developed in the '40s,
20 and that is when we invented -- as a society, we
21 invented a lot of chemicals, and we didn't have
22 rules to handle them. So they are not just worried
23 about my site. ECUA is monitoring -- they are
24 making sure the gas stations aren't a problem.
25 They are making sure the fertilizer plants aren't a

1 problem. So I would think that you don't have
2 anything to worry about in terms of the safety of
3 the public water supply. That is what I drink when
4 I'm in Pensacola, so I don't think there is a
5 problem.
6 MS. GUTIERREZ: Thank you very much.
7 MS. ISHMAEL: Francine Ishmael with Citizens
8 Against Toxic Exposure. I have a couple of
9 comments and a few questions.
10 It's good that EPA is finally considering
11 remediation (inaudible). We have been urging EPA
12 to address this issue for over 20 years. So I'm
13 really, really excited that you guys are finally
14 going to do some remediation with the groundwater.
15 We certainly look forward to analyzing
16 the new data and the preferred methods so that we
17 will able to present a well-rounded comment during
18 the public comment period.
19 The question that I have is: Would the
20 preferred methods remove the elevated levels of
21 dioxin that EPA has found?
22 MR. SPALVINS: On the question of dioxin, we
23 have not found dioxin in the groundwater. We have
24 found dioxin in the soil. There is a large amount
25 of evidence about where to sample the soil and

1 clean that up, and we have a confirmation sampling
2 of that information.
3 In terms of the groundwater, we don't see
4 any dioxin in the groundwater. We have checked the
5 groundwater for dioxin. Dioxin is a chemical which
6 prefers to be adsorbed to something that is solid.
7 It does not like to be dissolved in water.
8 MS. ISHMAEL: What about other contaminations,
9 other contaminants found? Would this method remove
10 those contaminants as well?
11 MR. SPALVINS: The technologies that we are
12 proposing is going to take care of all the
13 chemicals in the wood treating plant. This is not
14 going to address chemicals from the Agrico plant.
15 The oxidizing -- a way of thinking about it is the
16 type of chemistry where you are providing the
17 microbes oxygen to consume. That is a chemical
18 pathway that will successfully help break down
19 other contaminants that are in the plume. So if
20 there is a plume from a gas station that happens to
21 be there, it will address that. But we are not
22 able to use this technology to target those. The
23 way that the funding works is we are only allowed
24 it to use it to address contaminants from the
25 Superfund site. So I think it will have beneficial

1 effects on other sources of contamination, but we
2 can't make it a part of this.
3 MS. ISHMAEL: You may have already answered
4 this question regarding the proposed method of
5 transferring toxic contamination to air and water.
6 You still have this church that is still very
7 active. You still have bordering neighborhoods
8 that were not part of the relocation. How will
9 this method affect those people not to further
10 create any additional health problems that this
11 community has already been burdened with from this
12 site?
13 MR. SPALVINS: The extraction of the source
14 area, the extraction of this material out of the
15 source area, that should not have an immediate
16 effect in a negative way on any areas because we
17 are just pulling this material out. And when we
18 pull it out, we are going to handle it in a way so
19 it's not going to get into the area. It's not
20 going to get into the source area. It's not going
21 to move offsite.
22 This will result in a faster clean-up for
23 the downgraded plume because we are taking care of
24 the source of it. I don't think it will be a
25 negative impact in terms of groundwater, if at all.

1 MS. ISHMAEL: Regarding the boundaries of the
2 Escambia Treating site plume of contamination, has
3 it truly and adequately been defined how far these
4 boundary lines go as far as that contamination,
5 because I know that when we were detailing with the
6 Escambia Treating Site on the initial contamination
7 issue, the site was fence-lined. The contamination
8 was fence-lined to the Escambia Treating Company.
9 Then we were concerned about the neighborhood
10 across the street, which is the Clarinda Triangle.
11 Have you considered further west of that
12 area of possible contamination, such as Clay Street
13 and Kelly Avenue because I have had concerned
14 residents from those areas that talked about the
15 water being contaminated, the smell, the dark stuff
16 showing up, the runoff? Have you considered that
17 area as a possible extension of the initial site?
18 MR. SPALVINS: We have wells that are
19 up-gradient of the source area in Escambia, and the
20 water-flow direction is very evident and
21 consistently towards the bayou.
22 There are other sites that have
23 contaminated groundwater in the area. The State is
24 investigating one on Beggs Lane right now. There
25 are old gas stations. They just tore down one

1 where the tire shop was, or they just did it four
2 to five year years ago.
3 If somebody thinks they have groundwater
4 contamination or a problem, then they need to
5 follow up with the Department of Health, with the
6 County. They need to consider sampling. Sometimes
7 the State Department of Health can help people with
8 that and do a sampling for them.
9 But in terms of it being part of the
10 Escambia site, I'm pretty comfortable that we have
11 the boundary on the up-gradient side well defined.
12 In terms of when you go down-gradient, some of our
13 wells are several hundred feet apart. It is
14 possible that there are points of contamination
15 that are outside the colored lines that we have on
16 the maps.
17 But the fact of the matter is everybody
18 in the region in the broader area where the plume
19 is on city water. And we could put wells every
20 100 feet. I don't think that we want to pay for
21 that. But we would rather just get started doing
22 the clean-up. We have enough information now to do
23 the clean-up, and that is what we want to do.
24 MS. ISHMAEL: The other part -- this is my
25 last question. Regarding residents (inaudible).

1 MR. SPALVINS: In the plume area, we are not
2 aware of any. We did a little survey many years
3 ago. There may be irrigation wells. If somebody
4 is using a well for irrigation, it's a different
5 risk calculation because you're not bathing in it.
6 The main contaminant is naphthalene, and the main
7 way you get exposed to it is if it's in your water
8 supply. It's in your shower, and it absorbs in
9 your skin, and you inhale it. And, also, by
10 drinking it, but because of the volatilization,
11 naturally, you breathe in water when you take a
12 shower and water.
13 There may be people using wells for
14 irrigation. They have a right to do that. I think
15 the State regulates this. But the State is not
16 going to -- there are ways you can still have a
17 well and use it for irrigation near a Superfund
18 site. People do it. It's not a great idea. I
19 don't recommend it, but I don't think there is
20 anybody drinking the water.
21 MS. ISHMAEL: Thank you.
22 UNKNOWN SPEAKER: Are the wells all in
23 Escambia County? There is not any in the city?
24 MR. SPALVINS: Actually, most of the
25 groundwater plume is in the city. The facility

1 itself is in the city. It's part of the city
2 limits, so I would say that most of it is in the
3 city. We just say Escambia County because it's
4 also in Escambia County. We named the company
5 Escambia Treating Company so that probably leads us
6 to say Escambia rather than Pensacola, to answer
7 your question.
8 MR. ROSS: Kyle Ross again. Can you talk
9 about any kind of a timeline? I don't know if you
10 are able to predict how long of a process this is.
11 Installing these injection and extraction wells, do
12 you have any -- well, do you have any indication
13 how long it might take for that process to
14 complete, or is something that does complete?
15 MR. SPALVINS: So the time frame for doing the
16 design and asking for the funding, that is
17 something we do in 2015. We got the funding. We
18 probably have a period of time where we are finding
19 the strategy.
20 I have talked to the companies that can
21 do this kind of work. Some of them have said you
22 can build it all at one and extract everything all
23 at once. Some of them say, oh, two years, 18
24 months, a year, something in that range. But other
25 people have said it might make more sense to target

1 zones because it's a pretty big site to use this
2 technology. So it may make more sense to target
3 one area and then to move to another area and then
4 move to another area. Each area that you target
5 would probably take 18 months. So under that kind
6 of situation, it may be a multi-year process. So
7 that is something that we don't know the answer to
8 until we start talking to the people that implement
9 this technology.
10 After that part of the active extraction
11 of the source area, then I think we still have
12 another 20, 30 years of downgrading plume clean-up
13 that is going to take place before we get to a
14 point where it's clean.
15 It's the classic trade-off that we have
16 to make, which is we can clean it up very quickly,
17 but it can take a lot of money, and there are a lot
18 of sites that needs funds. So there is a process
19 where the EPA balances the needs of sites across
20 the country. We have been very lucky here. We
21 have been able to get funding.
22 MR. ROSS: My second question is: Once this
23 process at this site that is being proposed now,
24 assuming it goes according as planned, it sounds
25 like it's going to be several decades before it can

1 be declared clean, back to normal, normal? Am I
2 understanding that correctly?
3 MR. SPALVINS: I think that is an accurate
4 statement, yes.
5 One of the situations we have in the
6 strategy for this is there are other sites in the
7 area, the Agrico site, has a difficult plume to
8 clean up. So that one is going to take a long
9 time. These two plumes mix in some places. So
10 does it make sense to do one twice as fast as the
11 other one? There is a lot of balance in it. Then
12 we have the reality of the budgets.
13 We have a question right here.
14 MR. TAYLOR: Thank you. I'm Mark Taylor, city
15 of Pensacola resident. If I understood you
16 correctly, I was excited to hear that the OU1 area
17 is clean and that you-all are ready to turn that
18 over. That is the bulk of the land up there. If
19 you look on the map, it's 80 or 90 percent of the
20 site.
21 MR. SPALVINS: Right.
22 MR. TAYLOR: What is the hold-up on that and
23 say if the City did take ownership of it and start
24 developing it or whatever? How could that affect
25 your clean-up? You were trying to get to that one

1 earlier saying it's going to be very specific. As
2 long as there is access, I guess there won't be an
3 issue?
4 MR. SPALVINS: Right. The footprint of the
5 clean-up we're looking at here, I think is going to
6 be about four to five acres. It would be in the
7 corner of the property, around that area. We have
8 a fact sheet we did in 2012 about reviews for this
9 site. It's called for Ready for Use Fact Sheet.
10 It contains a couple of maps that show the
11 ownership of the property. We have about 70 acres
12 that are owned by the EPA. The former facility is
13 about 26 acres. The City already owns about a
14 third of it. The other two-thirds are owned by
15 private individuals. The City got that from the
16 County. The County transitioned -- transferred
17 that, plus some other properties to the City when
18 the City took the lead role in redeveloping it.
19 As far as the EPA's perspective, we are
20 ready to see the redevelopment happen and the
21 clean-up is finished. We are ready to get the rest
22 of the property. We already sent the rest of the
23 materials. It's just a matter of time.
24 I will say some of the strongest
25 interests in redevelopment has been from the

1 neighboring property owners that live with a piece
2 of this Federal property behind them. They don't
3 live there. They work there, and they would love
4 to expand their property. I have had at least ten
5 local businesses ask me about acquiring the
6 property right next to them. In the last six
7 months, three. I think that once it gets unstuck,
8 then we will probably have an opportunity to see
9 things move quickly.
10 MS. ISHMAEL: Are there any safeguards in
11 place to make sure that industry does not create
12 businesses up here so that we won't have to go
13 through this process again? Is it something that
14 is guaranteed that can't happen anymore? I'm
15 Francine Ishmael. I'm sorry. Can you tell me?
16 MR. SPALVINS: Well, what I can tell you is
17 that any business that goes up there is going to be
18 under the same laws as every other business in
19 Pensacola. And to the extend that they are
20 regulated by the State, by the County and by the
21 EPA, any new business is going to be regulated in
22 the same way.
23 Now, I can't promise you that somebody
24 isn't going to do something illegal. What I can
25 tell you that we have done on this federal property

1 is we put up restricted covenants in place so that
2 there is an enforceable restriction on how you use
3 that property. And if you don't use it
4 appropriately, then the State has the ability to
5 come after you in court and go after you for
6 damages.
7 And the EPA, we can -- if somebody does
8 something that really fouls things up, then we have
9 the ability to say, look, we told you don't dig
10 10 feet down, and you did, and you screwed
11 something up. Now you are in trouble. I don't
12 expect that to happen because the partners we are
13 going to have for redevelopment and come to the
14 table are going to understand. It takes a
15 sophisticated business to get involved in this.
16 There is an education that happens with the local
17 government, which has been very helpful with this,
18 and with the businesses that are going to be there.
19 They are going to understand their constraints, and
20 they are not going to -- I don't think they are
21 going to knowingly get into kind of future
22 problems.
23 MR. BOWLING: Eric Bowling again. The acreage
24 that we are talking about that you are going to
25 need for site preparation for the scope of work

1 that needs to be done, if you decide to go
2 individual grid as opposed to one major grid, then
3 you are going to need more additional land for
4 preparation and if -- I don't know what method you
5 are going to use for capping, whether you use
6 light-duty concrete or whether it's going to be a
7 neoprene or some sort of covering to harness the
8 vapor. You are going to need additional property
9 for that. Are we talking about from the
10 furthest-most northern part of the contamination to
11 the individual site?
12 MR. SPALVINS: This thing stopped working.
13 Well, I can describe it. The area we are going to
14 do the extraction on -- here we go -- is a small
15 area, relatively speaking. It's three-and-a-half
16 acres, two acres, three acres. It's in this area.
17 This map, which you may cannot see the detail of,
18 has the volume estimates and the areas by squares.
19 That is the worst of the worst. Okay?
20 So when were talking about phasing it, we
21 are talking about let's do this area first, and
22 then we will do this area, and then we will do this
23 area. The advantage of that, it makes the
24 treatment system smaller. So I think if we phase
25 the work, it will actually make the treatment

1 system smaller. It may not produce a footprint of
2 any meaningful amount because we are still going to
3 have to have some buildings over here. I don't
4 think it's going to mean it's a lot more space.
5 MR. BOWLING: If we using the technology that
6 you were talking about and the same process that
7 causes the actual soil to perk greater than what it
8 would normally be and that creates some spaces
9 within the soil sediments, are you going to -- if
10 you are going to do it individually by grid, by
11 separate grid, do the cap per separate grid, or if
12 you go in and you do the total thing, that means
13 you would have to cap the whole thing initially
14 first before we begin to do that.
15 MR. SPALVINS: That may be. We may build a
16 cap and cap the entire area first. That is
17 something that the experts would probably have to
18 do a design.
19 We have -- I have a lot of different
20 things that I know about, but there are people that
21 do only that, and that is the guy that can answer
22 that question. But in terms of making sure the
23 vapors don't escape, they will be in charge of
24 designing that, and they may design it the way you
25 suggest.

1 MS. SPENCER: Any other questions? If not, I
2 want to thank everybody for coming tonight. If you
3 did not get a chance, sign in so that we can make
4 sure we update our mailing list. Erik.
5 MR. SPALVINS: Let me just say I have a stack
6 of these proposed plans. We have a couple of
7 hundred total. If you want to take as many as you
8 want, you can but less than 15, please. On the
9 back of this, there is a form. There was a form.
10 MS. SPENCER: Erik is stealing my thunder.
11 There is a form on the back.
12 MR. SPALVINS: There is a form here that you
13 can use, and you can write your comments, and you
14 can fold it over, and you can send it to me or
15 L'Tonya in Atlanta. You can also get my business
16 card and e-mail the comments.
17 What we do with the comments is in the
18 ROD Amendment, we will take everybody's comments
19 and questions. We will have a written response to
20 those comments. And we will -- so you will see it
21 in black and white on the page what the response
22 is.
23 MS. SPENCER: Okay. Since Erik finished my
24 speech, thank you all for coming, and I appreciate
25 you. Thanks.

1 CERTIFICATE OF REPORTER

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4 COUNTY OF ESCAMBIA)

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7 I, Rebecca T. Fussell, Court Reporter, do

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9 stenographically report the foregoing proceedings;

10 and that the transcript is a true record.

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15 Rebecca Fussell

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