



# **ENVIRONMENTAL EVALUATION OF HAZARDOUS, TOXIC, AND RADIOLOGICAL WASTE (HTRW) SITES**

Prepared for:

**Mendrop Engineering Resources  
854 Wilson Drive, Suite A  
Ridgeland, Mississippi 39158**

Prepared by:



**6360 I-44 NORTH, SUITE 330  
JACKSON, MISSISSIPPI 39211**

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Figure 1: Alternative C and HTRW Sites

#### ATTACHMENTS

Attachment A – Bibliography of References

Attachment B – Photographs of the HTRW Sites



## 1.0 INTRODUCTION

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The Rankin-Hinds Pearl River Flood and Drainage Control District (RHPRFDCD) commissioned Allen Engineering and Science (AllenES) to assist in the preparation of an Environmental Impact Statement (EIS) in support of the Flood Damage Reduction project being proposed along the Pearl River in Rankin County and Hinds County, Mississippi. The project is being proposed to address current flooding issues faced by residential, commercial, and industrial properties along the banks of the Pearl River in Rankin and Hinds Counties. AllenES was commissioned to support the preparation of the EIS in regard to evaluation of environmental concerns related to chemicals and wastes that may be released from hazardous waste sites located within the planning boundary or that could affect the project alternatives.

Hazardous waste sites include a variety of sites that have historical environmental impacts from the release of hazardous substances, hazardous wastes, toxic chemicals, or radiological wastes (HTRWs) to the environment. The Pearl River Basin, within the proposed project area, contains a number of historical sites of concern in regard to environmental impacts from the release of HTRWs. Hazardous waste sites include historical sanitary and rubbish landfills and industrial or commercial facility sites where hazardous substances or wastes have been released to the environment. Hazardous substances are identified under the EPA Superfund Act (Comprehensive Environmental Response, Compensation, and Liability Act - CERCLA) and may include metals such as arsenic, lead, cadmium, and mercury; volatile organics such as solvents; semi-volatile organics such as creosote compounds, pesticides, herbicides, and PCBs; etc., that may have been released to the environment in amounts that pose a potential threat to human health and the environment. Hazardous wastes are solid wastes regulated under the federal Resource Conservation and Recovery Act (RCRA) due to characteristics such as acidity, corrosivity, reactivity, flammability, explosivity, or because they contain hazardous substances. Hazardous wastes include wastes that exhibit these characteristics, or are specifically identified waste streams, or wastes that are not properly managed and recycled such as oil and petroleum product wastes. Toxic wastes are those that contain toxic substances and substances regulated under the Toxic Substances Control Act (TSCA) that cause immediate health impacts to humans if exposed such as asbestos, toxic metals, and PCBs. Radioactive wastes include radiological elements such as radium, radon, uranium, strontium, and thorium that may originate from anthropogenic sources or from naturally occurring sources that get concentrated.

The purpose of this study was to identify sites with HTRW issues that may affect the project alternatives, or that might be affected by the project implementation. The objectives of this evaluation included descriptions of the sites and current conditions, identification of environmental and potential human health risks posed by these sites, and comparative analysis of impacts related to each of the sites in relation to the project alternatives. The goal of this study was to identify and present the environmental and potential human health risks associated with the HTRW sites for each of the project alternatives in order to assist in the selection of the best project alternative. AllenES performed the evaluation through a method of collection and review of readily available historical documents, performing a site reconnaissance at each of the sites, performing a comparative analysis based on AllenES' experience with HTRW sites, and preparing this report. A bibliography of reference sources is provided in **Attachment A**.

Three (3) separate alternatives and a "No Action" alternative are being proposed to accomplish the project goals and include the following: a non-structural plan or "Buy Out" of all affected properties (Alternative A), the construction of a levee system (Alternative B), or the construction of a channel improvement/weir/levee system (Alternative C). The purpose of the EIS was to identify existing environmental issues in the project area and to evaluate potential environmental impacts associated with each of the proposed project



alternatives. During the review process, AllenES identified three (3) potential HTRW sites within and proximal to the proposed project area considered to be sites of interest. The sites are generally located on upland areas adjacent to and within the floodplain of the Pearl River. Some of these sites have current and direct impacts on the water quality and aesthetics of the Pearl River.

The significant sites identified are listed as follows: the Lefleurs Landing Site (a.k.a. Jefferson Street Landfill), the Gallatin Street Dump, and the former Gulf States Creosoting Company Site. The following sections describe the setting and background, existing conditions, and geology/hydrogeology of each of the HTRW sites in relation to each of the proposed project actions.



## 2.0 SITES OF INTEREST

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During the review process, AllenES identified three (3) major HTRW sites of concern related to the proposed project alternatives. These sites are listed as follows: the former Lefleurs Landing Site (a.k.a. Jefferson Street Landfill), the former Gallatin Street Dump Site, and the former Gulf States Creosoting Company Site. The following sections describe the history and background, existing conditions, geology/hydrogeology, and environmental and potential human health risks associated with each of the hazardous waste sites in relation to their current conditions. Several other potential hazardous waste sites were identified during the review process but were determined to have no known current impacts with respect to the project alternatives. These sites are also identified below. HTRW sites are identified on **Figure 1** and site photographs are provided in **Attachment B**.

### 2.1 LEFLEURS LANDING SITE (JEFFERSON STREET LANDFILL)

#### 2.1.1 *Background and Setting*

The Lefleurs Landing Site (a.k.a. Jefferson Street Landfill) consists of a tract of land measuring approximately forty-five (45) acres and is located between the Pearl River and Jefferson and Pascagoula Streets. The site is owned by the City of Jackson. Historical data indicates that the City of Jackson has operated facilities on this property dating back to the early 1900s. Former activities included vehicle storage and maintenance operations, vehicle fueling utilizing underground storage tanks, incinerator, painting operations, animal control and shelter, administrative and police functions, and landfilling operations.

Findings from Phase II Environmental Site Assessment (ESA) activities and a Remedial Action Report (RAR) dated August 2004 completed by PPM Consultants, Inc. (PPM) indicated that a portion of the site was used as a landfill, along with motor fuel storage for fueling city owned vehicles. The purpose of the Phase II ESA was to determine if soil and/or groundwater in the vicinity of former underground storage tank (UST) areas had been impacted by motor fuels previously stored in the tanks. PPM concluded that all four (4) former UST areas showed some evidence of petroleum hydrocarbon impact to soils and groundwater. PPM and Fair Construction subsequently excavated the impacted soils in the UST areas. The RAR indicated that all actionable soils were removed to the satisfaction of the Mississippi Department of Environmental Quality (MDEQ) and groundwater concentrations of Polynuclear Aromatic Hydrocarbons (PAHs) were below the applicable regulatory limits; however, some residual contamination may remain as the dissolved benzene concentration in one monitoring well was 3.8 parts per million (ppm), which exceeded the then current regulatory standard of 1.4 ppm. PAHs are typical constituents of creosote used for treating or preserving wood.

PPM also investigated the landfill area. Evidence of wastes were noted in several places where the thin landfill cover had eroded resulting in exposure. Several borings were installed to investigate the nature of the waste matrix, depth of materials and groundwater occurrence. Selected soil and groundwater samples were analyzed for petroleum hydrocarbon constituents, additives, and lead. The investigation also identified the general extent of landfilling and boundary. The reports indicated that the landfill was not known to have a “constructed” cap or liner system; therefore, groundwater was believed to have the potential to interact with debris and leachate found in the landfill.

#### 2.1.2 *Existing Conditions/Current Impact*

AllenES performed a visual inspection of the Lefleurs Landing Site on July 8, 2014. The City of Jackson is currently using the site and facilities for police activities, horse pasture and barn, and storage facilities. A number of the historical buildings were partially demolished or in poor condition. The low shrub and grass



vegetation covered the landfill area. Evidence of rubbish and residual inert solid wastes were noted in some areas of the landfill where the soil cover was thinning. No retroactive improvements (e.g. liners, caps, leachate collection systems, etc.) were observed or known to have been installed on the landfill; therefore, AllenES believes that groundwater may be interacting with debris and leachate. Substantial rubbish was observed to be protruding from the south bank of the landfill. Erosion during high water periods in the Pearl River have resulted in exposure of the waste materials and rubbish materials may be washed into the river during high water conditions.

### **2.1.3 Geology/Hydrogeology**

The Lefleurs Landing Site is located on a point bar on the western (Hinds County) side of the Pearl River in Jackson, Mississippi at river mile 288. The entire landfill is located within the 100-year floodplain of the Pearl River. According to the potentiometric surface map created by PPM Consultants, Inc., dated March 2005, groundwater flow patterns appear to be flowing from the landfill to the Pearl River. It should be noted that the landfill does not have any formal engineering controls (i.e. liner, cap, leachate collection system, etc.) to prevent the offsite migration of leachate and compounds of concern.

Geological/hydrogeological information was obtained from the Phase II Environmental Site Assessment Report prepared by PPM Consultants, Inc. PPM installed thirteen (13) soil borings and ten (10) piezometers in these areas using Direct-Push Technology (DPT) to a general depth of five (5) feet below the depth at which saturated soil conditions were encountered 16 to 24 feet below ground surface (BGS). Site lithology was described as extremely heterogeneous, consisting of silts, clays, and sands at widely varying depths. Soils at the site were reported to consist entirely of fill material from earlier landfilling activities. Saturated soil conditions were encountered at average depths of fourteen (14) feet BGS, though thin saturated zones were encountered at other intervals in the fill material. Static groundwater levels in the piezometers were measured at depths of 12.81 to 20.04 feet BGS.

## **2.2 GALLATIN STREET DUMP SITE**

### **2.2.1 Background and Setting**

The former Gallatin Street Dump Site was a municipal sanitary landfill and is located approximately 1,000 feet east of the corner of Gallatin Street and East McDowell Road on a point bar on the west side of the Pearl River in Jackson, Hinds County, Mississippi from river mile 285 to 286. According to a Phase II ESA report by Ware, Lind, Furlow/Aquaterra, the total area of the landfill site is approximately 117 acres, approximately 62 acres of which were utilized for landfill purposes. According to documents reviewed during the file review process, the landfill was estimated to have been active from 1963 to 1980 and was operated as a municipal dump by the City of Jackson. The Gallatin Street Dump Site was not a constructed landfill and had no original engineering controls, such as a leachate collection system, cap or liner, to prevent leachate from migrating offsite and interacting with groundwater. However, a clay cap was retroactively installed to minimize human exposure pathways. Also, the State of Mississippi did not require the City to maintain any permit for the facility, nor were there any restrictions on the type or quantity of wastes that were accepted. No hazardous waste program was either in place or enforced by the City or the State with regards to the types of wastes accepted. The landfill was closed and is of no formal use to the City at this time. The following is a list of sources of common components of the waste that are known to have been deposited in the landfill:

- Household garbage.
- General industry.





- Construction debris and waste.
- Hospital waste.
- Municipal water & sewage sludges.
- Raw sewage from septic tankers.
- Dead animals.
- Contaminated produce, poultry, dairy products and meats.

The Phase II ESA report was completed by Ware, Lind, Furlow/Aquaterra in 1998. The report stated that the landfill had been retrofitted with a clay cap to minimize human exposure surface pathways to hazardous or toxic substances potentially contained in the landfill. The Phase II ESA report indicated that groundwater samples collected from borings placed within the landfill found leachate with concentrations of cadmium, lead and nickel which were above regulatory standards. The report also indicated that limited sampling of the surface water obtained from the Pearl River (upstream and downstream of landfill) did not detect landfill leachate at that time; however, the limited sampling was insufficient to demonstrate whether leachate release to the Pearl River was occurring or not.

### **2.2.2 Existing Conditions/Current Impact**

AllenES performed a visual inspection of the Gallatin Street Dump Site on July 8, 2014. Relief at the site is mostly flat, with the exception of a depressed area in the center of the site. There are two (2) major utilities that traverse the site. High power electrical transmission lines cross the site in a line running generally north to south. A high pressure, natural gas transmission main also crosses the site. It runs in a line generally west to east. There is a 30 foot permanent easement associated with this line.

AllenES did not observe any evidence of stressed vegetation; however, debris was found to be protruding from the bank of the Pearl River. Also, leachate from the landfill was observed to be seeping out of the soils along the bank of the Pearl River. Due to the landfill's location on a cut-bank with a history of erosion issues and the presence of major utilities, AllenES believes the subject site is a potential threat for release of leachate and debris to the Pearl River.

### **2.2.3 Geology/Hydrogeology**

The Gallatin Street Dump is situated in an alluvial plain of the Pearl River in Section 22, Township 5 North, Range 1 East. A review of the boring logs produced by Ware, Lind, Furlow/Aquaterra (Aquaterra) for use in the hydrogeological and bank stabilization study also indicates that the Gallatin Street Dump is situated within alluvial soil materials that overlie the Yazoo clay. A total of 11 borings were extended into the subsurface by Aquaterra within and adjacent to the Gallatin Street Dump during the hydrogeological and bank stabilization study. The following paragraphs provide a general description of the alluvial materials, waste, and Yazoo clay encountered beneath the site.

#### ***Alluvial Materials***

The boring logs indicate that the alluvial materials consist of interbedded layers of silt, clay, sand, and gravel which extend to a depth of 250 feet above mean sea level (msl) in boring 8-6, and to a depth of 229 feet above msl in boring BH 9. The alluvial deposits within the area of study are located directly above the Yazoo Clays and appear to range between 10 and 14 feet thick. The clay and silt materials were generally encountered above the sands and gravel.



### *Waste Material*

Monitor Well Installation Report No. 63677 prepared by Aquaterra indicated that garbage was found in borings BH-3, BH-4, 8-5, B-10 and B-11. The description in the boring logs generally described the garbage as a black garbage, consisting mostly of paper and plastic products. According to the boring logs, the thickness of the garbage ranged from three feet in boring BH-4 to 34 feet in B-11. Further inspection of the boring logs indicates that the bottom elevation of the garbage ranged from 265 feet above msl in boring 8-5 to 242 feet above msl in boring 8-10.

### *Yazoo Clay*

A review of the boring logs reveals that the Yazoo clay formation is encountered in each of the borings except BH-5 and BH-10. The Yazoo clay is generally described in the boring logs as a hard blue clay with shell fragments. The top of the Yazoo Clay ranged from an elevation of 250 feet above msl in BH-6 to as low as 229 feet above msl in BH-9. Generally, however, the top of the Yazoo was found to be situated between an elevation of 232 feet above msl and 234 feet above msl. The geotechnical report produced for the bank stabilization study reported natural moisture contents of the Yazoo clay to range from 22 percent to 43 percent.

### *Groundwater*

Aquaterra reported groundwater in 10 of the 11 borings advanced during their field investigation. The exception was Boring 8-6 which was located just north of the landfill. Two of the six monitor wells (MW-1 and MW-5) were installed with the screened interval within the waste layer. It is believed that the liquid level reported in these two wells may actually be indicative of leachate mounded within the landfill. A review of the boring logs for MW-5 and MW-6, as well as comparisons of the liquid levels reported in MW-5 and MW-6 (which are located adjacent to each other), further suggest that there may be a perched leachate mound within the landfill. More specifically, MW-6 was screened beneath the garbage layer revealing a water level of 246.1 feet above msl. This liquid level in MW-6 is some 12 feet below the groundwater level of 258.8 feet above msl reported in MW-5. Further observation of the boring logs depicted a five foot layer of clayey silt beginning at an elevation of 242 feet above msl, which puts it between the two screened intervals. Since MW-5 was screened above this layer, and since MW-6 was screened below this clayey silt layer in a seven foot layer of tan gray sand, this could possibly be an indication that the clayey silt is serving as a partially confining layer between the leachate and the actual groundwater. No groundwater samples were collected. Only one water sample for leachate characterization was collected from MW-5 and laboratory analyzed for typical leachate characterization parameters. Concentrations of various metals and semi-volatile parameters were detected. Cadmium, lead, and nickel were detected in concentrations above the Maximum Contaminant Levels (MCLs) established under the Safe Drinking Water Act for these parameters. The Aquaterra report recommended further leachate and groundwater investigations.

## **2.3 GULF STATES CREOSOTING COMPANY SITE**

### **2.3.1 Background and Setting**

The former 141-acre Gulf States Creosoting Company Site is located at 1625 Flowood Drive (Mississippi Highway 468) in Flowood, Rankin County, Mississippi. The property extends from the swampland and oxbow lakes along the Pearl River at river mile 290 to river mile 292. The information contained within this section was taken from the EPA Final Preliminary Assessment/Site Inspection (PA/SI) Report of the Gulf States Creosoting Company, December 2003, prepared by Weston Solutions, Inc. for the Environmental Protection Agency (EPA) Region 4. The PA/SI was conducted by EPA to determine whether the site would qualify as a National Priority List (NPL) Site under the federal Superfund Program. The investigation and sampling conducted were therefore limited to the objectives of the ranking program.

Gulf States Creosoting Company owned the property as early as 1929 and operated as a wood treating facility until the mid-1950's. In July 1958, American Creosoting Corporation obtained portions of the property



and operated for less than two (2) years. In June 1959, W.G. Avery Body Company purchased portions of the property and operated a body shop on the site.

During Gulf States Creosoting Company operations, railroad cross ties were treated at the facility and transported on and off-site by means of railroad box cars. Creosote was applied to the wood by commercial pressure treatment or by vat or tank dipping. Creosote is a wood preservative used to treat railroad ties, telephone poles, marine pilings, and fence posts.

Based on the analytical results for the samples collected during the PA/SI, soil impact from organic and inorganic hazardous substances was found to be present at the Gulf States Creosoting Company property. The hazardous substances found that were attributable to the former onsite operations included the metals of barium, cobalt, manganese, and zinc, and creosote residuals including a variety of semi-volatile polynuclear aromatic hydrocarbons (PAHs).

According to the PA/SI Report, the majority of population in the area receive their drinking water from the City of Flowood Water Department (CFWD). The CFWD's water supply wells are screened in the Cockfield Formation and the Sparta aquifers beneath a substantial confining layer. Due to the relatively small number of people served water by the CFWD and the fact that the municipal wells are screened at depths greater than 550 feet, the site did not rank high enough to become an NPL site under the EPA Superfund Program.

However, sediment samples collected from the oxbow slough located west of the Gulf States Creosoting Company property exhibited elevated levels of constituents used in the wood preserving industry. Creosote was observed on the surface of the waters in the adjacent swamp named "Creosote Slough". The extent of the creosote residuals occurring in the sediment were reported in the PA/SI report and were found to cover a broad area. However, the sampling program did not identify the nature and the extent of the creosote residuals. Creosote residuals were also found in the limited soil sampling performed in the historical areas of the treatment operations.

### **2.3.2 Existing Conditions/Current Impact**

A site reconnaissance was performed by AllenES on July 8, 2014 to document current conditions at the Gulf States Creosoting Site. The site is bounded to the east by Highway 468 and to the south by ConSteelCo. A levee bounds the western and northern portions of the site. Most of the original area of treatment operations is now covered by the facilities owned by ConSteelCo. Two small buildings are located on the middle portion of the site that are used for helicopter operations and hanger for a local TV and news media. The rest of the site is covered with pasture grass and isolated clumps of pine trees or pine tree stands. Horses are also currently grazed on the site pastures. During the visual inspection, AllenES did not identify any evidence of former operations or equipment, or any evidence of creosote residuals in the former treatment operations area. The PA/SI report indicated that no impoundments or berms that are commonly used in the creosoting process were used at this site; instead, the facility is reported to have used pressure tanks and vats to treat the wood products.

### **2.3.3 Geology/Hydrogeology**

The geology and hydrogeology of the site were obtained from the references and information contained in the PA/SI report and a report prepared by the United States Environmental Protection Agency (EPA), Region 4, entitled: "Record of Decision: Summary of Remedial Alternative Selection" dated September 2010. The report was prepared for the Sonford Products Superfund Site Operable Unit 2 (Sonford), which is located



approximately 4,000 feet from the southern boundary of the Gulf States Creosoting Company Site. Due to the proximity to the subject site, AllenES believes that the regional and site specific geology and hydrogeology for the Sonford site should be similar to that of the Gulf States Creosoting Company Site. All information provided in this section was taken from the aforementioned reports prepared by the EPA. None of the references mentioned were reviewed in the preparation of the current report.

The Gulf States Creosoting Company Site is located within the Jackson Prairie Belt Physiographic Unit of the East Gulf Coastal Plain Physiographic Province of Mississippi (USDA, 1998; USGS, 1984; MGETS, 1971). In Rankin County, the East Gulf Coastal Plain ranges from gently rolling to steep with the elevation ranging from 220 to 612 feet above msl. The soils at the Sonford site were reported to belong to the Cascilla-Arkabutla soil group (nearly level, well-drained and somewhat poorly drained, silty soil) (USDA, 1998).

The Claiborne Group and the Wilcox Groups are reported to be found below the alluvial soils in the area. The Claiborne Group consists of multiple formations which include the following in descending order: the Cockfield, Cook Mountain, Sparta Sand, Zilpha, Winona, and Tallahatta formations (MGS, 1985). The Cockfield Formation is comprised of irregularly bedded laminated lignitic clay, sand, and lignite, which is slightly glauconitic (David Pentecost "Hydro Report", undated). The top of this formation is located at approximately 40 feet below the ground surface at the Sonford site and ranges in thickness from 120 to 180 feet near the Sonford site (Pentecost, undated; Sistrunk, 1981). The Cook Mountain Formation lies beneath the Cockfield and consists of marl, limestone, glauconitic sand, and chocolate colored clay (MGS, 1985). The Cook Mountain is approximately 220 feet thick in the review area (Pentecost, undated). The Sparta Sand Formation, also known as the Kosciusko Formation, is comprised of an irregularly-bedded sand with clay and some quartzite. The Sparta Sand is approximately 280 feet thick near the Sonford site, but reaches over 800 feet thick in southwestern Hinds County, west of the review area (USGS, 1964; Pentecost, undated). The Zilpha and Winona formations lie beneath the Sparta Sand and consist of a chocolate colored clay containing glauconitic sand (Zilpha) and a highly glauconitic clayey sand (Winona) (MGS, 1985). The Zilpha Formation ranges in thickness from 200 feet to 420 feet while the Winona ranges in thickness from 10 feet to 65 feet (MGETS, 1971). The Tallahatta Formation consists of glauconitic claystone and clay with lenses of sand and some sandstone (MGS, 1985). The Wilcox Group, which underlies the Claiborne Group, contains irregularly bedded fine to coarse sand, lignitic clay and lignite (MGS, 1985). The Wilcox ranges in thickness from 1,100 feet to 2,830 feet in southern Rankin County (MGETS, 1971).

#### *Site Geology*

Site-specific geologic information for the Sonford site was obtained from subsurface exploration using direct push technology (DPT) in December 2006, February 2008, and May/June 2008 and from previous investigations. Lithologic logging performed during these investigations extended to a maximum depth of 32 feet below ground surface (bgs) in 14 borehole locations. The surface soils at the Sonford site are reported to consist of plastic clays; sandy clays; silty clays; fine-grained silty sands; and coarse-grained to gravelly sands. These interbedded clays, silts, and sands transition into blue-gray clay at roughly 24 to 28 feet bgs. The clay unit, most likely part of the Yazoo Clay, then transitions to interbedded clays, silts and sands (sand most likely part of the Cockfield and Cook Mountain Formations) to roughly 225 feet bgs. AllenES believes that the surficial soils on the Gulf States Creosoting Company Site are similar to the surficial soils at the Sonford site.

#### *Site Hydrogeology*

The surficial aquifer at the Sonford site is reported to be comprised of sands and gravels of the Pamlico Sands and Citronelle Formations. At ground surface, alternating layers of silty clay, sand, and clay are present to a depth ranging from the surface to approximately 24 feet bgs. Groundwater is typically



encountered at approximately 10 to 14 feet bgs across the Sonford site. The general direction of the groundwater flow is west-northwestward across the Sonford site. AllenES believes that the shallow soil lithology and groundwater occurrence under the Gulf States Creosoting Company Site are similar to the Sonford site. However, shallow groundwater at the Gulf States Creosoting Site is likely moving to the west/southwest due to the influence of the Pearl River.

There are three (3) aquifers in the project area that are currently available for drinking water supplies. In descending stratigraphic order, these aquifers are the Cockfield Formation, the Sparta Sand Formation, and the Wilcox Group. These aquifers are part of the larger Eocene aquifer system in Mississippi. This system extends west, southwest and south and contains freshwater in approximately 50 percent of the State. These three (3) aquifers are regional in extent and merge northward, with the exception of the Cockfield and the lower Wilcox, into a single aquifer south of Memphis, Tennessee (USGS, 1984).

According to the EPA 2010 report, groundwater in the surficial aquifer is classified as Class II, a current or potential source of drinking water. This classification does not specify whether or not the groundwater is Class II A, a current source of drinking water, or Class II B, a potential source of drinking water.

According to the EPA 2010 report, the majority of local residences have their drinking water supplied to them from the City of Flowood Water Department (CFWD) and from the City of Pearl Water Department (CPWD). The CFWD obtains its drinking water from six (6) wells in the area, which are screened in the Cockfield Formation and the Sparta Sand. The CPWD also obtains its drinking water from the Cockfield Formation and the Sparta Sand with eight (8) wells. Six (6) of these wells (two from CFWD and four from CPWD) are located within a four-mile distance to the proposed project site. All six (6) wells are screened in the Sparta Sand. The municipal well is 3,000 feet south from the Gulf States Creosoting Company Site.

## **2.4 OTHER SITES OF NOTE**

Other HTRW sites are located adjacent to the proposed project area. AllenES reviewed these sites in an effort to determine the potential likelihood of impact on the project alternatives from these sites. The sites described in the following sections are known to be of environmental significance; however, due to a variety of factors, including distance, soil type, type of impact, and/or prior historical remedial actions, AllenES believes these sites do not have the potential to impact the proposed project alternatives.

### **2.4.1 Rival Manufacturing Companies NPL Site**

The former Rival Manufacturing site is located approximately 1,500 feet east of the proposed project area on the west side of Highway 49 in Flowood, Rankin County, Mississippi. The Rival facility manufactured crockpots and was found to have contributed lead and polynuclear aromatic hydrocarbons (PAHs) to the surrounding soils and surface waters. A Phase I Environmental Site Assessment (ESA) was performed by BCM Engineers on the Rival Crockpot site and surrounding areas in the summer of 1993. The Phase I ESA reported that the Mississippi Department of Environmental Quality (MDEQ) performed an investigation of the site in 1982 and 1983 and found lead in the surface soils in concentrations ranging from 14 to 94,231 parts per million (ppm). The current Tier I Target Remedial Goal (TRG) established by the MDEQ for soils at restricted sites is 1,700 ppm. The Rival facility was added to the EPA's National Priorities List (NPL) in 1984. The EPA implemented a remedial action plan in 1992, the efforts of which were 90 percent complete at the time BCM was preparing the review area's Phase I ESA report. The report stated that impact was restricted to soil and surface water and no evidence of impact to groundwater was identified. Soils and sediments from an onsite pond were excavated and entombed in a soil mound containment structure constructed on the site



and the pond was closed. For these reasons, in addition to the EPA's successful remedial efforts and the facility's distance from the proposed project area, impact from the former Rival Manufacturing Companies facility is considered unlikely.

#### **2.4.2 Sonford Products Lumber Mill**

The former Sonford Products Lumber Mill is located at 3506 Payne Drive in Flowood, Rankin County, Mississippi and is approximately half a mile east from the proposed project area. The site operated as a lumber mill and wood treatment facility from 1972 until 1985. Chemicals commonly produced during this time were pentachlorophenol (PCP), sodium pentachlorophenate, and pest control products.

On April 18, 1985, approximately 2,000 gallons of PCP spilled into wetland areas on a parcel directly south of the facility. The Mississippi Department of Natural Resources (MDNR) (now the MDEQ) initiated remedial actions and identified various Compounds of Concern (CoCs) including PCP, mercury, lindane, and phenylmercuric acetate. On April 21, 1985, the EPA took over remedial operations at the site and removed 2,500 cubic yards of impacted soils, disposed of 10,000 gallons of oil and treating solution, and 100,000 gallons of wastewater. Response actions were completed on May 10, 1985.

In 1989, the Mississippi Bureau of Pollution Control (MBPC) (now the MDEQ) issued a "No Further Action" status for the site without performing any verification sampling. In 2004, Weston Solutions, Inc. prepared a Preliminary Assessment/Site Inspection Report (PA/SI) for the review area and recommended the Sonford Products site be classified as an NPL site. The site was placed on the EPA's NPL in 2007.

In September 2009, a *Record of Decision: Summary of Remedial Alternative Selection* report was prepared by Region IV of the EPA. The remedy selected by the EPA for the Sonford Products site included "an in-situ treatment of contaminated media (both soils and groundwater) using chemical oxidation and enhanced subsurface biodegradation." The goals of the selected remedy were to restore impacted soils to conditions that would protect construction workers, onsite/offsite residents, and also the underlying aquifer and the environment; also, the remedy aimed to restore groundwater to conditions that would not pose threats to human health if ingested or physically contacted, as well as to eliminate the risk of inhalation of volatiles.

Due to the distance from the proposed project boundary, remedial efforts completed to date, and the future remedial efforts planned, AllenES believes that the Sonford Products site will not pose a significant threat of impact to the proposed alternative projects.

#### **2.4.3 Various Automotive Junkyards**

Multiple automotive junkyards were identified in proximity to the project area and are depicted in **Figure 1**. Historically, automotive junkyards have been known to contribute hydrocarbons, metals, solvents and other CoCs to the environment. However, no specific studies or information regarding environmental conditions at these automotive junkyards are readily available. For this reason, investigation and characterization of these sites would be recommended prior to the initiation of project activities.



### **3.0 ALTERNATIVES EVALUATION**

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The following sections provide an assessment of the environmental risks, environmental and human health impacts, remedial alternatives, and socio-economic impacts of the hazardous waste sites with regard to the Flood Damage Reduction project alternatives. The selected project alternatives for evaluation include: 1) a “buy out” program, 2) a levee system program, 3) a channel improvement, weir, and levee system, and 4) a no-action alternative. Each of these are addressed in the following sections.

#### **3.1 ALTERNATIVE A (NON-STRUCTURAL PLAN)**

##### ***3.1.1 Description of Proposed Action and Relationship to Hazardous Waste Sites***

In order to address the flooding issues faced by the cities of Jackson and Flowood, a Non-Structural or “Buy Out” option has been proposed. A “Buy Out” would entail the purchasing of all private and commercial properties within flood prone areas (100 year flood plain) along the Pearl River within the proposed project area that have buildings constructed on them. This action would help protect human life and property during flood events; however, it would not address or eliminate environmental or potential human health threats from historical hazardous waste sites located within the proposed project area.

##### ***3.1.2 Risks Posed***

There are no immediate environmental or potential human health risks proposed by the Alternative A, but current environmental threats from hazardous waste sites would not be addressed. The Lefleurs Landing Site which is owned by the City of Jackson would remain as it is with the south bank of the landfill continuing to erode and release waste materials into the Pearl River during high flows. Leachate from the landfill would continue to flow into the Pearl River. The Gallatin Street Dump Site, which is also owned by the City of Jackson, would continue to have erosion along the northern edge of the rip rap and along the southern boundary on the Pearl River potentially releasing wastes into the Pearl River. Leachate from the landfill would continue to discharge into the Pearl River. The Creosote Slough is privately owned, has no structure on it, so it would not be acquired. Therefore, it would continue to pose threats of release of creosote wood treatment chemicals into the oxbow lake water and into the Pearl River during high flows.

##### ***3.1.3 Remedial Alternatives***

No remedial alternatives are associated with this action. It should be noted that the RHPRFDCD would not become responsible for the HTRW sites included in the land acquisition and would not be required to remediate these sites.

##### ***3.1.4 Short-Term Impacts***

There are no short term impacts posed by the “Buy Out” action on the HTRW sites. Short-term environmental and potential human health risks from hazardous waste sites would not be addressed or eliminated by this action.



### **3.1.5 Long-Term Impacts**

Long term environmental and potential human health risks from HTRW sites would not be addressed or eliminated by this action.

### **3.1.6 Community Acceptance**

The “Buy Out” option would not address remediating potential environmental and human health risks posed by the HTRW sites which is likely to have a negative impact on community acceptance.

### **3.1.7 Pros**

In the event that the “Buy Out” alternative was selected, the HTRW sites will not be acquired.

### **3.1.8 Cons**

In the event that the “Buy Out” alternative was selected, the environmental impacts would generally be the same as the No Action alternative. The risk of flood damage to properties and the risk of potential human exposure to harmful hazardous substances associated with the HTRW sites would not be substantially changed or reduced. Impacts would include the exposure to leachate, creosote and other hazardous substances via the release into groundwater or surface water or the exposure to impacted sediments. The “Buy Out” alternative would continue the threat of flooding which will continue to have potential adverse effects upon the HTRW sites.

## **3.2 ALTERNATIVE B (LEVEE PLAN)**

### **3.2.1 Description of Proposed Action and Relationship to Hazardous Waste Sites**

Another alternative proposed to address the flooding issues faced by the properties along the banks of the Pearl River in Jackson and Flowood is the construction of a series of levees. No new levee construction would be planned at the Lefleurs Landing Site or the Gallatin Street Dump Site, and the existing levees located at the Lefleurs Landing Site and the Gulf States Creosoting Site would be used. A new levee section would be constructed at the Eubanks Creek location. Under the levee system, the current property owners of properties located within the existing levees would continue to own their properties. Properties on which the new levees would be placed would either be acquired or an easement obtained. The levee alternative would therefore have no direct impact on the HTRW sites since the levee construction would not physically impact the sites.

### **3.2.2 Risks Posed**

The proposed levee system does not address the potential impacts from leachate migrating into the Pearl River. Since no levees are proposed for the Lefleurs Landing Site and the Gallatin Street Dump Site, the environmental risks identified for the no-action alternative for these sites would continue to exist. The use of the existing levee system at the Gulf States Creosoting Site would not address the creosote residuals existing in the Creosote Slough. Therefore, this alternative would not address the potential release of pollutants to the Pearl River and adverse impacts on water quality from the HTRW sites.





### **3.2.3 Remedial Alternatives**

No remedial alternatives are proposed within the scope of this alternative action and the issues posed by the current HTRW sites would not be addressed. The construction of a levee system would not address or eliminate the current environmental and potential human health risks posed by the existing creosote impact from the Creosote Slough and the former Gulf States Creosoting facility or the leachate issues with the existing Lefleurs Landing and Gallatin Street Dump Sites.

### **3.2.4 Short-Term Impacts**

The levee alternative would have no short-term impacts on the HTRW sites. The environmental risks identified for these sites would continue to exist. Since no new levees are proposed for the Lefleurs Landing Site and the Gallatin Street Dump Site, the environmental short-term risks identified for these sites would continue to exist. The construction of a levee system would not address or eliminate the current environmental and potential human health risks posed by the existing creosote impact from the Creosote Slough and the former Gulf States Creosoting Company Site or the leachate issues associated with the existing Lefleurs Landing and Gallatin Street Dump Sites.

### **3.2.5 Long-Term Impacts**

Long-term impacts associated with the construction of a levee system in the Jackson and Flowood areas would have no impacts on the hazardous waste sites. The construction of a levee system would not address or eliminate the current environmental and potential human health risks posed by the existing creosote impact from the Creosote Slough and the former Gulf States Creosoting Company Site or the leachate issues associated with the existing Lefleurs Landing and Gallatin Street Dump Sites.

### **3.2.6 Community Acceptance**

It is expected that the construction of a levee system would elicit a negative response from the public with regard to the HTRW sites since no action would be taken to mitigate the environmental and human health concerns. This alternative would not result in addressing the environmental conditions and human health threats posed by the HTRW sites.

### **3.2.7 Pros**

Alternative B would be less expensive with regard to the HTRW sites since no mitigation would be performed. This alternative would likely result in little money spent in relation to the remediation of the HTRW sites.

### **3.2.8 Cons**

Under Alternative B the construction of a levee system would not address or eliminate the current environmental and potential human health risks posed by the existing creosote impact from the Creosote Slough and the former Gulf States Creosoting Company Site or the leachate issues associated with the existing Lefleurs Landing and Gallatin Street Dump Sites.



### **3.3 ALTERNATIVE C (CHANNEL IMPROVEMENT/WEIR/LEVEE PLAN)**

#### **3.3.1 Description of Proposed Action and Relationship to Hazardous Waste Sites**

The proposed Channel Improvement/Weir/Levee alternative action would entail the construction of a weir or dam along the Pearl River at river mile 284 for the purposes of flood control and flood prevention measures for the Jackson metropolitan areas. The proposed project would impact the HTRW sites. The channel improvement would require moving portions of the Gallatin Street Dump Site, remediation of the Lefleurs Landing Site, and removal or capping of the Creosote Slough. Approximately two-thirds of the Gallatin Street Dump Site would be moved by excavation and placed on top of the remainder of the site to create a smaller footprint with a higher elevation. Actions associated with this alternative will have various environmental benefits on the affected areas and local communities. Remedial alternatives for the HTRW sites included in the proposed “Channel Improvement/Weir/Levee” project may include, for example, the construction of engineering controls, such as slurry walls and impermeable caps, to prevent the offsite migration of associated hazardous substances, in-situ bioremediation techniques, slope and bank stabilization methods, excavation and removal of impacted sediments, among others. The cost of the remedial actions potentially required for the HTRW sites are considered in the total cost of the “Channel Improvement/Weir/Levee” option.

##### *LeFleurs Landing Site (Jefferson Street Landfill)*

Under the “Channel Improvement/Weir/Levee” alternative, environmental impacts associated with the Lefleurs Landing Site will be evaluated and mitigated during the implementation of the project. The potential environmental impacts that will be addressed include, but are not limited to, the following: the release or exacerbation of current releases of solid and hazardous substances and leachate to groundwater and/or surface water, and temporary alteration of groundwater flow patterns, possibly resulting in the migration of leachate and hazardous substances towards developed areas, as well as toward the proposed channel improvement. This alternative will have a beneficial impact on the environment and human health since these potential environmental impacts will be addressed in the design and implementation of the project.

##### *Gallatin Street Dump Site*

Under the “Channel Improvement/Weir/Levee” alternative, a majority of the eastern 2/3rds of the landfill will be excavated and placed on top of the remaining site. Potential environmental impacts will be evaluated and mitigated during the implementation of this alternative. Environmental impacts associated with the Gallatin Street Dump could include, but are not limited to, the following: the temporary introduction of large amounts of sediment to the Pearl River, the release or exacerbation of current releases of leachate and/or solid and hazardous substances to groundwater and/or surface water, and temporary alteration of groundwater flow patterns, possibly resulting in the migration of hazardous substances and leachate towards developed areas as well as the proposed project. This alternative will have a beneficial impact on the environment and human health since these potential environmental impacts will be addressed in the design and implementation of the project.

##### *Gulf States Creosoting Company Site*

The boundaries of the Gulf States Creosoting Company Site extend from the wetlands found adjacent to the cut-bank on the south/east (Rankin County) side of the Pearl River at river mile 292 to the wetlands and oxbow lakes located on the east side of the Pearl River at river mile 290 in Flowood, Mississippi. The wetland areas and oxbow sloughs (Creosote Slough) that the proposed Channel Improvement/Weir/Levee action



would dredge and inundate have been found to have visible amounts of creosote residual impact in sediments. An existing levee separates the majority of the Gulf States Creosoting Company Site from the Pearl River and the proposed project area. Under the Channel Improvement/Weir/Levee alternative, portions of the existing levee on the Gulf States Creosoting Company Site will be removed and relocated slightly to the west of the current levee location.

Under the Channel Improvement/Weir/Levee Weir alternative, environmental impacts associated with the Gulf States Creosoting Site and Creosote Slough would be addressed. Environmental impacts that will be addressed include, but are not limited to, the following: the temporary introduction of large amounts of creosote impacted sediments to the Pearl River, and temporary alterations in groundwater flow, possibly leading to the migration of hazardous substances to unaffected areas. These potential environmental impacts will be evaluated and mitigated during the implementation of this alternative. This alternative will therefore have a beneficial impact on the environment and human health since these potential environmental impacts will be addressed in the design and implementation of the project.

### **3.3.2 Risks Posed**

Risks associated with the construction of the channel improvement/weir/levee system for flood control purposes along the Pearl River includes directly impacting the HTRW sites. The Creosote Slough would be located within the project area proposed for excavation and dredging for the channel improvement; therefore, the impacted sediments within the Creosote Slough will be evaluated and mitigated. Remedial mitigation alternatives could include, but are not limited to, capping in order to and permanently cover and not disturb the sediments, or excavating and removing the impacted sediments prior to dredging the proposed project. The Lefleurs Landing Site would be located along the edge of the proposed channel improvement and would require additional capping and bank stabilization. Further investigations would be necessary to determine potential leaching of landfill waste chemicals to the groundwater and movement of groundwater into the channel improvement. Groundwater controls and a slurry wall may be appropriate remedial actions in this event. The Lefleurs Landing Site would then be potentially useful for park areas. The channel improvements would also bisect the Gallatin Street Dump Site; therefore, it would require excavation and removal of approximately half of the landfill site to create the proposed project. This material may be incorporated into the current remaining landfill area to further elevate the area, cap the area, and provide bank stabilization. An elevated mound could be created for public access and to provide a public park, boat launch, recreational facilities, and scenic views. Further investigations would be necessary here also to determine potential leaching of landfill wastes to the groundwater and movement of groundwater into the proposed project. Groundwater controls and a slurry wall may be appropriate remedial actions.

### **3.3.3 Remedial Alternatives**

#### *LeFleurs Landing (Jefferson Street) Site*

In the event that the “Channel Improvement/Weir/Levee” project alternative is initiated, certain measures will be taken to prevent environmental impact from the LeFleurs Landing Site. Such measures may include, but are not limited to,

- Construction of a slurry wall.
- Installation of a clay cap.
- Installation of bank stabilization controls.
- Installation of a series of groundwater extraction wells.



### *Gallatin Street Dump Site*

In the event that the “Channel Improvement/Weir/Levee” alternative is initiated, certain measures will be taken to prevent environmental impact from the Gallatin Street Dump Site. Such measures may include, but are not limited to, the following:

- Excavation and removal of up to fifty per cent of the landfill materials.
- The installation of bank stabilization controls.
- The construction of a slurry wall.
- The installation of a series of groundwater extraction wells.

### *Gulf States Creosoting Company Site*

In the event that the Channel Improvement/Weir/Levee alternative is initiated, certain measures will be taken to prevent environmental impact from the Gulf States Creosoting Company Site and the Creosote Slough. Such measures may include, but are not limited to, the following:

- Excavation and offsite disposal of impacted sediments.
- Installation of an impermeable cap over impacted areas and no dredging.
- Installation of a series of groundwater extraction wells or slurry wall.

### **3.3.4 Short-Term Impacts**

The proposed “Channel Improvement/Weir/Levee” alternative could potentially have a series of immediate short-term impacts on the proposed project area. Short-term impacts of this alternative will include mitigation activities for the Gallatin Street Dump Site, the Lefleurs Landing Site, and the Creosote Slough eliminating or controlling environmental and human health concerns. Construction activities have the potential to increase noise levels, erosion and runoff of silt, generation of air borne dust, and the release of hazardous substances from these HTRW sites. These short-term impacts from construction will be mitigated through project management and controls. The mitigation measures for each of the hazardous waste sites will result in beneficial environmental and human health impacts by eliminating or controlling pathways of exposure to HTRWs.

Other immediate effects that may result from construction of the proposed project could include a temporary loss of the secondary water supply intake for the City of Jackson. Jackson utilizes an existing water treatment plant which is located on the Pearl River at a location scheduled for dredging and development of the “Channel Improvement/Weir/Levee” alternative. This water treatment plant is used as a secondary source and backup water supply source for the City. The dredging of sediments and subsurface soils in the Pearl River could potentially increase the turbidity of the surface waters to levels unacceptable for human consumption; therefore, the City of Jackson would need to evaluate temporary water supply alternatives during the duration of dredging and construction activities.

### **3.3.5 Long-Term Impacts**

The potential long-term impacts associated with the proposed “Channel Improvement/Weir/Levee” project in regard to the HTRW sites are beneficial for environmental and potential human health impacts. Over the long term environmental concerns of leaching from the Gallatin Street Dump and the Lefleurs Landing Site



will have been alleviated and the sites will have been stabilized with new covers. The sites will have been remediated and transformed into new public uses. Potential land use activities will be expanded and the sites beneficially reused. The Creosote Slough will have been mitigated and no longer present a continuing source of release of creosote chemicals to the environment and to the City of Jackson's drinking water. The Slough area will become a part of the bottom of the channel improvements following mitigation. The former Gulf States Creosoting Company Site along with other areas will have been further investigated and evaluated during project implementation for groundwater or other runoff impacts and remediated if they pose an environmental or human health threat to the proposed project. The water quality of the proposed project as well as the channel bottom will have been improved and protected in relation to the HTRW sites because of their mitigation.

### **3.3.6 Community Acceptance**

It is expected that the construction of a channel improvement pool of the magnitude proposed in the "Channel Improvement/Weir/Levee" alternative for the Jackson metropolitan area would be favorably accepted by the community. In addition to providing flood control measures for the cities of Jackson and Flowood, the proposed project could serve as a scenic recreational area for local residents and tourists to visit and could create new opportunities for businesses to develop and expand. The HTRW sites will be mitigated under this alternative.

### **3.3.7 Pros**

In addition to flood control measures, the project would benefit the environment and protection of human health. Under this alternative the remediation and implementation of engineering controls on several sites in the project area will be performed. The Channel Improvement/Weir/Levee system would reduce erosional and leachate problems associated with the LeFleurs Landing Site and the Gallatin Street Dump Site. At present, the Pearl River is eroding the banks of these landfills and creating potential exposure pathways to subsurface debris and leachate. With the decreased velocity of the Pearl River, erosional effects could be minimized. Leachate generation from the landfills will be addressed and surface pathways of exposure to hazardous substances will be eliminated by capping. The impacted sediments in the Creosote Slough will be addressed by removal or mitigation. Under this alternative, the hazardous waste sites will be addressed, remediated, and available for redevelopment. Current sources of pollution would be removed or mitigated and water quality would be improved and protected.

### **3.3.8 Cons**

There are potential negative impacts associated with the implementation of the proposed "Channel Improvement/Weir/Levee" alternative with regard to the hazardous waste sites. The most obvious of cons is associated with the expense of remediating the hazardous waste sites. The project would require environmental investigation and remediation, engineering studies, and construction of remedial actions at the hazardous waste sites. In the short-term, implementation of the Channel Improvement/Weir/Levee action has the potential to cause the release of, or temporarily exacerbate current rates of the release of hazardous substances from the HTRW sites in the proposed project area (e.g. Gulf States Creosoting Company Site, Gallatin Street Dump Site, etc.). Remediation and mitigation actions at the HTRW sites will be performed in a manner to protect against the potential release of HTRWs during mitigation as part of the project.

## **3.4 NO ACTION ALTERNATIVE**



The “No Action” alternative of not implementing a project at all consists of pursuing no construction activities or remedial efforts with regard to the hazardous waste sites. The following sections describe the risks, remedial alternatives, environmental impacts, and other variables associated with this alternative with respect to the HRTW Sites.

#### **3.4.1 Description of Proposed Action and Relationship to Hazardous Waste Sites**

The “No Action” alternative would allow for conditions to remain unaffected and would not pursue any further construction activities or remedial efforts in regard to the HTRW sites. In essence, this would allow for the potential continued release of hazardous substances and leachate currently being discharged to groundwater and the Pearl River from the HTRW sites.

#### **3.4.2 Risks Posed**

Risks associated with the “No Action” alternative would consist of the risks associated with current conditions previously described. Issues previously identified in relation to environmental impacts from the local landfills at Gallatin Street Dump and Lefleurs Landing Site, and creosote residuals from the Creosote Slough at the Gulf States Creosoting Company Site would not be addressed.

#### **3.4.3 Remedial Alternatives**

No remedial alternatives would be associated with this action.

#### **3.4.4 Short-Term Impacts**

The short-term impacts associated with this action would include those that are currently present. Namely, these impacts would include the exposure to leachate, creosote and other hazardous substances via the release into groundwater or surface water or the exposure to impacted sediments. The No Action Alternative would continue the threat of flooding which will continue to have potential adverse effects upon the HTRW sites.

#### **3.4.5 Long-Term Impacts**

The long-term impacts associated with this action would include those that currently pose risks. These impacts include potential human health effects, biota impacts, impacts to important habitats such as wetlands, recreational impacts, and other various environmental impacts from continued exposure to hazardous substances that could be released to soil and groundwater from the hazardous waste sites. No project would be constructed and the threat of flooding would continue to have potential adverse effects upon the HTRW sites.

#### **3.4.6 Community Acceptance**

Community acceptance of the current situation and potential adverse flooding is likely to be unfavorable.

#### **3.4.7 Pros**



While the “No Action” alternative would not have immediate impacts to the community or the HTRW sites, it does not address the current environmental and socioeconomic concerns. A lack of activity would not exacerbate these issues and would be of little or no cost to the taxpayers in the short term.

#### **3.4.8 Cons**

The “No Action” alternative has potential short-term impacts and will definitely have long-term impacts when a significant flooding event occurs again. The “No Action” alternative would allow current environmental issues to continue to deteriorate with regard to HTRW sites. If no action is taken, current potential threats to human health and the environment would not be eliminated.



#### **4.0 SUMMARY AND CONCLUSIONS**

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HTRW sites have been identified within the boundary of the proposed project, as well as adjacent to the boundary. The HTRW sites include the Gallatin Street Dump Site, Lefleurs Landing Site (Jefferson Street Landfill), and the Gulf States Creosoting Company Site and associated Creosote Slough. Proposed project alternatives have been evaluated and determined to have impacts to the HTRW sites, and, in a similar manner, the HTRW sites will have impacts on the proposed project alternatives. Other hazardous waste sites that were outside of but adjacent to the project boundary were also evaluated and no significant adverse environmental impacts on the proposed project were found.

The Gallatin Street Dump Site and the Lefleurs Landing Site are former landfills that were not designed to contain wastes. Rainwater percolating down through the waste matrix into the groundwater, and then groundwater moving through the wastes are generating leachate. The leachate is currently migrating into the Pearl River. The leachate potentially contains a variety of pollutants. Pearl River currents and flood waters are continually eroding the banks of these two landfills, releasing rubbish, debris, trash, and chemicals into the river. The Creosote Slough contains sediments with creosote residuals that are released to the environment and the Pearl River during periods of inundation such as flood or high water conditions.

The “No Action” alternative is undesirable because it will leave the HTRW sites as they are today; thus continuing their threat of release of HTRWs to the environment, potential adverse impacts to human health and the environment, and posing environmental cleanup liabilities for the current owners. Under the “Buy Out” alternative, the hazardous waste sites will remain in the same condition, will continue to pose a threat of release of HTRW, and will not be redeveloped. Under the “Levee” alternative the hazardous waste sites will remain as they are, continuing to pose environmental liabilities for the current owners. The “Channel Improvement/Weir/Levee” alternative will include remediation and mitigation measures to address the hazardous waste sites to remove or eliminate the environmental threats posed by the sites, as well as further investigations of other potential sites such as the former Gulf States Creosoting Company Site to assure no adverse impacts.

Remedial alternatives for the HTRW sites included in the proposed “Channel Improvement/Weir/Levee” project may include, but are not limited to, the construction of engineering controls, such as slurry walls and impermeable caps to prevent the offsite migration of hazardous substances, in-situ bioremediation techniques, groundwater controls, slope and bank stabilization methods, excavation and removal of impacted sediments, and sediment capping, among others.

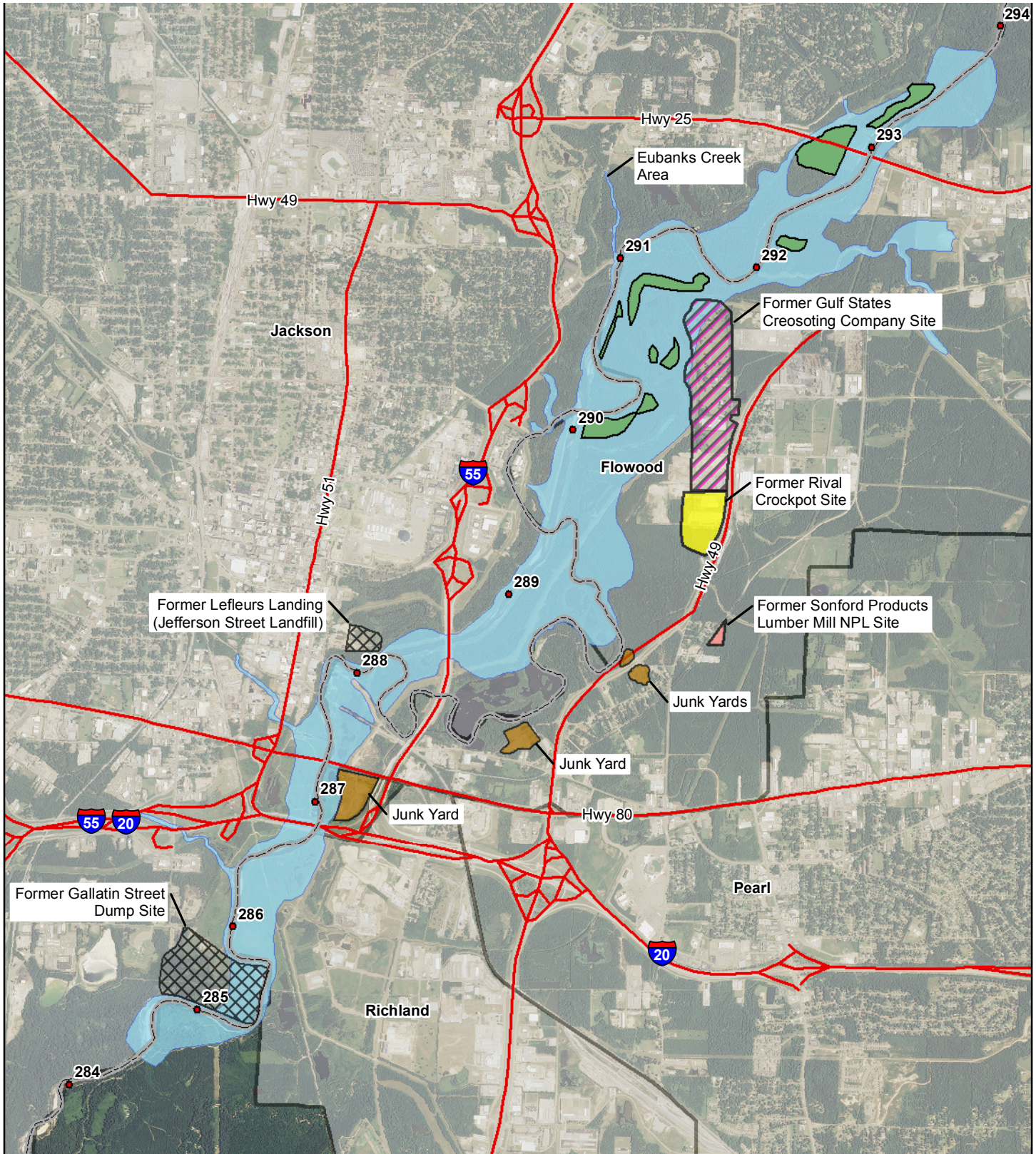
Upon evaluation of readily apparent environmental, economic and social benefits and impacts associated with the HTRW sites in relation to each of the alternative actions for the Pearl River flood reduction project, Alternative C – termed the “Channel Improvement/Weir/Levee” project – is believed to be the choice most beneficial to the community. This action would address and/or eliminate current environmental impacts from the HTRW sites. Although there will be costs for mitigation of the HTRW sites, the economic benefits of the selected alternative will far outweigh the costs over the long term.





## FIGURES

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**Disclaimer:**  
 The information contained in this map was generated from GIS data maintained by different sources and agencies. Some limitations may apply based upon restrictions imposed by other sources or agencies providing data directly to Allen Engineering and Science, Inc. (AllenES) or making data available to download via internet. Areas depicted by these products are approximate, and are not necessarily accurate to mapping, surveying, or engineering standards. These digital products are for illustration purposes only, are not suitable for site-specific decision making, are subject to constant changes, and may not be complete, accurate or current. Any specific coordinates may be in error by several hundred feet or more. A data layer may have registration errors and not overlay with other data layers correctly.

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- LEGEND**
- Approximate County Boundary
  - Approximate Proposed Lake Location
  - Approximate Proposed Island Locations
  - Approximate Major Interstates/Highways
  - Approximate River Mile Location and Identification
- 289



**MENDROP ENGINEERING RESOURCES  
 HINDS/RANKIN COUNTY, MISSISSIPPI**



SCALE: 1"=4,000'	DRAWN BY: PML	DATE: 09-09-2014
	CHKD BY: CHD	DATE: 09-09-2014

PROJECT NO. 14120	FILE 14120 090914 FIG01 R01 DAC&HTRWS
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ALTERNATIVE C AND HTRW SITES | FIGURE 1



## **ATTACHMENT A**

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### **Gallatin Street Dump Site**

*Gallatin Street Dump Slope Stability and Landfill Analysis Project, Gresham, Smith & Partners/Ware, Lind, Furlow (Aquaterra), January 1998.*

### **Gulf States Creosoting Company**

*Final Preliminary Assessment/Site Inspection Report: Gulf States Creosoting Company - Flowood, Rankin County, Mississippi, Revision 1, Weston Solutions, Inc., December 31, 2003.*

*Record of Decision: Summary of Remedial Alternative Selection – Sonford Products Superfund Site Operable Unit 2 – Flowood, Rankin County, Mississippi, U.S. EPA, Region 4, September 2009.*

### **Lefleurs Landing Site (Jefferson Street Landfill)**

*Phase II Environmental Site Assessment Report at Lefleurs Bluff Landing Site – Phase II Site Assessment for Areas 2 and 3B, 658 South Jefferson Street – Jackson, Mississippi, PPM Consultants, Inc., April 20, 2005.*

*Remedial Action Report: Mississippi Department of Environmental Quality – Lefleurs Bluff Festival Grounds Jefferson Street – Jackson, Mississippi, PPM Consultants, Inc. August 2004.*

### **Rival Manufacturing Companies**

*Phase I Environmental Site Assessment: W.G. Avery and Body Company – 141 Acre Parcel – Mississippi Highway 468, BCM Engineers, Planners, Scientists and Laboratory Services, July 1993 – Revised August 1993.*

### **Sonford Products Lumber Mill**

*Record of Decision: Summary of Remedial Alternative Selection – Sonford Products Superfund Site Operable Unit 2 – Flowood, Rankin County, Mississippi, U.S. EPA, Region 4, September 2009.*



**ATTACHMENT B**

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**Gulf States Creosoting Company Site**



Picture 1 – Creosote Slough



Picture 2 – Creosote Slough



## Gulf States Creosoting Company Site



Picture 3 – Former Wood Treatment Area looking Southeast



Picture 4 – Former Wood Treatment Area looking East



## Gulf States Creosote Company Site



Picture 5 – Former Wood Treatment Area looking Northeast



Picture 6 – Levee looking North



**Lefleurs Landing Site (Jefferson Street Landfill)**



Picture 7 – River Bank look West



Picture 8 – Exposed Rubbish in Landfill Edge



**Lefleurs Landing Site (Jefferson Street Landfill)**



Picture 9 – Rubbish Exposed on South Bank of Landfill



Picture 10 – Landfill Area looking West





## Gallatin Street Dump Site



Picture 11 – Landfill Area looking East



Picture 12 – Rip Rap Area along Bank of Pearl River



## Gallatin Street Dump Site



Picture 13 –Evidence of Rubbish in the Pearl River Bank



Picture 14 – Erosion and Seepage Area along Pearl River



## Gallatin Street Dump Site



Picture 15 –Evidence of Leachate Seepage into Pearl River



Picture 16 – Evidence of Gas Bubbles in Sediment at Bank of Pearl River



## Eubanks Creek Site



Picture 17 – Eubanks Creek looking North



Picture 18 – Eubanks Creek looking South