Introduction

This document will serve as the final report to the United States Environmental Protection Agency (EPA) for the Wolf River Brownfields Assessment Project Area Grant, BF 95463110-0, from Shelby County Government through its Memphis and Shelby County Office of Planning and Development. This final report will focus on the sites selected for funding under the grant; include "before" and "after" pictures; briefly describe the environmental work performed; discuss the status of the site and additional site investment; lessons learned; and contain the Federal Financial Report, the Final Minority/Women Owned Enterprise Utilization Report and the Final Lobbying and Litigation Certification forms. Please note that all Brownfield funded technical reports including Phase I Environmental Site Assessments (ESAs), Phase II ESAs, the generic Quality Assurance Project Plan (QAPP), site specific QAPP addenda/work plans, Analysis of Brownfield Clean Activities (ABCA) and Remediation Plan were submitted to Olice Carter as these documents were produced and/or approved. Additional copies of these documents are available at the grant repository, Memphis Public Library & Information Center.

The status report submitted to EPA on June 30, 2013 discussed specific details of the public engagement process and other grant elements. The "Final Report: Wolf River Brownfields Assessment Grant" prepared in June 2013 by Powers Hill Design (PHD) served as the public closeout document for the grant. It contained an acknowledgement of the individuals, organizations, grant partners, applicants and consultants who participated in the grant as well as the Rhodes College Partnership. The document also contained "before" pictures, a map of the sites assessed, and a table of relevant information about each site and the public engagement activities that lead to the site selection. The PHD report concluded with a "Brownfield Resource" page directing people to additional information on Brownfields and Brownfield Grant opportunities. Collectively, these three documents describe the grant activities performed for the Wolf River Brownfields Assessment Project Area Grant funded by the United States Environmental Protection Agency as implemented by the Memphis and Shelby County Office of Planning and Development.

Specific Sites Funded for Environmental Work

This section will provide information on the specific sites that were selected by the Shelby County Brownfields Council to receive federal funding through the Brownfield Assessment Grant Program for Phase I Environmental Site Assessments (ESAs), Phase II ESAs, and the site selected for an ABCA and remediation plan. All Phase I ESA sites were selected through an open application process. Phase II ESA sites were primarily selected from Phase I sites. The site chosen for an ABCA and remediation plan was selected from eligible Phase II ESA sites. All applications were reviewed by the Assessment Review Committee, an Ad-Hoc Committee of the Shelby County Brownfields Council charged with reviewing the applications and making a recommendation to the Council.

The original grant commitment was 20 Phase I ESAs, 6 Phase II ESAs and at least, one remediation plan. The adjusted grant commitment as approved by Olice Carter was 17 Phase I ESAs, 6 Phase II ESAs and at least, one remediation plan. The Wolf River Harbor, the Chelsea Greenline and 2630 Epping Way were projects that received 2-3 Phase I ESAs due to the size of

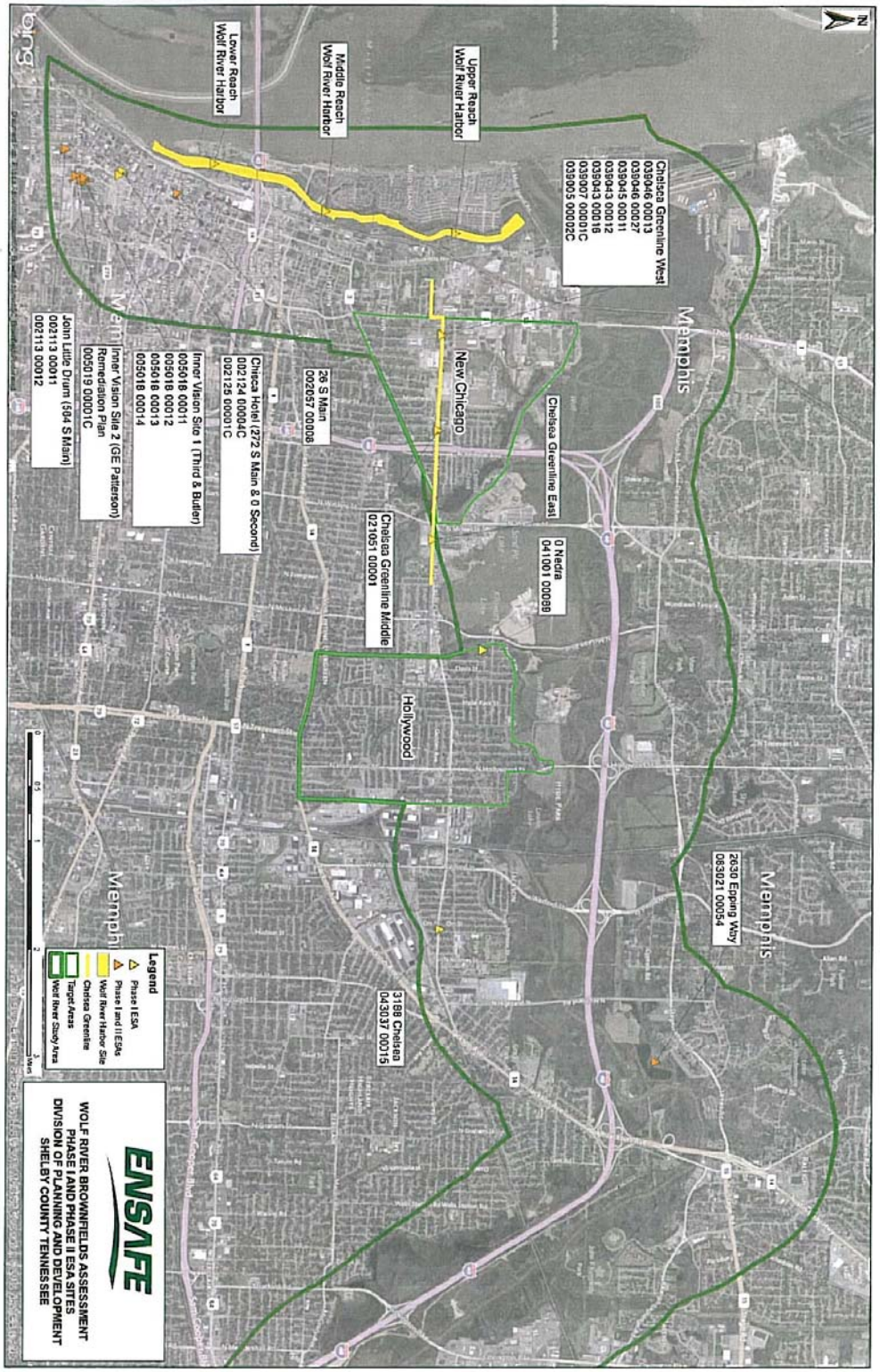

Chelsea Greenline West
039046 00013
039046 00027
039045 00011
039043 00012
039043 00016
039007 00001C
039005 00002C
Upper Reach
Wolf River Harbor
Middle Reach
Wolf River Harbor
Lower Reach
Wolf River Harbor
Memphis
New Chicago
Chelsea Greenline East
0 Nedra
041001 00089
Hollywood
Chelsea Greenline Middle
021051 00001
26 S Main
002057 00008
Chesca Hotel (272 S Main & 0 Second)
002124 00004C
002125 00001C
Inner Vision Site 1 (Third & Butler)
005018 00011
005018 00012
005018 00013
005018 00014
Inner Vision Site 2 (GE Patterson)
Remediation Plan
005019 00001C
John Little Drum (684 S Main)
002113 00011
002113 00012
2630 Epping Way
063021 00054
3188 Chelsea
043037 00015
Legend
Phase I ESA
Phase I and II ESAs
Wolf River Harbor Site
Chelsea Greenline
Target Areas
Wolf River Study Area
ENSAFE
WOLF RIVER BROWNFIELDS ASSESSMENT
PHASE I AND PHASE II ESA SITES
DIVISION OF PLANNING AND DEVELOPMENT
SHELBY COUNTY TENNESSEE

Figure 1

the project area; whereas, the Phase I ESA for the John Little Drum site received one Phase I ESA since both parcels were adjacent and small in size. EnSafe, Inc. served as the environmental professional for the Brownfield Assessment Grant and charged a fixed rate of $2,946 for each Phase I ESA performed under the grant. Phase II ESA prices varied based upon the scope of work.

Wolf River Harbor

The Wolf River Harbor is located in a grant target that is comprised of the Wolf River on the north; Interstate 40 on the south; Front, Henry and Second on the east; and Wolf River Harbor on the west. The Wolf River Harbor is also located in the Uptown Community Redevelopment (TIF) Area in Downtown Memphis, the Downtown Memphis Commission's Central Business Improvement District and the Memphis Riverfront Development Corporation's boundaries.

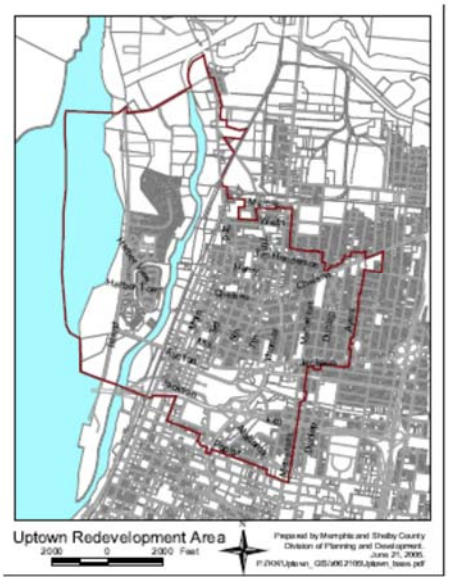


Figure 2

Figure 3

The Wolf River Harbor will also serve the proposed new Bass Pro Facility that will incorporate the reuse of the former Pyramid Area. Uptown West is located west of the proposed Bass Pro site.

Wolf Rive Harbor Pictures (Before)

<u>Description of the Site:</u>
EnSafe's Phase I ESA Executive Summary on page vii states:

> The subject property includes surface water and sediment within the 3-mile reach of the Harbor beginning at the confluence of the Mississippi River and

> the Harbor adjacent to the southern point of Mud Island to the northern causeway (North Mud Island Road), and is bounded by the shoreline of Mud Island to the west and Uptown and Downtown Memphis to the east. A 2010 U.S. Army Corps of Engineers Fact Sheet describes the subject property as a slack-water harbor used for import of industrial materials. Commercial barge mooring and loading/offloading terminals and one commercial dock (Memphis Riverboats) are along the eastern shoreline of the subject property.

The purpose of the Phase I ESA work was to determine if the water in the Wolf River Harbor was suitable for transforming the harbor into a "water amenity with transportation, limited recreation, and mixed-use development" as a part of the larger waterfront development and Uptown West (EnSafe, Phase I ESA report, March 8, 2012). The Memphis Riverfront Development Corporation was the application for the three Phase I ESAs performed on the Wolf River Harbor.

<u>Condition of the Wolf River Harbor:</u>
Regulatory research conducted by EnSafe, Inc. as a part of the Phase I ESA states:

> The Harbor discharges to the Mississippi River Mile 736. The Mississippi River (24.0 miles along Shelby County) and Wolf River Harbor are listed on the Tennessee Department of Environment and Conservation (TDEC) Division of Water Pollution Control (DWPC) Final Version Year 2010 303 (d) List of impaired streams due to: mercury (from atmospheric deposition); polychlorinated biphenyls (PCBs), dioxin, and chlordane (contaminated sediment and from sources outside the State jurisdiction or borders); and physical substrate habitat alterations. The Mississippi River and Wolf River are Category 5 (one or more use impaired) with a fishing advisory (originally due to Chlordane).
>
> Regulatory research identified nine facilities along the eastern shoreline and several within 0.25 mile with permitted storm water and/or non-contact cooling water discharges directly to the Harbor under Tennessee Multi-sector General Permits and/or Individual National Pollutant Discharge Elimination System permits. Additionally, Aquatic Resource Alteration Permits have been issued for the area around the subject property in support of erosion prevention and sediment control, emergency repairs to storm water culverts, and construction. TDEC DWPC files did not contain information suggesting releases, discharges, or significant areas of noncompliance indicative of releases or discharges of hazardous substances or petroleum products to the Harbor from adjoining properties.
>
> Regulatory research also identified several properties within 1 mile of the Harbor with (current and historical) records of repeated releases, soil and ground water contamination, hazardous waste generation, and registered and leaking underground storage tanks. Because shallow ground water in the downtown area and the surface water of the Harbor are expected to interact,

> ground water contamination at those facilities has the potential to have migrated to the subject property.
>
> Releases reported through the U.S. Coast Guard National Response Center (NRC) and Emergency Response Notification System (ERNS) indicated that gasoline (unleaded), diesel fuel, and oil have been released to the Wolf River Harbor over the past two decades; three releases of petroleum were reported in 2011…Information in the NRC and ERNS reports did not consistently identify what corrective actions were taken and/or whether the spills were contained and petroleum recovered. In addition, the Mississippi River and/or Wolf River Harbor likely received releases and discharges from facilities and/or vessels that occurred prior to promulgation and enforcement of environmental regulations (from late 1700s to the early 1970s) requiring remedial/corrective action. (Executive Summary, page ix)

<u>Phase I ESA Findings:</u>
The Phase I ESA performed by EnSafe, Inc. on the Wolf River Harbor identified *historical recognized environmental conditions, recognized environmental conditions and business risks* based on the Wolf River Harbor's "long commercial and industrial history of the properties that adjoin the Harbor with multiple releases to soil and groundwater at several surrounding area sites (within 1 mile) in Uptown and Downtown Memphis".

> Contaminants are expected to have been released to the Harbor through storm water runoff (both overland and through underground drainage features) and/or groundwater discharge; examples of such discharges are bulleted below.
>
> 1. Petroleum products and hazardous substances have been discharged from parking lots and pavement around industrial facilities, roads, and lots in Uptown and Downtown Memphis and on Mud Island.
>
> 2. Petroleum products have been discharged from automobile repair garages, junk yards, and machine shops in Uptown and Downtown Memphis.
>
> 3. Releases of solvents detected in groundwater at the Pyramid Arena, Old Cummins Diesel, Firestone, Uptown Memphis Blocks 51/52, Uptown Mixed-Use Center, Levee Auto Parts, and Metal Manufacturing/Perl Co.
>
> 4. Releases of petroleum products detected in groundwater from former USTs that supplied fuel to the marina on Mud Island.
>
> 5. Historical hardwood processing in the Uptown area may have included wood preserving. Coal tar (beginning in the 1840s) and chromated copper arsenate and pentachlorophenol (beginning in the mid-1930s) were commonly used wood preservatives.

6. A coal tar plant that later converted to a manufactured gas plant that used and stored bulk quantities of fuel oil was the location of the current North Second Street Trolley Garage from the late 1980s to the early 1930s.

Past releases of hazardous substances and petroleum products to the Harbor represent a *historical recognized environmental condition* that remains a *recognized environmental condition* based on its categorization as an Impaired water with use restrictions established by the State of Tennessee.

Information from the City of Memphis Public Works Division indicates that the sanitary sewer system within Downtown Memphis overflows multiple times each year. The Gayoso Bayou and Marble Bayou drainage basins collect sanitary sewer overflow and discharges it (untreated) to the Wolf River Harbor. The discharge of sanitary sewer (which may include industrial process wastewater) or overflow into the Harbor represents a *recognized environmental condition.*

The continued industrial uses of properties along the east Wolf River Harbor shoreline and presence of vessels carrying bulk quantities of hazardous substances and petroleum products poses a material threat of release to the Harbor via spills, storm water discharge, and groundwater migration that is considered a *recognized environmental condition.* In addition, barge loading and offloading at the grain and concrete terminals may pose an inhalation risk from fugitive dust emissions.

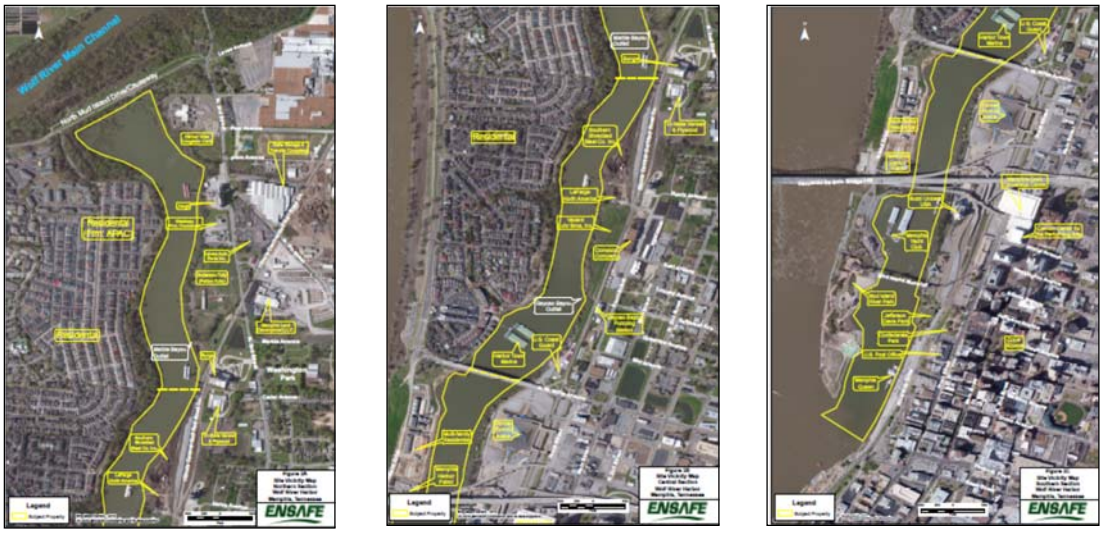
The potential *business environmental risk* associated with past releases and threat of hazardous substances, petroleum products, and/or sanitary sewage with respect to the planned future use of the Harbor may be mitigated and/or addressed considering the following.

1. Neither the Harbor nor the Mississippi River is used as a drinking water source and there are no surface water intakes in the Memphis area that supply public water.

2. Limiting recreational activities to meet restrictions established by the State of Tennessee.

3. Establish actual site conditions through Phase II ESA surface water and sediment sampling, followed by risk assessments to determine feasible uses and establish necessary precautions, limitations, and response actions for planned use/activity/population. (Executive Summary, pages x and xi)

The Memphis Riverfront Development Corporation did not apply for Phase II Environmental Site Assessments on the Harbor.



Figures 3-5 Aerial Photographs of the Wolf River Harbor with key businesses and Phase I ESA boundaries identified.

Redevelopment and Reinvestment:

The Uptown West Master Plan was a partnership between the Riverfront Development Corporation (RDC), Memphis and Shelby County Redevelopment Agency (CRA), Lauderdale-Greenlaw, LLC, the Memphis Housing Authority, the U.S. Army Corps of Engineers and others. The master plan was funded through a contract between the RDC (CRA funded RDC's $200,000 up front contribution using increment/property tax revenue) and the U.S. Army Corps of Engineers through the Planning Assistance to the States Program. The total plan cost was $400,000. A final draft of the master plan for the Uptown West Area was approved by various stakeholders.

Further, the Memphis Land Bank-Uptown, LLC entered into a separate contract with EnSafe, Inc. for $10,000 to reformat the information from the Phase I ESAs for the Wolf River Harbor together with research on the remaining Uptown West parcels to create a threat assessment document for the Uptown West Area using tax increment revenue. The Uptown West Threat Assessment reviewed historical land use sources as well as available regulatory databases for approximately 150 tax parcels in the Uptown West boundaries and 115 adjoining tax parcels in order to assign first-order risk categories (Environmental Threat Assessment Uptown West, page 1).

In addition, the City of Memphis Division of Public Works constructed the Gayoso Trash Interceptor using City of Memphis Storm Water CIP funds totaling $1,104,097.98. The debris collection system was built in the Wolf River Harbor (within the Uptown West Project Area) to collect trash and debris from the harbor and the treatment plant.

Thus, EPA's initial expenditure of $8,838 for three Phase I ESAs of the Wolf River Harbor was part of a larger investment of $1,514,097.98 in additional funding for various Uptown West Activities to date. The CRA has approved funding of an additional $2.9+ Million for future Uptown West related activities.

AFTER PICTURES

Wolf River Harbor

The Chisca Hotel

The Chisca Hotel is located at 272 South Main Street, and the adjacen parking lot is located at 0 South Second Street in the Downtown Memphis Commission's Central Business Improvement District and in the South Main Historic District. These sites are located across the street from the Memphis Light, Gas and Water Headquarters and Gibson Guitar Factory. The Chisca Hotel is a landmark building in a part of the South Central Business Improvement District that is the beneficiary of entertainment venues such as the Orpheum Theater, Gibson Guitar, Peabody Place, and the FedEx Forum.

Chisca Hotel and Parking Lot (Before)

<u>Description of the Site:</u>
The Phase I ESA Execuitve Summary on page iv describes the site as:

> The 2.62-acre subject property at 272 South Main Street in downtown Memphis occupies two city blocks and is bordered on the north by Linden Avenue, on the east by South Second Street, on the south by Pontotoc Avenue, and on the west by South Main Street; the blocks are bisected by Mulberry Street. Parcel 002124 00004C is a 1.08-acre paved parking lot. Parcel 002125 00001C is developed with a 292,138-square-foot, eight-story hotel building and connected four-story office/parking garage annex. These structures have not been occupied since the late 1990s and are heavily deteriorated, with portions exposed to the elements (humidity and rain) causing flooding, rusting, delaminating paint and insulation, and mold.
>
> The hotel has two elevator equipment penthouses, an approximately 4,000-square-foot luxury penthouse, and a basement and sub-basement. The basement — which extends almost the entire hotel building footprint — appears to have housed most of the facility's maintenance, storage, and laundry areas, and equipment associated with various mechanical, electrical, plumbing, water and pool filtration, and fire suppression systems. The associated sub-basement — under the southeast end of the hotel basement — housed boilers, piping, and various control systems. The sub-basement was accessible from one set of stairs in the basement and had street access for deliveries via a platform lift, the entrance to which was paved over with a

> sidewalk that has the appearance of a sink hole from the Mulberry Street level. The annex has one elevator equipment penthouse.

The Phase I ESA was performed for the purchaser who plans to redevelop the site into apartments with ground floor retail and a parking lot.

Condition of the Chisca:
The EnSafe, Inc. Phase I Investigator made the following observations of the former Chisca Hotel:

> The subject property was visually assessed on November 7 and 14, 2011. A few containers of paint, lubricant, and water treatment chemicals remain onsite; most of the containers observed onsite — rusted, deteriorated, and/or stained 55-gallon metal drums of unidentified substances — were in the basement/sub-basement. The sides of four drums and the underlying concrete floor and adjacent wall were stained black as were many areas of the basement floor. In other basement and sub-basement areas, the floor and/or base of walls, elevator shafts, and base of pipe chases were rusted and/or stained and the concrete in poor condition. Based on the age of the facility and estimated date equipment was last likely serviced, polychlorinated biphenyl (PCB)-containing oils may remain in elevator, hydraulic, and mechanical equipment onsite. In addition, hydraulic fluids drained or spilled from older onsite equipment may have residual PCBs.
>
> A brick-walled enclosure surrounds what is believed to be a heating oil aboveground storage tank in the basement, on the east side of the hotel near the vehicle/delivery ramp off Mulberry Street. The enclosure has an approximately 3-inch-thick concrete cover from which various pipes protrude. The enclosure adjoins fire sprinkler system equipment and is above boilers in the sub-basement; the boilers are similarly enclosed with brick walls and concrete covers. Information obtained did not indicate the tank size, current (if any) or former contents, installation date, etc. The visible brick, mortar, and concrete enclosing the tank were not stained.
>
> The following types of materials have accumulated and/or been abandoned in the hotel and annex buildings onsite: mechanical system equipment (e.g., tanks, boilers, control panels, chillers, piping); maintenance equipment (e.g., air compressor, tools, ladders, hoses, belts); elevator systems; commercial kitchen equipment; office equipment and paper items; furniture and carpeting pieces; water tanks; drums, and paint and chemical containers; delaminated thermal system insulation (TSI) and chipped paint; and dead animal carcasses and bird waste.
>
> Evidence of drains and pits includes two areas of cut concrete in the basement filled with brick and concrete (the fill material is not flush with the surrounding concrete floor), a 4-foot cylindrical covered feature connected to

> piping extending through the sub-basement wall, a drain opening in a dry portion of the sub-basement, and what appears to be a de-watering system in the stairwell on the ground floor of the annex. The sub-basement was flooded with up to 1 foot of water; the water was highest in the north (access) end of the sub-basement and water marks and/or staining on the walls suggest the possibility of higher flooding historically. The floor in the mid portion of the sub-basement, west of the brick-enclosed boilers, was covered with a thick white muddy substance believed to be a mixture of water and delaminated asbestos-containing TSI.
>
> A 300-foot well installed in the Memphis Sands aquifer in 1930 for commercial use is registered to the Hotel Chisca on federal and state well databases; none of the resources EnSafe contacted/researched had information related to water quality, sampling, and/or well location (within the hotel). Drinking water in the subject property area is municipally supplied. (Executive Summary, page v)

The EnSafe, Inc. Phase I Investigator also identified the following conditions on surrounding area properties:

> The subject property is in a portion of downtown Memphis that has been developed commercially and residentially since at least 1888, with adjoining properties occupied by residential, retail stores, churches, commercial (furniture manufacturing and repair, and automobile sales, service, and repair), hotels, restaurants, beauty/barber shops, and offices. Adjoining and/or nearby parcels occupied by businesses with operations expected to have used and stored hazardous substances and petroleum products include filling stations, guitar manufacturing, and printing and film developing. In addition, Sanborn maps show an underground gas tank in Pontotoc Street near the intersection with South Main Street. Neither the historical filling stations nor the Pontotoc Street tank was registered or listed on environmental databases reviewed. Two adjoining facilities (Gibson Guitar Factory and George Hedge Printing) have records regarding hazardous waste generation, for which no information was available at TDEC or USEPA.
>
> Regulatory research identified facilities on environmental databases, with reported releases, and/or with permits or other environmental records within ASTM-defined search distances. Review of available files at the TDEC Memphis Environmental Field Office did not indicate contaminants at those facilities (primarily from leaking underground storage tanks) have migrated to the subject property; most were issued “no further action” required or “clean closure” letters and/or had groundwater flow direction carrying contaminants away from the subject property. (Executive Summary, page vi)

Phase I ESA Findings:

EnSafe, Inc. Phase I Investigator identified the following *recognized environmental conditions* and *business environmental risks* on pages vi and vii of the Executive Summary :

> The stained floors and walls and corroded drums in the basement and sub-basement are evidence of the presence of hazardous substances and/or petroleum products under conditions that indicate a release of hazardous substances or petroleum products into structures on the property, which is a *recognized environmental condition.*
>
> Although asbestos that is a part of the structure of, and results in exposure within, buildings is specifically excluded from Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) liability, asbestos that is disposed of on a site and is no longer part of the structure of a building is subject to CERCLA response actions. Based on the age of the structure, all TSI in the basement and sub-basement is considered presumed asbestos-containing. The deterioration of the TSI in the former hotel basement and sub-basement and the quantities that have delaminated to cover flooring in large areas and/or have been stockpiled onsite are no longer part of the structure and are considered to have been disposed of onsite. In addition, the muddy mixture of what appears to be TSI and water from flooding in the sub-basement constitutes a disposal onsite. The presence of asbestos under existing conditions is considered a *recognized environmental condition.* Future use of the property includes residential and/or public occupancy and redevelopment includes partial demolition of buildings onsite; therefore, the presence of asbestos-containing material is a *business environmental risk* due to the capital costs and potential liability associated with its identification, abatement, encapsulation/removal, and disposal.
>
> The registered well onsite poses a *business environmental risk* because it may provide a conduit to the subsurface, including the Memphis Sands aquifer, for any contaminants released at its location, which could not be determined from interviews or the site reconnaissance, and capital costs may be necessary to properly close/abandon the well. Additional *business environmental risks* associated with the subject property include capital costs and potential liability associated with characterization and proper disposal of contents that may remain in drums and containers, hydraulic equipment (including the freight elevator), mechanical equipment, and the heating oil tank.
>
> Based on their age, the buildings formerly located on Parcel 002124 00004C were likely constructed with asbestos-containing material and lead-based paint (LBP). The buildings were demolished before regulations governing removal and disposal of building materials including asbestos and LBP were promulgated. If demolition debris remains beneath the parking lot parcel, the likelihood that it contains asbestos and/or LBP is considered a *recognized environmental condition*.

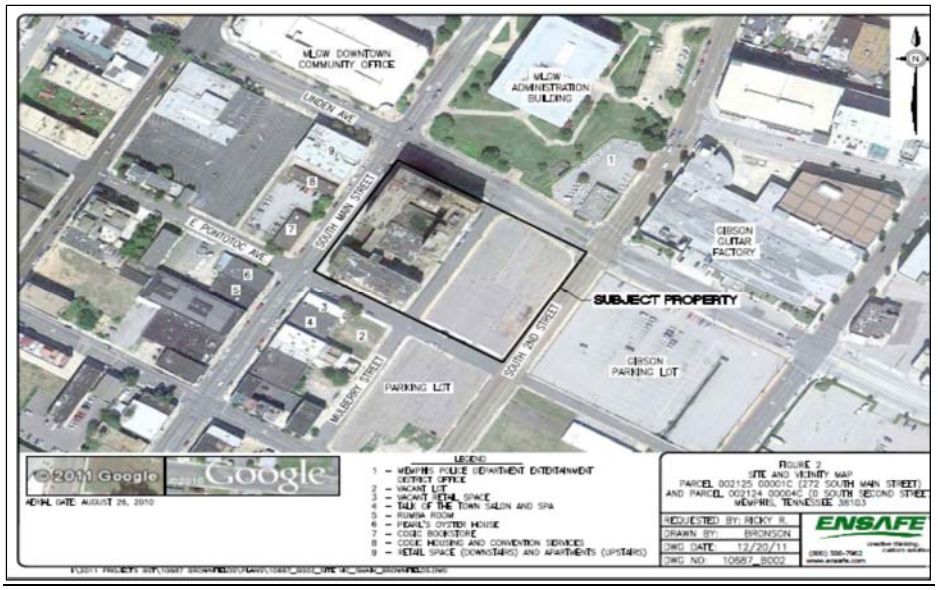


Figure 6 Aerial Photograph with Chisca Hotel and Parking Light Highlighted

Redevelopment and Reinvestment:

The Chisca Hotel partnership, the Main Street Apartment Partners, LLC, is pursuing a mixed finance strategy for the redevelopment of the former Chisca Hotel into 150-190 apartments, ground-floor retail and restaurant space, and a new parking garage. The Chisca Project underwent review by the Downtown Memphis Commission's (DMC) Design Review Board due to the incentives provided by DMC, and the Memphis Landmarks Commission since the property is located in a local historic district.

The City of Memphis committed $2 Million in its FY 2013 Capital Improvement Program to fund blight remediation work on the former Chisca Hotel to the Memphis Center City Development Corporation which is a 501(c)(3) corporation affiliated with the Downtown Memphis Commission. The Center City Development Corporation will hold the $2,000,000 until the developer has satisfied several conditions including demonstration of complete project financing, execution of a general construction contract to complete the redevelopment of the Chisca Project, and receipt of construction performance bonds (City Council resolution dated August 7, 2012). The resolution further requires the work to commence within 9 months or the Center City Development Corporation will return the City of Memphis funds, 20% WBE/MBE participation, and a recapture provision if the ownership groups sells or refinances the project to the extent that a surplus return is generated or above the threshold required to attract additional redevelopment funding from private capital.

In addition, The Downtown Memphis Commission's Center City Revenue Finance Corporation granted a PILOT for the Chisca Hotel for 20 years and allocated $1 Million from the PILOT Extension Fund to its Downtown Parking Authority for renovation of the parking garage.

Members of the development team had a preliminary meeting with Louis Jackson of the Tennessee Historical Commission on Friday, April 19, 2013 to discuss historic tax credits for the Chisca Project. Additional information is needed before a recommendation can be forwarded to the National Park Service for a final determination and award.

EPA's initial investment of $5,892 for two Phase I ESAs resulted in an approximately $2,000,000 short term investment by the City of Memphis: a long-term investment of approximately $1,000,000 in Downtown Memphis Commission funds and $19.5-24 Million in private capital long-term investment. The PILOT approved by DMC will freeze property taxes for this project at a pre-development level for a 20 year period.

AFTER PICTURES

The Chisca Hotel and Parking Lot

The Chelsea Avenue Greenline

The majority of the proposed Chelsea Greenline is located in two grant target areas-the New Chicago Community and the Wolf River Harbor Area. The New Chicago Community is bounded on the north by Levee Road, Chelsea Avenue on the south, Watkins Street on the east, and Thomas Street on the west. The Wolf River Harbor target area is bounded by the Wolf River on the north; Interstate 40 on the south; Front, Henry and Second on the east; and Wolf River Harbor on the west.

The proposed Chelsea Avenue Greenline is primarily composed of the abandoned Union Pacific Railroad right-of-way from North Evergreen to Washington Park. It is an approximately 2.4 mile corridor. The proposed Chelsea Avenue Greenline holds the potential to connect the completed CSX/Shelby Farms Greenline to the Uptown West Area and the multi-use trail being funded through a Tiger Grant and tax increment financing. The Greater Memphis Greenline was instrumental in the planning and development of the Shelby Farms Greenline.

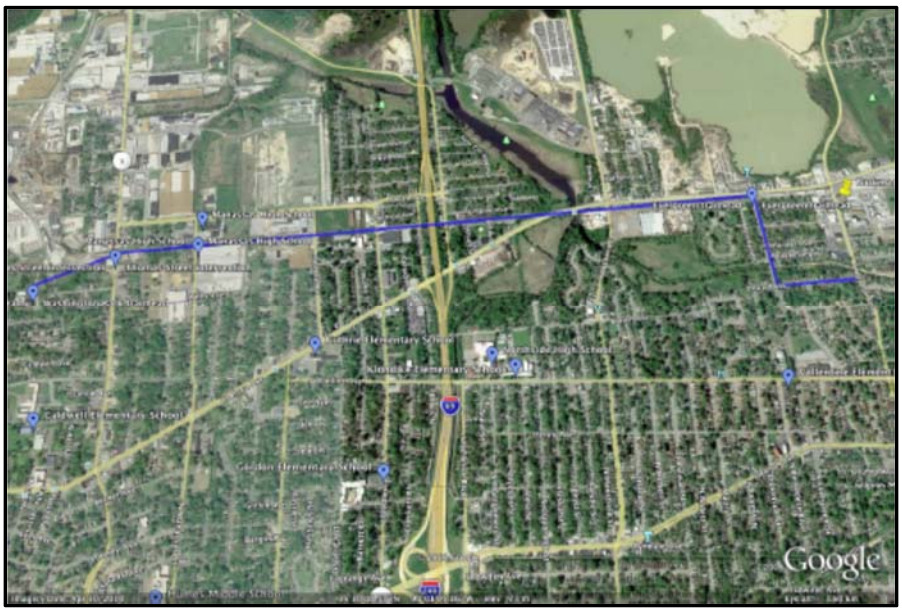


Figure 7 Aerial Photograph of the Proposed Chelsea Greenline

<u>Description of the Site:</u>
The EnSafe Phase I Investigator described the abandoned Union Pacific Railraod Right-Of-Way in the following manner:

> UP used the subject property for at least 100 years as a railway but has not used the railway in approximately 4 years. The railroad tracks and cross ties were removed from the subject property in 2010 or 2011. The cobble- and gravel-covered railbed and footprint of the former railroad are still visible. Low-lying grass and vegetation have grown in and along the railbed throughout the subject property corridor. The subject property crosses eight private parcels (primarily in the west section of the subject property); six owned by UP and two owned by Lazarov Brothers Tin Compress Company (Lazarov). The two Lazarov parcels appear to have been undeveloped or residential until the 1960s; some equipment

> storage was visible in aerial photographs on the Lazarov parcels from the 1970s to the 1990s. During the site visit, EnSafe observed stained soil and stressed vegetation on and adjoining the subject property, solid waste discarded throughout the entire subject property corridor, and an abandoned railroad tanker car on the subject property. (Executive Summary, page iv)

Proposed Chelsea Avenue Greenline (Before)

The EnSafe, Inc. Phase I Investigator also identified the following conditions on surrounding area properties:

> The subject property is in a portion of northwest Memphis that has been developed since at least 1907[1]. Adjoining properties have been used as industrial, commercial, residential, and for churches. Adjoining industrial/commercial properties along the entire 2.4-mile corridor have been formerly or are currently occupied by businesses that have used and stored (including underground) hazardous substances and petroleum products. Industrial property uses have included a steel mill, wood product facilities/lumber yards, an acetylene gas plant, a neon sign manufacturer, a box factory, chemical and petroleum processing/manufacturing companies, coal companies, and furniture factories. Commercial property uses have included gas stations, auto repair shops, salvage yards, scrap metal recyclers, roofing contractors, dry-cleaning facilities, transportation warehouses, a demolition company, and a bus maintenance facility. (Executive Summary, pages iv and v)

<u>Phase I ESA Findings:</u>

EnSafe, Inc. Phase I Investigator identified the following *recognized environmental conditions* and *business environmental risks*:

> Activities associated with the subject property's historical use as a rail line (including loading, unloading, and railcar maintenance) have the potential to have used hazardous substances and petroleum products, including those

[1] The date of EnSafe's earliest historical source (Sanborn fire insurance map) obtained for this Phase I ESA.

containing polychlorinated biphenyls (PCBs), heavy metals, solvents, and other chemicals for maintaining the railway access and vicinity, and creosote to maintain wood rail ties. Discarded debris and waste was observed throughout the subject property corridor. The potential impacts from contaminants typically associated with railroads and the debris represent *recognized environmental conditions*.

Stained soil on the subject property adjacent to Chandler Demolition appeared to be hydraulic oil or motor oil originating from demolition equipment staged on the right-of-way. The staining is considered a *recognized environmental condition*. Unused Chandler Demolition equipment staged on the subject property is considered a *business environmental risk* due to the potential capital costs and liability associated with removing the equipment.

Contaminated sediment remaining along the banks of Cypress Creek is considered a *historical recognized environmental condition* that remains a *recognized environmental condition*. Contaminants include pesticides, metals, PAHs, and VOCs.

Stained soil and stressed vegetation on the subject property south of Preserve International is considered a *recognized environmental condition*. The gold/yellow/orange staining appeared to be caused by a sweet-smelling liquid originating from two bay doors on the south of Preserve International's building. Preserve International apparently produces farm chemicals (including cleaners, sanitizers, disinfectants, and mold inhibitor) using acids, bases, and solvents.

Black stained soil and stressed vegetation from the former Powell Brothers Roofing Contractor facility is considered a *recognized environmental condition.* No petroleum or other odors were detected in the stained area. Additionally, this facility is registered on the UST database.

The Ben J Malone site is an active LUST site with a Corrective Action System constructed at the site. According to regulatory documents, groundwater at the site flows west (cross-gradient to the subject property). During the site visit, approximately 15 55-gallon drums were observed staged adjacent to the subject property and a hole was observed in the vacant facility's fence. The material threat of release to the subject property from this facility is considered a *recognized environmental condition.*

Documented soil contamination at the New Chicago site is considered a *recognized environmental condition.* According to regulatory information,

approximately 800 feet of the New Chicago/subject property boundary is contaminated with lead and petroleum. This former steel mill has a black ash layer (suspected to be slag, kiln dust, and ash) buried up to 36 inches deep across at least approximately 3 acres adjoining the subject property.

The subject property is within the EPIC #64 site, which includes the Osmose and Sharvania sites. Arsenic, lead, chromium, TCE, cis-DCE, and trans-DCE were detected in soil or groundwater at the Osmose site, and arsenic and lead were detected in soil at the Sharvania site. The detections in soil and groundwater at the Osmose and Sharvania sites are considered *recognized environmental conditions* in connection with the subject property. Osmose's proposed remediation plan includes excavating 1 to 8 feet of soil on the subject property along its entire border with the Osmose property. The associated feasibility study states the responsible parties intend to acquire the portion of the subject property that borders the Osmose property. The pile of concrete rubble, asphalt, and dirt on the subject property between Tully Street and Thomas Street appeared to be construction debris from the Sharvania site, where a new concrete pad was recently poured. The likelihood that the debris pile contains contaminated soil from the Sharvania site is considered *a recognized environmental condition*. However, according to paperwork submitted in February 2012, Sharvania will remove the debris pile and properly dispose of the material in an offsite, permitted landfill.

An oil release on the subject property in 1996 from a tanker car (Tully Road Rail Car Spill) is considered a *historical recognized environmental condition* that remains a *recognized environmental condition*. USEPA supervised cleanup of approximately 150 tons of contaminated soil from the subject property and stated that the immediate threat to human health and the environment had been mitigated; however, subsurface soil and/or groundwater contamination may be present.

The subject property is in an area of northwest Memphis that has been heavily industrialized and commercialized since the early 1900s. The length of the subject property corridor, history of the surrounding area, and number of adjoining/surrounding industrial, manufacturing, commercial, and landfill sites is considered a *recognized environmental condition*.

Additional *business environmental risks* associated with the subject property include capital costs and/or potential liability associated with subsurface investigations in areas that have not been fully investigated and/or characterization and proper disposal of material (such as the tanker car and 55-gallon drum) that remains on the subject property.

> Several data gaps encountered while conducting this Phase I ESA may have limited EnSafe's ability to identify *recognized environmental conditions* associated with or resulting from historical uses of the subject property. (Executive Summary, pages v and vi)

Syd Lerner, Executive Director of the Greater Memphis Greenline, was unable to negotiate a right of entry for a Phase II ESA along the Chelsea Greenline with the Union Pacific Railroad by the Phase II ESA deadline.

Redevelopment and Reinvestment:

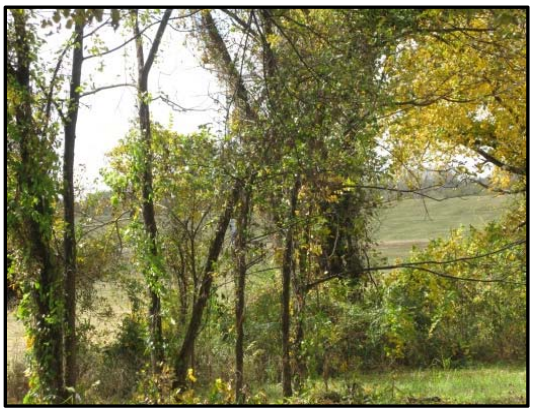
Mr. Lerner worked with the City of Memphis to have the Chelsea Avenue Greenline Project included in the Transportation Improvement Program (TIP) for 2014-17 as a City of Memphis Bike and Pedestrian Grouping Project. The Chelsea Avenue Greenline Project is ranked #49 and is scheduled to receive $1,182,857 in Federal funds with a local City of Memphis match of $295,714 from the City of Memphis FY 15 CIP request. Thus, EPA's initial expenditure of $8,838 for three Phase I ESAs will result in a long term investment of $1,478,571 in federal transportation funds and local CIP funds.

AFTER PICTURES

Proposed Chelsea Greenline Right-of-Way

0 Nedra

0 Nedra is located in the Hollywood Community Target Area in North Memphis. This is an area where there is a great need for fresh fruit and vegetables, i.e. an urban food dessert. The applicant, Family Farmers Cooperative, states the property will be used for urban farming and an orchard.



0 Nedra

<u>Description of the Site:</u>
Page 9 of the Phase I ESA report states:

> The (1.14) rectangular subject property is a grassy and partially wooded lot with no structures. The subject property does not front roadways but is accessible from adjoining residential properties fronting Nedra Avenue and May Street, and from the adjoining May Street Park.(Executive Summary, page vi)

Figure 8 0 Aerial Photograph with 0 Nedra Highlighted

Adjoining and Surrounding Area Properties:
The Phase I evaluator also describes the adjoining properties as:

> Residences that front Nedra Avenue adjoin the subject property to the north and the 30-acre May Street Park property adjoins the subject property to the east, south and west. Residences extend approximately 650 feet north and over 1 mile east of the subject property within the Hollywood Community-Hyde Park Neighborhood. Commercial operations (gas stations, restaurants, and small businesses) are along Chelsea Avenue, which is 0.3 mile to the south. North McLean Boulevard is approximately 500 feet west of the subject property, beyond which is a 6.6-acre vegetated parcel owned by the City of Memphis. Ferrell Properties/Ferrell paving owns several parcels totaling over 400 acres west of North McLean Boulevard and south of the Wolf River, including Sand Pit Lake and Kilowatt Lake, on which Metro Materials operates a construction sand and gravel plant. Metro Materials/Ferrell Paving does not maintain an air operating permit at this location; operations are expected to emit particulates with the potential to settle on the subject property via air dispersion. (Executive Summary, page vii)

Phase I ESA Findings:
EnSafe, Inc. Phase I Investigator identified the following *recognized environmental condition* and *business environmental risks*:

> The various hazardous substance and petroleum product containers disposed of onsite were empty and no odors or staining was observed, although the heavily vegetated condition of the disposal area may have limited EnSafe's ability to identify evidence of a release. Historical aerial photographs do not indicate evidence (pits, vehicle trails leading to the area) of large-scale burial or disposal, but the vertical extent of debris could not be determined based on visual observations. The types of materials observed in this area appear to be a result of random disposal from households. Mr. Matthews future use plans do not involve this area; however, to mitigate potential *business risks*, EnSafe recommends clearing of the underlying ground surface to identify buried debris and/or evidence of releases. Information obtained during those activities will determine the necessity for and type of environmental media sampling. Based on the container's original labeling, possible contaminants of concern (COCs) include semi-volatile organic compounds SVOCs)/petroleum hydrocarbons, metals, asbestos, and volatile organic compounds (VOCs).
>
> The potential for accumulation of particulate matter from current and historical sand and gravel dredging and manufacturing operations within 600 feet of the subject property poses a *business environmental risk* associated with the proposed future use (growing food for human consumption). EnSafe recommends additional research to confirm COCs from Metro Material's

operations with the intention of collecting surface and shallow subsurface soil samples in areas to be gardened. (Executive Summary, pages vii-viii)

Redevelopment and Reinvestment:

0 Nedra is one of a number of parcels owned by the Family Farmers Cooperative. (This parcel was one of several properties conveyed/given to the Family Farmers Cooperative by Shelby County Government via the Shelby County Land Bank.) Shelby County Government gave this property to the Family Farmers Cooperative via a quit claim deed in September 2011. The Family Farmers Cooperative is a commercial farming operation in the Greater Memphis Area. The 2011 appraisal showed the property's value as $6,100: the 2013 appraisal shows a value of $14,300. The owner did not apply for a Phase II ESA. EPA's initial expenditure was $2,946.00 for one Phase I ESA.

AFTER PICTURE-EnSafe, Inc.'s Phase I ESA Pictures

Photo 1: View of the subject property, looking north.

Photo 2: View of the subject property, looking south towards May Street Park.

3188 Chelsea Avenue

Before Picture

3188 Chelsea is a former gas station/convenience store located at the edge of the Hollywood Community in an industrial area. Limited due diligence activities were conducted by the current owner prior to purchasing the property. The owner does contractual work and was difficult to contact for both information on the site and to provide access.

<u>Description of the Site:</u>
Page vi of the Phase I ESA Executive Summary states:

> The 0.29-acre subject property is a vacant parcel at the northwest corner of Chelsea Avenue and Ash Street, developed with an approximately 1,500-square-foot retail store building surrounded by approximately 6,000 square feet of asphalt and concrete. The north approximately one-quarter of the subject property is a grassy strip that extends the entire length. The property south of the site building (from west to east) is sparsely vegetated with patches of gravel and asphalt transitioning to patched concrete then back to asphalt. Within the concrete-paved portion is a patched area indicative of a former fuel dispenser island. In general, the asphalt and concrete are in poor condition (turtleback cracking, separated seams, etc.), with patches of vegetation growing through.
>
> The property was secured with a 6-foot chain-link fence and the building was inaccessible (locked) during EnSafe's May 1, 2012, site visit, which limited observations of the interior to what could be seen through windows on the south and east sides of the building. A portable wood shed, also locked, was on a concrete pad in the northwest corner of the property. The original concrete floor inside the site building was covered with 12-inch floor tile reportedly installed by Mr. Pugh, who did not recall any staining or evidence of patched

areas indicating filled drains, sumps, or pits. In addition, there were no drains or pits in the parking lot and no interior floor drains were observed through the windows of the building.

A set of four 2-inch diameter pipes protrude from the ground at the southwest corner of the building and a set of four 0.5-inch diameter pipes protrude from the ground adjacent to the main entrance. Patched concrete was observed from the smaller-diameter pipes to the former dispenser island area. Another patched strip of concrete and asphalt extended from the utility company's water main cover in the sidewalk along Chelsea Avenue north along the east side of the site building. According to Mr. Pugh, that patched strip is from replacing older water service and drain lines with larger-diameter piping in 2009 for restrooms in the east end of the building. The excavation, which crossed the concrete area near the center of the south property border, remained open for approximately one week. Neither Mr. Pugh nor the employee of Priority First Plumbing & Repair who installed the water line recalled observing stains or petroleum odors in the 18- to 24-inch deep piping excavation.

Adjoining and Surrounding Area Properties:
The Phase I evaluator also describes the adjoining properties as:

The site is surrounded by single-family residences, vacant residential lots, and church properties within the Hollywood Community (aka Midtown North) area, which contains many brownfields mixed with active industries along the major streets of Warford, Hollywood, and Chelsea within ZIP code 38108. The Hollywood Community is one of four target areas in the Wolf River Community-Wide Brownfields Assessment Grant. Based on a *City of Memphis Brownfield Redevelopment Study* and a 2009 brownfields windshield survey and property ownership status study conducted by the Urban Studies Program at Rhodes College, the Hollywood Community is home to several potential brownfields, including the subject property, former gas stations, industrial/manufacturing facilities, and junk yards. Many of the potential brownfields have been taken by Shelby County Government for delinquent taxes or whose property owners owe significant back taxes. The 2009 study included aerial photography review and windshield tours of the general area that showed sites littered with unused and/or abandoned containers, vehicles, equipment, and buildings. (Page 10)

Douglass Elementary School and Douglass High School are north of the subject property at the northeast corner of Ash Street and Mt. Olive Road; the elementary school fronts Ash Street and the high school fronts Mt. Olive Road. Douglass Park is bound on north by Heard Avenue, on the east by North Holmes Street, on the south by Douglass High School, and on the west by Douglass Elementary School and Ash Street. Commercial properties along Chelsea Avenue in the subject property area consist of empty lots, former gas stations/automobile service stations, churches, and abandoned/vacant buildings.

Larger manufacturing facilities — some vacant — surround the subject property with most tied to rail lines that border the Douglass Community on the north, south, and west. (Page 21)

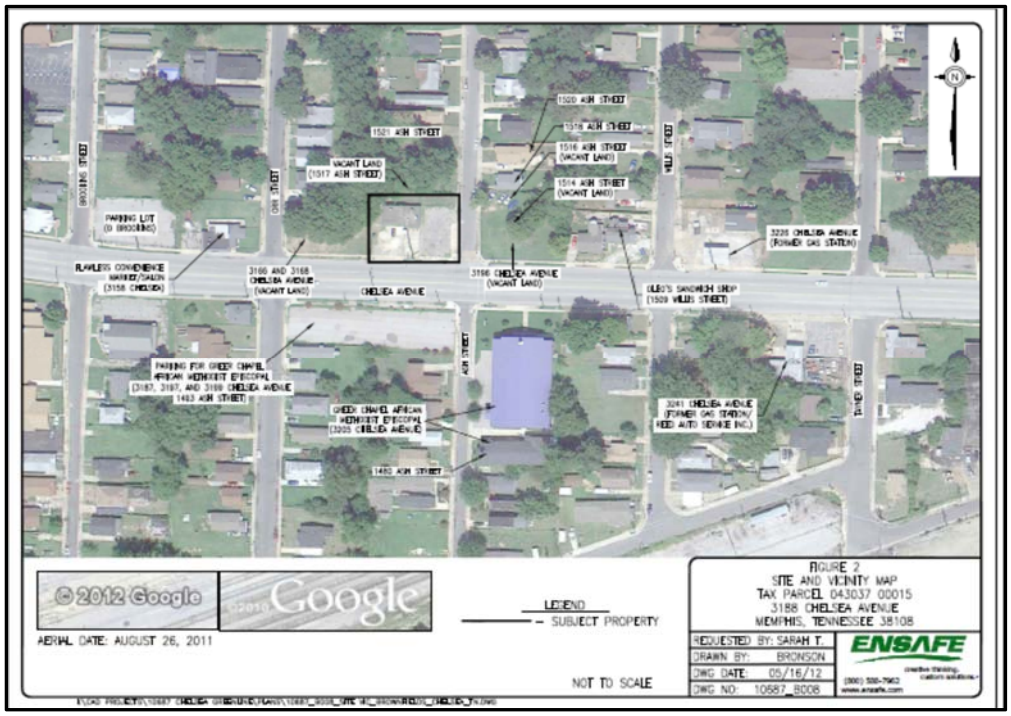


Figure 9 Aerial Photograph with 3188 Chelsea Highlighted

<u>Phase I ESA Findings:</u>
EnSafe, Inc. Phase I Investigator identified the following:

The historical uses of the subject property as a gas station and for automobile service and repair occurred prior to promulgation of environmental regulations that controlled the use, storage, and disposal of hazardous substances and petroleum products, and regulated closure of underground storage tank (UST) systems. The likely presence of hazardous substances and petroleum products on the property under conditions that indicate a past release into the ground and/or groundwater of the property is considered a *recognized environmental condition* in connection with the subject property.

There have been no UST systems registered to the subject property with TDEC, based on EnSafe's regulatory research and an inquiry reportedly made by Mr. Pugh when he purchased the property. Mr. Pugh believed the tanks have been removed, based on the appearance of the asphalt and concrete and from conversations with neighbors, but had no documentation that tanks were emptied, closed, or removed, or that environmental media has been sampled to determine if releases have occurred from former operations on the subject property. The lack of information related to the presence of USTs and/or associated piping that was reasonably ascertainable despite efforts conducted

within the scope of the ASTM E 1527-05 standard practice is considered a *data gap*. Additional investigation to detect the presence of a UST system and/or associated hazardous substances or petroleum products is necessary to address the *data gap*; the appropriate investigation would involve geophysics to search for USTs and a subsurface investigation to screen soil and groundwater for potential contaminants of concern (COCs) benzene, toluene, ethylbenzene, and xylene (BTEX), methyl tertiary-butyl ether (MTBE), naphthalene, and total petroleum hydrocarbons (TPH).

The lack of reasonably ascertainable information regarding Douglass Park Cleaners, which may have operated directly abutting the subject property for approximately 20 years, is also a *data gap* that can be addressed through subsurface investigation in conjunction with the subject property. Potential COCs associated with drycleaning operations include volatile organic compounds (VOCs) and Stoddard Solvent (petroleum hydrocarbons).

Surrounding area properties with reported releases pose a *business environmental risk* because the potential exists for their long-term uses to have impacted subsurface soil and groundwater which could then migrate to the subject property. However, the risk appears to be mitigated in that regulatory research has indicated that groundwater flows away from the subject property from those facilities, they have been or are regulated by a state agency that is aware of environmental-related issues at those sites, and/or the facilities are contaminated with hazardous substances such as those generated from drum reclamation that are not associated with petroleum products used/stored at the subject property. (Executive Summary, pages viii and ix)

<u>Redevelopment and Reinvestment:</u>
The 2013 appraisal for 3188 Chelsea is $22,100. The site is now an operational business. EPA's initial expenditure is $2,946 for one Phase I ESA. The owner did not apply for a Phase II ESA.

AFTER PICTURE

3188 Chelsea-Douglass Quik Stop

Chart 1 from the "Final Report: Wolf River Brownfields Assessment Grant" below shows Phase I ESAs and identifies pertinent site information.

	Site Name	# of ESAs	Location	Project Area	Structures on site	Area	Notes
1	26 South Main	1	26 South Main	DMC - CBID	14,900 SF 3 story building with basement	0.07 acres	Former commercial use site; planned redevelopment is mixed use. Phase I findings: potential impacts from former printing operations, petroleum products, and asbestos-containing materials (ACM) and lead-based paint (LBP).
2	Hotel Chisca	2	272 South Main	DMC - CBID	292,138 SF 8-story hotel and connected 4-story office/parking garage annex	2.6 acres	Former hotel and parking lot, Church of God in Christ headquarters. Planned reuse is mixed use with retail, restaurants, and apartments. Phase I findings: potential ACM and LBP; drums, containers, tank, & water in sub-basement; potential vapor intrusion.
			0 Second			1.08 acres	
3	2630 Epping Way	2	2630 Epping Way	Wolf River Greenway & Conservation Corridor	Former country club with clubhouse foundation, and amenities including a 20-acre oxbow-shaped lake	66.09 acres	Former Epping Forest Country Club. Planned reuse is for environmental education and Wolf River Greenway. Phase I findings: impacts from Wolf River flooding and construction debris.
4	3188 Chelsea	1	3188 Chelsea	With 1 mile corridor of the Wolf River	1,500 SF retail building with 6,000 SF of asphalt and concrete	0.29 acres	Former retail and gas station – commercial use. Planned reuse is commercial development. Phase I findings: potential underground storage tanks and petroleum product contamination.
5	Chelsea Greenline	3	McLean to Chelsea Avenue to Washington Park	New Chicago Community / Wolf River Harbor	Abandoned Union Pacific Railroad Right-of-Way	2.4 miles	Former Union Pacific Railroad. Planned reuse is greenline for recreational use. Phase I findings: potential contamination from petroleum products and hazardous materials from railroad use, potential contamination from adjacent industrial uses and encroachment.
6	Inner Vision - 1	2	Abel, E Butler, S Third	DMC - CBID	410 South Third Street and remnants of buildings and infrastructure	1.23 acres	Former residential, commercial, and industrial use. Planned reuse is commercial development/entertainment venue. Phase I findings: potential underground storage tanks, potential contamination from petroleum products and hazardous materials, ACM and LBP.
7	Inner Vision – 2	1	GE Patterson & Hadden	DMC – CBID	Vacant land with deteriorating concrete and grass	0.26 acres	Former auto repair, auto parts sales, residential, and hotel. Planned reuse is for mixed commercial development. Phase I findings: potential contamination from petroleum products and encroachment.
8	John Little Drum	2	564 South Main	DMC – CBID	2 vacant parcels with 4 monitoring wells and a lyric panel	0.28 acres	Former dry cleaning chemicals & supplies warehouse. Planned reuse is for commercial development. Phase I findings: Potential volatile organic compounds contamination, potential vapor intrusion.
9	0 Nedra	1	Between Wolf River and adjacent homes on Nedra Ave and May St	Hollywood Community	Vacant land	1.14 acres	Former open space/garden. Planned reuse is for gardening. Phase I findings: in wooded areas, debris from random dumping.
10	Wolf River Harbor	3	Slack water harbor between Uptown/ Downtown Memphis and Mud Island	Wolf River Harbor	Water body; No structures	3 miles	Current slack water harbor for industrial/ commercial use. Planned reuse is for recreation and industrial/ commercial/residential use. Phase I findings: potential petroleum and hazardous substances contamination.

26 Main Street

26 South Main is a vacant, three-story building located mid-way down the Mid-America Mall near Monroe in the Downtown Memphis Commission's Central Business Improvement District. It is adjacent to the historic William Len (now a Marriott Residence Inn), but not included in the Madison and Monroe Historic District. The facade of the building was renovated with stucco and new windows prior to any environmental work.

26 South Main Street (Before)

<u>Description of the Site:</u>
Page iv of the Phase I ESA Executive Summary states:

> The 0.07-acre rectangular subject property is improved with a 14,900-square-foot three-story building with a basement. The property is accessible from the northwest through a main entrance along South Main Street and from the southeast through the basement along South November 6th Street. The subject property is currently vacant and has not been occupied since the mid-2000s.

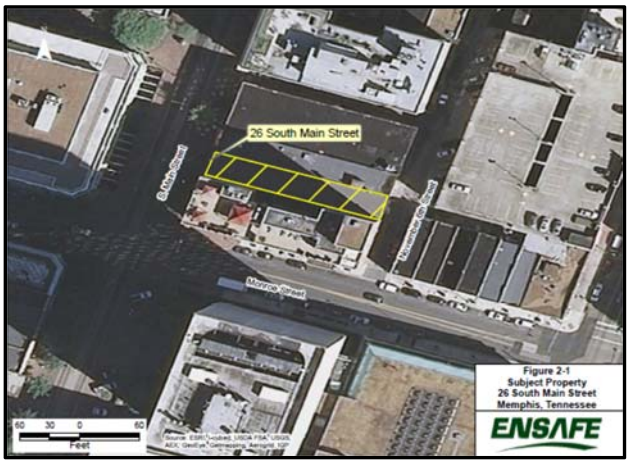


Figure 10 Aerial Photograph of 26 South Main Street

Adjoining and Surrounding Area Properties:
Page of the Phase I ESA Report states:

> The subject property is in downtown Memphis in an area primarily developed with office buildings, hotels, and retail and commercial spaces. The subject property is bordered on the north by The Peanut Shoppe at 24 South Main Street and Nice as New consignment shop at 23 South November 6th Street; on the east by South November 6th Street, beyond which is the First Parking Place garage at 21 South Second Street and McEwen's on Monroe restaurant at 120 Monroe Avenue; on the south by the Residence Inn (aka the William Len Building) at 110 Monroe Avenue; and on the west by South Main Street, beyond which is the Brinkley Plaza building at 80 Monroe Avenue.
>
> The subject property is in a portion of downtown Memphis that has been developed commercially and residentially since at least 1888. Historically, adjoining properties have been retail (clothing, furniture, shoes, jewelry, and candy/peanut) stores, commercial (furniture sales and upholstery), service- and entertainment-oriented (hotels, restaurants, gaming halls, barber shops, and tourist attractions), and offices (insurance agents, banks, attorneys). In addition, four adjoining properties were listed in historical sources as printing facilities (19 and 21 South Second Street housed printing operations between approximately 1950 and 1980, and 122 and 124 Monroe Avenue housed printing operations in the 1890s and early 1900s).
>
> Three adjoining facilities (19 and 21 South Second Street and 80 Monroe Avenue) were identified as former generators of hazardous waste. Information regarding these facilities was not available at TDEC or on the USEPA Web site.
>
> Regulatory research identified facilities on environmental databases, with reported releases, and/or with permits or other environmental records within 1 mile of the subject property. Five facilities located between approximately 230 and 1,200 feet from the subject property, are former printing facilities listed as former generators of hazardous waste. No files for these facilities were available for review at the TDEC Memphis Environmental Field Office (EFO). Research and review of available files at the TDEC Memphis EFO for the additional listed facilities — primarily facilities that have reported releases from leaking underground storage tanks — does not indicate contaminants at those facilities have migrated to the subject property; most were issued "no further action" required or "clean closure" letters and/or had groundwater flow direction carrying contaminants away from the subject property. (Executive Summary, pages v and vi)

Phase I ESA Findings:

> The stained areas on the floor and walls in the basement are evidence of a release of hazardous substances and/or petroleum products into structures on the property, which is considered a *recognized environmental condition*.
>
> The printing facilities that historically adjoined and/or surrounded the subject property are an environmental concern due to their typical usage of hazardous substances such as inks, solvents, and adhesives. Waste disposal practices by printing facilities operating before the early 1980s are suspect, because environmental regulatory controls were not fully developed, enforced, or recognized. Although releases have not been reported from these former printing operations, based on the number of printing operations in proximity to the subject property and the years those operations spanned (late 1800s to 1980s and later), the potential for releases from these operations to have caused regional soil and/or groundwater contamination in the site area is considered a *recognized environmental condition*.
>
> What appears to be paint staining on the floor tiles on the first floor, including in and around the janitor's closet, was limited in extent, and is considered *de minimis*.
>
> Based on its age, the building was likely constructed with ACM and LBP. Future use of the property includes commercial and residential redevelopment; therefore, the presence of ACM and LBP is a *business environmental risk* due to the capital costs and potential liability associated with its identification, abatement, encapsulation/removal, and disposal.
>
> The data gaps detailed below may have limited EnSafe's ability to identify *recognized environmental conditions* associated with or resulting from historical uses of the subject property. (Executive Summary, pages vi and vii)

Phase II ESA Findings:

Pages vi and vi of the Phase II ESA Executive Summary prepared by EnSasfe, Inc states:

> The Phase II ESA was conducted through three 1-day site visits over a 3-week period between June 26 and July 13, 2012.
>
> **Utility Evaluation Basement**
>
> Based on visual observation and a general knowledge of building utilities, and considering known historical uses, the basement sub-floor piping was determined to be connected to the sanitary sewer line and likely served the kitchen during site use as a restaurant and/or laundry during site use as a hotel. Based on the evaluation and identification of the piping in the basement as being part of the sanitary sewer system of the building, no additional soil sampling was deemed necessary.

Sub-Slab Soil-Gas Sample Results
Naphthalene was the only compound detected in sub-slab soil gas at concentrations that exceeded residential adjusted ambient air regional screening levels. The naphthalene concentrations are within the site target lifetime cancer risk range of $1X10^{-4}$ to $1X10^{-6}$. No further action is recommended regarding vapor assessment at the subject property.

Soil Sampling Results
VOCs and extractable petroleum hydrocarbons concentrations detected in soil samples collected beneath the petroleum-stained area in the basement were below screening levels protective of an excavation worker. No further action is recommended regarding soil sampling beneath the basement floor.

Asbestos Containing Materials Survey Results
Chrysotile was identified as being associated with three different types of floor tile present on the first floor. EnSafe recommends that ACMs be handled and maintained in accordance with applicable local, state, and federal regulations. This discrete survey was limited to suspect materials that were visually and physically accessible and did not include the exterior roof. If additional suspect materials are identified — such as those behind walls or not identified because of other limitations during this survey — they should be sampled by a certified building inspector prior to disturbance.

EnSafe recommends if any renovations occur, that ACMs be removed in accordance with applicable local, state, and federal regulations from all areas that will be subject to renovation or demolition activities. ACMs observed in the building were non-friable and in good condition; therefore, if ACMs are to remain in the building following renovation/demolition activities, EnSafe recommends that a site-specific Operations and Maintenance Plan be developed for management and control of all remaining ACMs.

Lead-Based Paint Survey Results
LBP was identified on every floor of the subject property. The following are recommendations from Environmental Technical Services (ETS)/National Econ Corporation report of the LBP survey. Due to the potential hazards of exposure, a Lead Management Program should, at minimum, be prepared, and implemented, to avoid incidental, and/or accidental disturbance of lead containing material, found at the subject property. The program should set forth operational and maintenance guidelines to minimize lead consumption or exposure that may be caused by age, normal wear and tear, delamination, building maintenance, repairs, renovation and other activities that may impact lead-containing material.

Prior to demolition, or major construction, specifications should be properly modified to incorporate the removal of lead containing material. According to

the Tennessee Department of Environment and Conservation, any detectable level of lead can result in occupational exposure. ETS recommends that personal and random area air monitoring be conducted during lead removal and/or demolition.

Note that under Section 302 of the Lead-Based Paint Poisoning Prevention Act, lead containing material hazards equal to or greater than 0.5% by weight (5,000 parts per million) or 1.0 milligrams per square centimeter must be abated. Lead containing material that is intact and is not delaminating can be disposed of as construction debris as long as it is attached to its original substrate and is within waste characterization protocols. However, appropriate work practices and worker protection must be utilized.

Redevelopment and Reinvestment:

The owners plan to redevelop the building with a ground floor office and apartments. During the remediation plan meeting, the owners shared architectural plans for the office/apartments. The owners own a construction company and felt the information provided in the Phase II ESA report was adequate to remove the asbestos containing material and lead-based paint and withdrew their remediation plan application

EPA's initial investment is $32,196 ($2,946 for one Phase I ESA and $29,250 for a Phase II ESA). According to Gay Taylor, $25,000 has been invested in architectural plans and building improvements. She estimates that the remaining redevelopment cost will be $670,000. The owners are pursuing public financing from the City of Memphis through a community development grant. The community development grant is subject to local funding. The environmental site assessments may provide the additional investment necessary for public financing through the City of Memphis, Downtown Memphis Commission, a construction loan or some combination of public-private financing to move the project forward.

AFTER PICTURE

26 South Main Street

0 South Main Street

0 South Main/the John Little Drum Site/Lyric Panel Lot is located in the Downtown Memphis Commission's Central Business Improvement District and the South Main Historic District. The two vacant lots are owned by two different owners and are across from the Historic Central Station, a mixed use development that contains offices, limited retail space, an events area, a mini precinct and the Amtrak train station and upper story apartments. The two lots contain a painted mural with train lyrics on a red metal fence along the South Main Street frontage, hence the lyric panel lot name.

Lyric Panel Fence

View of Interior of John Little Drum Site

Site History:

The Shelby County Land Bank owned lot has a long environmental history that dates back to an owner named John Little. When Mr. Little closed his businesses, he used the vacant building on the property to store dry cleaning chemicals and detergents in 55 gallon drums along with paper products. In time chemical spills occurred due to vandalism and a lack of maintenance. In 1986, TDEC and Memphis Fire Department personnel inspected the building due to a complaint and found 25 55 gallon drums and a number of smaller containers. A TDEC contractor removed the drums and the building was demolished in 1987. A lien was placed on the property to recover removal costs (Phase I ESA Report, Executive Summary, page v)

Shelby County Government acquired the property due to delinquent taxes. Over the years the trustee had communication with the State of Tennessee regarding removal of the lien. GCI-II acquired its lot through Shelby County Government. As a part of the Brownfield Assessment Grant, both lots received Phase I and Phase II ESAs.

Description of the Site:

The Phase I ESA Executive Summary on page iv states:

> The subject property includes the addresses 562, 564, 566, and 568 South Main Street in Memphis, Shelby County, Tennessee. The subject property is near the southern end of downtown Memphis in an area of commercial and residential development. The property consists of two parcels of land totaling 0.28 acre; the south parcel contains 0.18 acre and the north parcel contains 0.10 acre.

The subject property is currently undeveloped and unused. No buildings or equipment remain onsite. The property is partially fenced and is covered with thick vegetation which precluded close observation of the ground surface throughout the property. Four groundwater monitoring wells were the only improvements observed on the property. During the site visits, several small piles of trash were observed throughout the subject property. The trash consisted primarily of drink bottles, food containers, and paper trash. No indication of hazardous substances or petroleum products was observed in the trash piles.

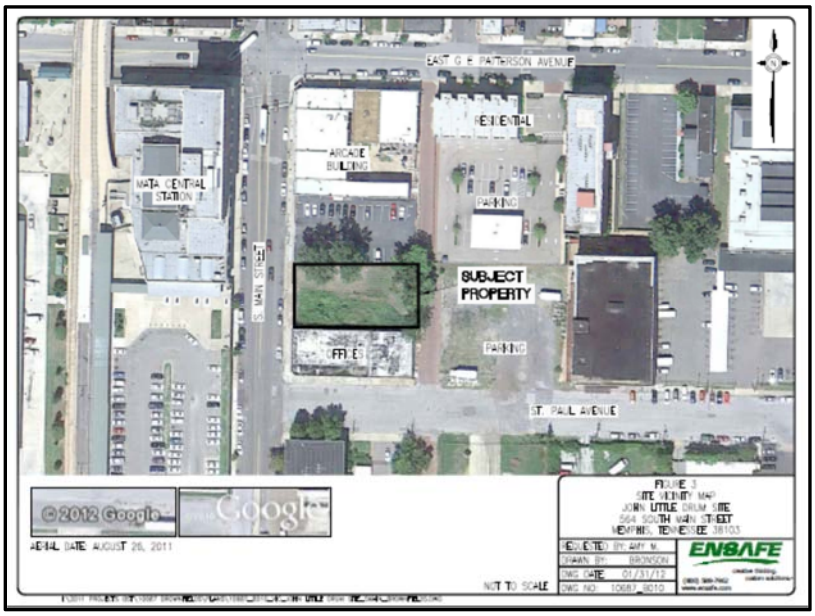


Figure 11 Aerial Photograph of 0 South Main Street/John Little Drum Site

<u>Adjoining and Surrounding Area Properties:</u>
Page v of the Phase I ESA Executive Summary states:

The property is bounded on the west by South Main Street, beyond which is the Memphis Area Transit Authority Central Station development (bus station, police substation, leased offices, residences, and event/party rental areas). A paved parking lot is north of the site, beyond which are the Arcade Building, which houses several art galleries, shops, and the Arcade restaurant. G.E. Patterson Avenue is north of the Arcade Building. An unnamed access road/alley is east of the property, beyond which are an undeveloped, gravel- and grass-covered lot and a vacant warehouse building. An office/warehouse building currently occupied by the law office of Alan Alsobrook is south of the property, beyond which is Saint Paul Avenue. Regulatory research identified adjoining and surrounding area facilities on environmental databases, with reported releases, and/or with permits or other environmental records. Review

of locally available regulatory files did not indicate releases at those facilities have migrated to the subject property.

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Phase I ESA Findings:

This Phase I ESA has identified a *historical recognized environmental condition* that remains a *recognized environmental condition* in connection with the subject property.

Limited soil investigations conducted in 1994 and 1999 identified VOCs (including chlorinated solvents), semi-volatile organic impounds, pesticides, and metals in soil. A soil-gas survey conducted in 2007 identified elevated concentrations of chlorinated VOCs beneath the subject property. The 2000 and 2007 groundwater investigations identified chlorinated VOCs and metals in groundwater. Further site investigation is necessary to establish complete baseline conditions and fill AAI data gaps so that a Brownfields agreement can be obtained which adequately releases a prospective purchaser from future liability at this site, and to determine if any remedial actions, institutional or engineering controls, and land-use limitations are necessary to redevelop this property for future use.

Phase II ESA Findings:
Pages v and vi of the Phase II ESA Executive Summary prepared by EnSasfe, Inc states:

> Recommendations for additional assessment are based on the planned reuse of the subject property as a paved parking lot and the use of the office/warehouse at 574 South Main as a commercial building for uses other than day care or operations where children will be routinely present.

574 South Main Street
The exposure pathway of volatile vapors associated with groundwater contamination at the John Little Drum site is presumed to be complete for occupants of the building at 574 South Main and additional assessment in the building is warranted. During a meeting on September 12, 2012, between representatives of TDEC, Shelby County, USEPA, and EnSafe, the TDEC expressed concern regarding potential vapor exposure to occupants in the building at 574 South Main Street. TDEC met with the building owner and TDEC has proposed conducting indoor air sampling and analysis to evaluate the presence of vapors present in the building. The data collected by TDEC will aid in an evaluation of the necessity for vapor mitigation in the building.

Remedial Options Plan (Construction Management and Vapor Mitigation Options Evaluation) — $6,500
EnSafe recommends a Remedial Options Plan be prepared to include best management practices for the redevelopment and construction of the subject property as a parking lot (based on discussions at the April 2012 meeting with TDEC). The Remedial Options Plan will address the following elements:

- Procedures and estimated costs for proper closure of the existing groundwater monitoring wells before beginning construction.

- Procedures and estimated costs for installation of replacement groundwater monitoring wells, if required by TDEC.

- Procedures for managing and disposing of clearing and grubbing debris during parking lot construction.

- Contingencies for identifying, responding, and managing potential soil or other contamination discovered during construction.

- Evaluation of vapor management options for a parking lot reuse, such as passive or active systems, and estimated costs for the design and installation during site fill and surface construction.

  Requirements and estimated costs for an annual inspection and maintenance plan to ensure the pavement surface remains intact, groundwater monitoring wells are maintained, and the vapor management system, if installed, is maintained

As a part of the Phase II ESA activities, representatives of TDEC, Shelby County and the EnSafe Team have met and worked together to try to remove the lien and move redevelopment of this property forward. All parties met prior to beginning Phase II ESA activities and agreed upon the Phase II ESA scope of work. All parties have continued discussions and attempted to move this property toward a path of redevelopment. The hazardous substances onsite have been identified and the remaining work is beyond the scope of this grant.

TDEC performed an indoor air sampling event on November 28, 2012 and another sampling event was performed in September 2013 at the adjacent building owned by GCI located at 574 South Main Street. TDEC, EnSafe and Shelby County Government personnel have discussed additional work and alternatives that could be funded under the grant and are unable to provide a solution that will permit the lien to be released. EnSafe personnel prepared a final summary on the John Little Drum site.

Redevelopment and Reinvestment:

EPA invested $45,746 in these two sites ($2,946 for a Phase I ESA on both parcels, $21,900 for a Phase II ESA on the GCI-II owned parcel and $20,900 for a Phase II ESA and summary document on the Shelby County Government owned parcel). The environmental site assessments are a part of due diligence activities that any educated buyer would perform. At this time, Shelby County Government will not be pursuing a cleanup grant on its parcel. The total cleanup costs are unknown and the federal funding is limited.

Although the John Little Drum site is in a high profile location, it is a small site with a potentially large cleanup cost. In order to redevelop the property, some type of public private partnership will be needed and that will most likely involve assembling other properties.

AFTER PICTURES

O South Main Street: Front and Rear

2630 Epping Way

2630 Epping Way is located in the Raleigh Community within one mile of the Wolf River and in the Wolf River Greenway and Conservation Corridor Target Area. The property is a unique site due to its quasi- public ownership, importance as sensitive environmental property, and land use as an outdoor classroom and recreation area, and in the future as a part of the Wolf River Greenway.

Entrance off Epping Way (Before)

Site History:
In 2007, the property was donated to Board of Education of the Memphis City Schools via a quitclaim deed. Initially Memphis City Schools (MCS) thought the property would be used to construct a junior high school. Due to various circumstances, a school was not constructed.

After MCS took possession of the property, MCS spent $40,000 to demolish the former country club improvements and have the construction debris, abandoned cars, tires and material that had been dumped onsite removed for disposal. As a part of this process, MCS spent $1,500 to secure the site by installing gates and soil berms to prevent future dumping onsite.

At present, MCS and the Wolf River Conservancy use the lake as an outdoor classroom. The "Wolf River Greenway and Conservation Plan" recommends a greenway trail system be extended across this property. The Wolf River Conservancy will continue to work with MCS to use the lake as an outdoor classroom.

Description of the Site:
The Phase I ESA Executive Summary on page vi states:

> The 66.09-acre vacant subject property at 2630 Epping Way is in a primarily residential area of Raleigh, a suburban community in north-central Memphis designated by the 38128 ZIP code. Raleigh is bordered on the west by the community of Frayser, on the east by the city of Bartlett, on the south by the Wolf River and north loop of I-40, and on the north by the Memphis city limits.

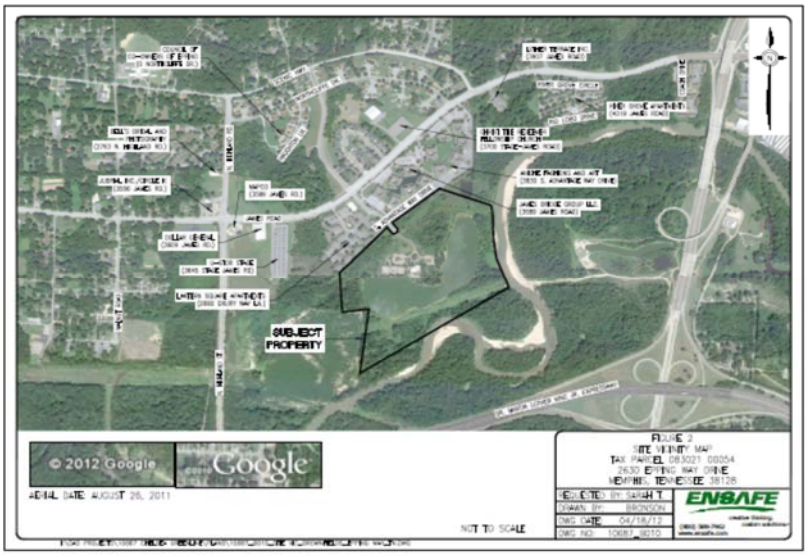

Figure 12 Aerial Photograph of 2630 Epping Way and Its Close Proximity to the Wolf River

Adjoining and Surrounding Area Properties:
Page viii and ix of the Phase I ESA Executive Summary states:

> The subject property is bordered on the north by The Lantern Apartments and Jamesbridge Apartments; on the west by parcels of woods, fields, and cultivated land; and on the east and south by undeveloped land along the banks of the Wolf River, Austin Peay Highway, and I-40. Surrounding area properties are primarily residential (single family homes and apartment complexes) and retail (automobile dealerships and related businesses, restaurants, contractors, small businesses, gas stations/convenience stores, and strip shopping centers). Regulatory research identified facilities on environmental databases, with reported releases, and/or with permits or other environmental records within 1 mile of the subject property. Review of available files at the TDEC Memphis EFO for those facilities — unauthorized solid waste dump sites and active gas stations that have reported releases from leaking underground storage tanks (LUST) — does not indicate contaminants at those facilities have migrated to the subject property. The LUST sites were either issued clean closure/no further action, or remain under investigation and monitoring regulated by TDEC and covered by the state petroleum fund. In addition, the direction of groundwater flow at those sites transported contaminants away from the subject property.

Phase I ESA Findings:
Page ix of the Executive Summary states:

> Based on the intended use of the subject property for recreational purposes, overflow of water from the Wolf River (a Category 5 stream with a fishing advisory) that co-mingles with water in the subject property lake is considered a

recognized environmental condition. EnSafe recommends surface water and sediment sampling to establish a baseline of contaminants in the lake and a risk assessment to ensure suitability for future use, which may include direct contact and fishing, and determine the need for continued monitoring after periods of heavy rain that causes the Wolf River to overflow onto the subject property.

Solid waste material — including construction or demolition debris, remnants of former structures, and discarded items — encountered during redevelopment and reuse may contain asbestos, the onsite disposal of which constitutes a *recognized environmental condition*. EnSafe recommends sampling material suspected of containing asbestos prior to purchase to determine appropriate disposal options and to address the potential *business environmental risk* associated with liability and costs of disposal.

The potential for PCBs to have been used in the swimming pool's construction materials poses a *business environmental risk* if future use of the subject property involves excavation and disposal of the concrete and/or underlying/surrounding soil. Exposure to PCB-containing material from the swimming pool associated with the planned use for the site is mitigated because it has been filled and covered with soil and vegetation.

The initial concern reflected in the Phase I ESA application was the trash from dumping and construction debris on the site and the former swimming pool. As stated in the Phase I and Phase II ESA reports, "there is normally a 150 foot separation between the northeast portion of the lake and the Wolf River under normal conditions and a 200 foot separation between the center of the lake and the Wolf River"; however, "during periods of heavy flooding, such as in May 2011, the Wolf River may overflow onto the subject property and the Wolf River water would co-mingle with the water in the lake." This fact coupled with site observations of scattered shingles and other debris formed the primary basis for a Phase II ESA. The primary purpose of the Phase II was to determine if the lake was safe for the water related activities being conducted on site and ensure the shingles did not contain asbestos. The Phase I and Phase II ESAs were conducted for the Wolf River Conservancy as a part of its due diligence activities. MCS plans to transfer ownership of the site to WRC in the near future. The transfer is being delayed due to the merger of the former Memphis City Schools and Shelby County Schools into a unified school system.

<u>Phase II ESA Findings:</u>

The Phase II ESA scope of work was based on the findings of the Phase I ESA to assess the potential release of hazardous materials and petroleum products to the sediment and surface water of the site resulting from historical flooding by the Wolf River. To complete this assessment, surface water and sediment samples were collected for laboratory analysis for chlordane, polychlorinated

biphenyls (PCBs), and dioxins. Chlordane and PCBs were not detected in either surface water or sediment samples. Dioxins were detected in both surface water and sediment samples, but were at concentrations below screening values.

The Phase I ESA also identified the potential for ACM in roofing materials disposed of onsite. Samples were collected and submitted for analysis, but no ACM was detected.

Based on the laboratory results for surface water, sediment, and roofing material samples, no further action is recommended for the Epping Way site.

Redevelopment and Reinvestment:

EPA's initial investment in this property is $46,989.43 ($5,892 for two Phase I ESAs and $31,097.43 for a Phase II) to primarily assure the site is safe for the current educational and recreation activities. According to the 2013 appraisal information, this 66 acre site is appraised for $199,600. Other than the appraisal and an estimate of the educational and recreation activities (unknown at this time) conducted onsite and demolition and improvements to secure the site ($41,500), it is difficult to calculate a dollar value for the EPA investment in this property. Its value as quasi- public space and environmentally sensitive property does not lend itself well to traditional reinvestment and job creation analysis. In addition, this site is not considered to be a vacant, blighted property that drains the tax rolls since MCS razed the buildings and cleaned up the site. Its current and future activities add to the overall quality of life for community residents.

A grant from the Plough Foundation for $120,000 started the Wolf River Conservation Corps, an eight week, 2 year pilot program targeting North Memphis youth from 12-15 years old. The majority of the program was held on the 2630 Epping Way site and provided environmental education and "life-changing" experiences such as CPR, first aid training, canoeing, kayaking, etc. In addition, a $25,000 Five Star Grant was awarded to WRC with a portion of the funding being utilized at this site.

Photo 4: View looking east across the north portion of the lake

After Picture taken by EnSafe for Phase II ESA

Inner Vision Site #1

Inner Vision Memphis Site #1 is comprised of the properties located on the northeast corner of South Third Street and Butler Avenue and includes 0 Abel Street, 0 East Butler Avenue, 410 South Third Street and 400 South Third Street in the Downtown Memphis Commission's Central Business Improvement District. The owner plans to use the site for a mixed entertainment venue. Architectural plans and a sources and uses fund statement were submitted as a part of the Phase II ESA application process. Funding sources are owner's equity and construction loans that total approximately $2,575,000.

Before Pictures

410 South Third Street- Commercial Facade and Residential Improvements

Rear of 0 East Butler | Side of East Butler | Front of 0 Abel

<u>Description of the Site:</u>
The Phase I ESA Executive Summary on page vi and vii states:

> The 1.23-acre subject property is comprised of four tax parcels oriented in a clockwise direction: 005018 00011 (northeast 0.22 acre), 005018 00012 (southeast 0.56 acre), 005018 00013 (southwest 0.28 acre), and 005018 00014 (northwest 0.17 acre). The parcels form a square bordered by Abel Street on the east, East Butler Avenue on the south, South Third Street on the west, and Tax Parcels 005018 00015 (394 South Third Street) and 005018 00010 (381 Abel Street) on the north. The subject property is in downtown Memphis within the South Central Business Improvement District (CBID) near the center of the South Main Historic District Association.

Parcels 005018 00011 and 00014 are undeveloped and grass-covered lots with a history of residential development and use dating back to the early 1880s. Residents of the north-adjoining apartment building use Parcel 005018 00011 to stage garbage cans (along the west side) and toys and a bar-b-que grill along the north side. The ground surface in the southeast portion (that fronts Abel Street) has pieces of brick and concrete (remnants from former buildings and a cobblestone driveway).

Remnants of recent residences at Parcel 005018 00014 are concrete stairs that provided pedestrian access from the west-adjoining South Third Street sidewalk, a narrow concrete driveway, and portions of wood and chain-link fences. Observed amidst heavy vegetation and tall grass throughout Parcel 005018 00014 were wood slats and pieces, sticks, metal piping, concrete, and household garbage, most of which was along the east border shared with Parcel 005018 00011 and appeared to be from the neighboring apartment residents or remained from demolition of this parcel's residences in 2004. The wood slats and pieces appeared to be from the shared fence.

A partial concrete-block wall, subgrade piping, and portions of fencing, foundations and concrete pads remain from demolition of a light industrial building (234 East Butler Avenue) on Parcel 005018 00012. Several one- and two-story additions were constructed onto the original (circa 1925) building, which formed an L-shape that opened toward the northeast. Areas of uneven topography (sinkholes or where demolition removed deeper portions of the foundation/paved areas) were observed in the southeast portion of this parcel. The ground surfaces were covered with piles of brick, organic matter, dirt, pieces of floor tile (primarily in the southwest portion), and roadside trash, a plastic bucket, and partial bags of garbage (primarily along Abel Street).

Parcel 005018 00013 is developed with a 3,514-square-foot building at 410 South Third Street. The original portion of the building was constructed in 1923 for retail gas sales, and expanded to include commercial (office) space and a two-vehicle maintenance garage. The garage was constructed over three gasoline underground storage tanks (USTs). Concrete pavement west and south of the building provides parking space and access from South Third Street and East Butler Avenue. This parcel is vacant and unused.

<u>Adjoining and Surrounding Area Properties:</u>
The Phase I ESA report states:

> The subject property is within the South CBID South Forum District's South Main Extended Sub-District, which comprises approximately 150 acres roughly bounded by Linden Avenue, East G.E. Patterson Avenue, Main and Mulberry streets, and Danny Thomas Boulevard. (page 40)

> The circa 2004 *South Forum Redevelopment Plan* on the Downtown Memphis Commission's (formerly Center City Commission) website describes the subject property area as having less than 900 residents with 31% of the area comprised of vacant land (23.5 acres), vacant buildings (2.69 acres), or neglected properties (19.46 acres). In 2002, the Office of Planning and Development established zoning criteria restricting future uses to residential with supporting neighborhood commercial businesses. The plan recommended a new gateway to include redevelopment projects that incorporate public art at the intersection of East G.E. Patterson Avenue and South Third Street. Additional recommendations for the subject property area include replacing vacant land and empty buildings surrounding nearby Army and Navy parks with multi-story residential buildings with parking access off East Butler Avenue, and a buffer to soften the nearby Navy Park residential project from traffic on South Third Street. (page 41)

<u>Phase I ESA Findings:</u>
Page ix and x of the Executive Summary states:

> The *historical recognized environmental conditions* identified in the 2007 Phase I ESAs remain *recognized environmental conditions* in the absence of additional (subsurface) investigation. EnSafe's Phase I ESA identified additional *recognized environmental conditions* associated with the sump/drain and staining in the garage portion of the 410 South Third Street building, and "disposal" of the asbestos-containing floor tile at the 234 East Butler Avenue. EnSafe recommends a Phase II ESA of the subject property, primarily focusing on subsurface soil and groundwater conditions at Parcels 005018 00012 and 00013.
>
> *Business environmental risks* related to costs and potential liability remain associated with noncompliance with SCHD asbestos regulations at Parcel 005018 00012, and noncompliance with MFD and/or TDEC UST closure regulations and characterizing and disposing of the contents of the sump/drain at Parcel 005018 00013. EnSafe recommends collecting a sample of the material in the sump to determine disposal options and properly disposing of any remaining ACM.

<u>Phase II ESA Findings:</u>
Pages iv-vii of the Executive Summary states:

> The Phase II ESA field investigation was performed January 10 — 11, 2013. Soil samples were collected from 13 soil borings across the site consisting of five soil borings at 410 South Third Street and eight borings at 234 East Butler Avenue. Below are recommendations for each area of assessment conducted at 410 South Third Street and 234 East Butler Avenue.

410 South Third Street

The Phase II ESA at 410 South Third Street focused on the three USTs abandoned in place and the blind sump in the garage for potential releases of hazardous materials and/or petroleum to the subject property. Additional assessment evaluated the potential for ACM in roofing material and the potential presence of lead-based paint (LBP) on painted surfaces in the building. Assessment results for each element are discussed below.

Underground Storage Tanks Abandoned In Place: Three soil borings were installed adjacent to the three USTs left in place in the garage bay and one temporary monitoring well was installed along the suspected product line on the west side of the building. Soil and groundwater samples were analyzed for volatile organic compounds (VOCs) and polynuclear aromatic hydrocarbons (PAHs), and soil samples were also analyzed for the Resource Conservation and Recovery Act (RCRA) 8 metals.

Seventeen VOCs were detected in soil, but all were at concentrations well below screening criteria. Twelve PAHs were detected in soil samples and four exceeded screening criteria. PAHs were evaluated as benzo(a)pyrene equivalent (BEQ) because of similar toxicity characteristics. The BEQ results were below the Shelby County urban background value of 1 milligram per kilogram (mg/kg). Arsenic was also detected in soil samples, but was at concentrations below the Shelby County residential background concentration of 22 mg/kg (EnSafe 2010).

Three VOCs and one PAH were detected in groundwater collected from the temporary monitoring well. Vinyl chloride exceeded its U.S. Environmental Protection Agency tap water regional screening value (RSL, November 2012), but was below its maximum contaminant level (MCL). 1,1-dichloroethene exceeded its MCL, but was below its tap water RSL. 1,1-dichloroethane and phenanthrene were detected below their tap water RSLs; neither have MCLs. Groundwater from the alluvium aquifer is not used as a drinking water source or for industrial water use in the area, based on information reviewed during the Phase I ESA (EnSafe 2012). As such, direct exposure to contaminants detected in the shallow groundwater at the site is not expected to occur.

Soil and groundwater data indicate solvents and petroleum contaminants are present in soil and groundwater adjacent to the USTs; however, none of the detected concentrations warrant additional assessment.

The property owner has reported to EnSafe that the building at 410 South Third Street will be demolished in the near future and a new structure will be constructed on the site. According to the EnSafe Phase I ESA (EnSafe 2012), the three USTs are still in place. Therefore, EnSafe recommends that once the existing building has been removed, the three USTs should be removed in accordance with current Tennessee Department of Underground Storage Tank

(TDUST) guidance and regulations and the UST removal should be reported to TDUST with the request, as appropriate, for clean closure acceptance.

Garage Blind Sump: One soil boring was installed adjacent to the blind sump in the garage bay and a soil sample was submitted for VOC and PAH analyses. Four VOCs were detected, but all were well below the RSLs. Arsenic was detected above RSLs, but below the Shelby County background concentration. PAHs were not detected. None of the detected concentrations in the soil sample collected adjacent to the sump warrant additional assessment.

Asbestos Containing Materials: No ACMs were identified in the roof material sampled by Nation Econ Corporation during this Phase II ESA. FA sampled suspect ACM from 410 South Third Street in August 2008, but no ACM was identified. Based on these results, no further assessment or action for ACM at 410 South Third is warranted.

Lead-Based Paint: Environmental Technical Services/Nation Econ, Inc. conducted an LBP survey of the building at 410 South Third Street and made the recommendations summarized below that are agreed with by EnSafe and assuming the building will be demolished.

Prior to demolition, specifications should be properly modified to incorporate the removal of lead containing material. According to TDEC, any detectable level of lead can result in occupational exposure. Under Section 302 of the Lead-Based Paint Poisoning Prevention Act, lead containing material hazards equal to or greater than 0.5% by weight (5,000 parts per million) or 1.0 milligrams per square centimeter must be abated. Lead-containing material that is intact and not delaminating can be disposed of as construction debris as long as it is attached to its original substrate and within waste characterization protocols. However, appropriate work practices and worker protection must be utilized.

234 East Butler Avenue

The Phase II ESA at 234 East Butler focused on former operation areas and the UST removed from the site, and included additional areas assessed at TDEC's request. Assessment results for each element are discussed below.

Former Parts Washer and Paint Booth Area: One soil boring and one temporary monitoring well were installed in the area of the former metal parts washer and two soil borings were installed in the area of the former paint booth. Soil and groundwater samples were analyzed for VOCs, PAHs, and RCRA metals. VOCs were detected in soil, but at concentrations well below screening criteria. An isolated BEQ result exceeded the urban background concentration, but PAHs were not detected in the sample directly below. Arsenic was detected at concentrations exceeding RSLs, but was below the Shelby County residential background concentration. MTBE was detected in the groundwater sample from this area, but was below all screening criteria.

None of the detected concentrations in soil or groundwater samples from the former parts washer and paint booth area warrant additional assessment.

Former Fuel Oil Underground Storage Tank: One soil boring and one temporary monitoring well were installed adjacent to the former fuel oil UST. Soil and groundwater samples were analyzed for VOCs and PAHs. VOCs were detected in soil, but at concentrations well below screening criteria. BEQ was present in one soil sample, but was below the urban background concentration. Trichloroethene was detected in the groundwater sample collected from MW03, but at a concentration below its MCL. None of the detected concentrations in soil or groundwater samples from the former fuel oil UST area warrant additional assessment.

Concrete Slab: One soil boring was installed at the concrete slab as TDEC requested and the soil samples were analyzed for VOCs and PAHs. Three VOCs were detected in soil, but at concentrations well below their RSLs. PAHs were not detected in the soil sample collected adjacent to the slab. None of the detected concentrations in soil samples from the concrete slab area warrant additional assessment.

Former Warehouse Area: One soil boring was installed at the southeast portion of former warehouse as TDEC requested and the soil samples were analyzed for VOCs and PAHs. Three VOCs were detected in the soil sample collected from this area, but all were at concentrations well below their RSLs. PAHs were not detected in the soil sample collected adjacent to the slab. None of the detected concentrations in soil samples from the former warehouse area warrant additional assessment.

Asbestos Floor Tile: In August 2008, FA sampled suspect ACM from 234 East Butler Avenue. Several types of ACM were identified and subsequently abated prior to demolition of the building; however, some floor tile and mastic were left in place and have become deteriorated and friable. Given the condition of the ACM observed during EnSafe's site visit, the floor tile and possibly mastic may require abatement in accordance with SCHD requirements.

Utilities have been disconnected at the 410 South Third Street building and demolition is tentatively set to begin May 15.

<u>Redevelopment and Reinvestment:</u>
EPAs initial investment of $45,551 ($8,838 for three Phase I ESAs and $36,713 for a Phase II ESA) will result in short term demolition costs of approximately $50,000 and a total investment of approximately $2,575,000 when the building is complete.

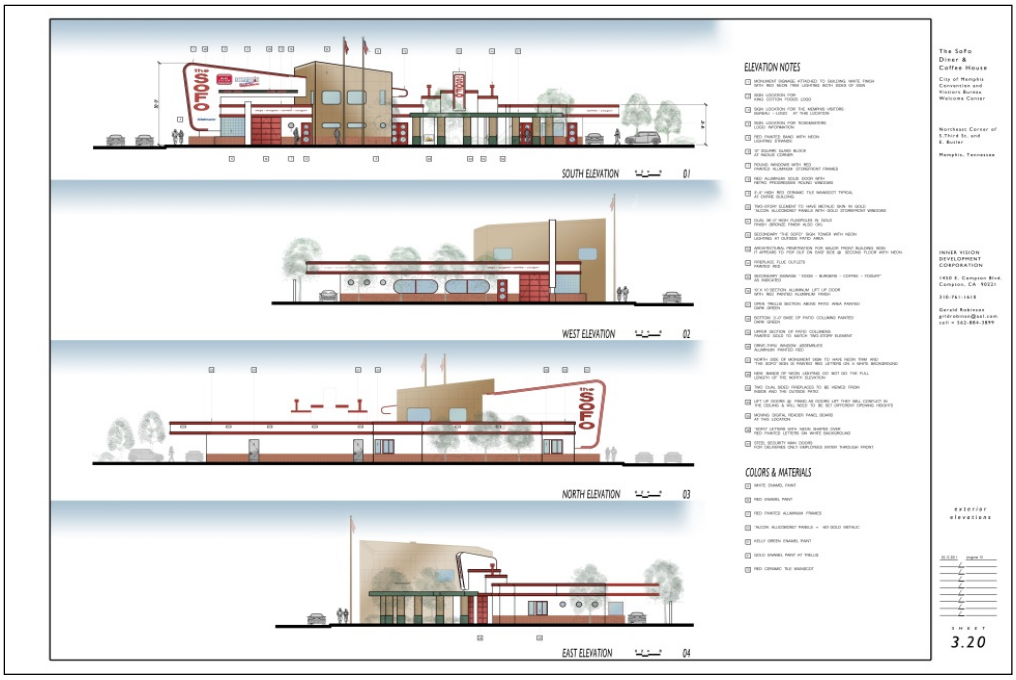

Figure 13 Inner Vision Site 1 Renderings

AFTER PICTURES

Front of 410 South Third Street

410 South Third Street with Residential Infrastructure

Rear of 0 East Butler

Side of East Butler

Front of 0 Abel

Inner Vision Site #2

Inner Vision Memphis Site #2, 0 East Calhoun, is located at GE Patterson Avenue and Hadden Street, across South Third from Site #1 in the Downtown Memphis Commission's Central Business Improvement District. 0 East Calhoun is one of two parcels that form a triangle at the intersection of South Third Street, East Calhoun and GE Patterson, several blocks from the FedEx Forum. Inner Vision owns one parcel and the other parcel is owned Don and Jane Brignole, a local property owner.

View of Parcel005019 00001C between Butler and Hadden (Before)

Description of the Site:
The Phase I ESA Executive Summary on page vi states:

> The 0.264-acre vacant, unused subject property is irregularly shaped and appears as a north-pointing arrow, with a triangular portion at the north end and a rectangular portion at the south end. Inner Vision purchased the subject property in 2007. Historical warranty deeds describe the property as two combined parcels: Parcel I (north end) and Parcel II (south end). Parcel I is the triangular portion bordered on the north and east by South Third Street and on the west by Hadden Street, and Parcel II is the rectangular parcel bordered on the east by South Third Street, on the south by East G.E. Patterson Avenue, and on the west by Hadden Street. Parcel I is paved with deteriorated and cracked concrete, and Parcel II is grassy with areas of stressed vegetation interspersed with gravel. The subject property and southeast-adjoining 0.09-acre property (Tax Parcel 005019 00002 at 521 South Third Street) — known as the Don Brignole Site — comprise a triangular piece of land bound on the north and east by South Third Street, on the south by East G.E. Patterson Avenue, and on the west by Hadden Street.

Adjoining and Surrounding Area Properties:
The Phase I ESA Executive Summary pages vii and viii states:

> The Don Brignole Site historically operated as gas station, used auto sales, and restaurant businesses. Demolition of an approximately 750-square-foot structure on the Don Brignole Site began in 2011, at which time three underground storage tanks (USTs) were identified and removed. The site was

inspected by the Tennessee Department of Environment and Conservation (TDEC) Memphis Environmental Field Office (EFO) Division of Underground Storage Tanks (DUST) and transferred to the Nashville Central Office Division of Solid Waste Management (DSWM) State Remediation Program (SRP). The UST Closure did not appear to be in compliance with the DUST or Memphis Fire Department requirements based on reasonably ascertainable information. The tanks, which had been staged onsite awaiting disposal, were reportedly stolen, during which the contents of the tanks were dumped; information obtained did not indicate if any of the contents were placed on the subject property. Subsequent sampling by Brignole's consultants determined the former tank contents were hazardous with the characteristic of lead. Roy Crowder, the SRP Project Manager, met with EnSafe and the Don Brignole Site property owner, and indicated he would "most likely" issue a "No Further Action" letter based on the information provided to him, and that demolition activities could be completed. During EnSafe's July 17, 2012, site visit, this site had an open excavation from which the tanks had been removed and the north portion of the building remained. Demolition debris was observed on the subject property primarily along the former west building wall of the restaurant. Since EnSafe's initial site visits in June 2012, trash and debris appeared to have been placed or blown into the excavation.

The remaining adjoining properties are separated from the subject property by city streets and have been developed since at least the mid- to late 1800s. Properties to the north and east have historically been occupied by gas stations and automobile maintenance and repair shops. The north- and east-adjoining properties have had unregistered and registered petroleum USTs for which no regulatory documentation (regarding closure, removal, sampling, etc.) is available. Currently, the north-adjoining property is occupied by a vacant building also owned by Inner Vision and the east-adjoining properties house a billboard and are used for surface parking. The surface parking lot is the only adjoining property listed on an environmental database (for registered USTs).

The west-adjoining properties were originally residential interspersed with stores, a coal yard, and city stables through the early 1900s. Between the 1930s and 1950s, larger buildings had been constructed fronting Hadden Street that housed manufacturing businesses (beauty cream and luggage) and a live cricket farm and, fronting East Calhoun Avenue, service businesses (barber shop, grocery, and watch repair), entertainment businesses (restaurants and pool hall) and retail (jewelry and liquor) stores. In the 1960s and 1970s, the buildings fronting Hadden Street were redeveloped (some fronting East Butler Avenue), renovated, and/or occupied by businesses that provided machinery and automobile repair services, and sold and serviced heating/air conditioning, plumbing, and electrical supplies and equipment; the stores, service, and entertainment businesses remained through the early 1990s. Currently, only the west-adjoining 5,550-square-foot retail building is occupied by Renee's

Sandwich Shop and Porter Paints at 202 and 206 to 208 East G.E. Patterson Avenue, respectively.

The south-adjoining property has had three uses: residential (through 1912), the Union Station railroad depot (1913 through 1969), and the U.S. Postal Service Packaging and Distribution Center (1970 to 2012).

Phase I ESA Findings:
Page ix of the Executive Summary states:

The historical uses of Parcel I for automobile repair and tire sales and service and the southeast-adjoining property (the Don Brignole Site) as a gas station and for automobile service and repair occurred prior to promulgation of environmental regulations that controlled the use, storage, and disposal of hazardous substances and petroleum products, and regulated closure of UST systems. Visual evidence of a release from historical operations onsite was not observed during the Phase I ESA. Based on the historical uses of the subject property and historical gas station operations, incomplete and/or non-compliant UST removal documentation, and potential for removal activities (particularly the emptying of hazardous waste sand/soil material) at the Don Brignole Site to have encroached on the subject property are considered a *recognized environmental condition* in connection with the subject property. Additional investigation (a Phase II ESA) is recommended.

Available files at the TDEC Memphis EFO did not document that contaminants at other regulated adjoining or surrounding area facilities have migrated to the subject property or that the subject property was to be included in future investigations at those sites. However, the incompleteness of existing files, lack of available files, and number of sites with decades of historical operations expected to involve the use, storage, and/or disposal of hazardous substances or petroleum products and that have not been regulated or investigated is considered a *data gap*. Additional investigation recommended to fill the *data gap* is a Phase II ESA of soil and groundwater at the subject property.

The debris and trash observed onsite is considered *de minimis* Any soil, sand, or gravel on the subject property that originated from the Don Brignole Site may require characterization prior to disposal; disposal of a hazardous waste poses a potential *business environmental risk* because of the potential associated liability and costs. EnSafe recommends collecting a composite sample of any material remaining from the former UST contents to determine disposal options.

Phase II ESA Findings:
Pages iv and v of the Executive Summary states:

The Phase II ESA field investigation was performed January 8-10, 2013, to evaluate the potential release of hazardous materials and/or petroleum hydrocarbons to the subject property. Groundwater samples were collected from three temporary monitoring wells and soil samples were collected from nine soil borings for laboratory analysis. Below is a summary of the findings and recommendations for additional site action.

Groundwater Analytical Results

Laboratory analysis of groundwater samples detected four volatile organic compounds (VOCs) and seven polynuclear aromatic hydrocarbons (PAHs) in groundwater. Trichloroethene was the only VOC that exceeded the U. S. Environmental Protection Agency (USEPA) tap water regional screening level (RSL), but was below its USEPA maximum contaminant level for drinking water. Based on these results, no additional action is recommended regarding groundwater at the subject property.

Soil Analytical Results

Laboratory analysis of soil samples detected VOCs, metals, and PAHs. All VOC detections were below screening criteria. Arsenic exceeded its residential and industrial RSLs, but was below the generally accepted Shelby County residential arsenic background level. Lead was detected in one sample exceeding its residential RSL, but was below its industrial RSL.

Laboratory analysis indicated PAHs are present in soil at concentrations exceeding the Tennessee urban background concentration of 1 milligram per kilogram (mg/kg) for benzo(a)pyrene (BAP). As discussed in Section 5.2.3 of this report, a group of six PAHs with characteristics similar to BAP can be converted to BAP equivalent (BEQ) concentrations and compared to the BEQ urban background concentration to evaluate potential contamination associated with these compounds. The BEQ concentrations for this site ranged from 0.091 mg/kg to 34.4 mg/kg. The two highest BEQ concentrations were 19 mg/kg and 34.4 mg/kg in 0 to 1 foot deep samples collected from the southeastern portion of the site; the other 16 BEQ concentrations were less than 6 mg/kg. All exceedances were limited to the surficial 2 feet of soil in the grassy southern portion of the site.

Soil sample locations in the southern portion of the site were biased to the property boundary between the subject property and the Brignole property to the east. The Phase I ESA identified a recognized environmental condition associated with the removal of USTs in which potentially hazardous waste sand/soil material from inside the USTs was emptied onto the subject property along the property boundary. Information discovered during the Phase I ESA indicated the contents of the USTs had been gasoline; contaminants typically associated with gasoline include VOCs (benzene, ethylbenzene, toluene and xylenes), naphthalene, and lead. These compounds, along with PAHs

(specifically, the BEQ-related compounds), were present in soil samples collected along the site boundary, but the detected concentrations were below those indicative of a gasoline release. The presence of BEQ-related contaminants in the southern grassy portion of the site is likely related to other sources such as waste oil, rainwater runoff from adjacent asphalt covered areas, historical use of coal and/or fuel oil for heating building in the late 1800s and early 1900s, or other sources.

Recommendations

The presence of BAP-related compounds at concentrations above the Tennessee BEQ urban background and the industrial RSL for BAP should be assessed further. EnSafe recommends preparing a remedial options plan to address site contamination and removal of the hydraulic lift reservoir tank.

Additional assessment to delineate BAP contamination and evaluate remedial options may include collecting additional soil data to delineate hot spots and conducting a preliminary risk-based evaluation of site contamination to determine an acceptable remedial goal. Remedial actions may include capping or removal of contaminated soil.

The reservoir tank for the hydraulic lift should be removed and any contaminated soil removed, if present. Hydraulic lift reservoir tanks are usually 60 gallons or less and are not regulated under state UST regulations.

EnSafe, Inc. prepared An Analysis of Brownfields Cleanup Alternatives and Remediation Plan that was revised on June 28, 2013. The Executive Summary from that report states:

Future development of the site for commercial use would include buildings and surface cover such as asphalt or concrete that would result in eliminating exposure of future commercial users (composite site workers) to the contaminated soil. However, during construction for reuse, excavation workers would be directly exposed to contaminated soil. Therefore, the excavation worker was identified as the primary receptor with the composite site worker as a secondary receptor.

Excavation Worker Site-wide Risk: A BEQ screening concentration of 26.7 mg/kg was calculated for the excavation worker using a target lifetime cancer risk of $1X10^{-6}$ and online calculation tools from the Oak Ridge National Laboratory Risk Assessment Information System and U.S. EPA. The acceptable upper bound risk-based concentration for an excavation worker for a lifetime risk of $1x10^{-4}$ is 2,670 mg/kg. BEQ concentrations reported at the site were below 2,670 mg/kg; thus, no further evaluation of site-wide risk was conducted for the excavation worker based on this preliminary analysis.

Composite Site Worker Site-wide Risk: The industrial RSL of 0.21 mg/kg for benzo(a)pyrene is used to evaluate BEQ and is based on the composite site

worker exposure scenario as well as a target lifetime cancer risk of $1X10^{-6}$. The acceptable upper bound risk-based threshold of $1X10^{-4}$ for a composite site worker is 21 mg/kg; only one reported concentration exceeded 21 mg/kg; BEQ estimated for location SB06 was 34.4 mg/kg from the 0 to 1 foot depth interval. Consequently, site-wide risk for the composite site worker was evaluated further.

A site-wide exposure point concentration (EPC), based on the upper confidence level on the mean, was calculated using all BEQ results and U.S. EPA's ProUCL software. The site-wide EPC of 25.9 mg/kg was estimated to result in a site-wide lifetime cancer risk of $1.2X10^{-4}$ for a composite site worker under current site conditions. The estimated site-wide risk is slightly above the upper bound of $1X10^{-4}$ for acceptable lifetime cancer risk. Remediation based on $1.2X10^{-4}$ may not be warranted, unless the location is determined to be a hotspot, and continuous exposure could occur in that exposure area.

To determine if remediation of a hotspot at sample location SB06 (BEQ = 34.4 mg/kg) would be an effective remedy, the concentration of 34.4 mg/kg was replaced (simulating removal) with a concentration of 1 mg/kg (acceptable backfill concentration) and the EPC and site-wide risk were recalculated. The EPC was estimated to be 4.4 mg/kg, and the corresponding site-wide lifetime cancer risk was estimated to be $2.1X10^{-5}$ for a composite site worker. Thus, the composite site worker site-wide risk can be reduced to the acceptable lifetime cancer risk range of $1X10^{-6}$ to $1X10^{-4}$ by a remedial action, such as removal or capping, to eliminate exposure at the maximum concentration location.

Prospective Reuse

Currently, there are no redevelopment plans for the subject property; however, Inner Vision's long-term strategy is to redevelop the property for commercial use.

Remedial Action Objectives

Remedial action objectives (RAOs) are implemented to protect human health and the environment against the possible risk associated with a contaminated site. The assumed reuse of the property for commercial land use indicates that potential receptors who may be exposed to site soil contaminants are composite site workers and excavation workers.

The RAOs for the G.E. Patterson site are to:

- Support redevelopment or reuse of the site as a commercial-use property.

- Assuming commercial redevelopment, either eliminate exposure or reduce site-wide risk to within the acceptable lifetime cancer risk range

($1X10^{-6}$ to $1X10^{-4}$) for composite site workers and excavation workers as set forth in the NCP and OSWER Directive 9355.0-30.

Analysis of Alternatives

The evaluation of alternatives includes identifying each alternative and analyzing the technologies available to successfully meet the RAOs. For the G.E. Patterson Avenue at Hadden Street site, four alternatives were considered:

- Alternative 1 — No Action
- Alternative 2 — Hydraulic oil reservoir removal, land use controls, and soil management plan
- Alternative 3 — Excavation and offsite disposal of contaminated soil
- Alternative 4 — Soil/asphalt capping of contaminated soil

The remedial alternatives were evaluated based on U.S. EPA's criteria: 1) RAOs are met, 2) community involvement/acceptance of the alternatives, and 3) ABCA guidelines for implementability, effectiveness, and cost are met.

Comparison of Alternatives

Based on evaluation of the four alternatives, Alternative 3 (excavation and offsite disposal of contaminated soil) is the preferred alternative. In addition to removal and disposal of BEQ-contaminated soil, Alternative 3 incorporates the actions proposed in Alternative 2 (hydraulic oil reservoir removal, land use controls, and soil management plan). Alternative 2 limits the redevelopment of the property to commercial use, but does not include a removal or capping action to eliminate exposure or reduce site-wide risk. Alternative 4 meets the RAOs, but Alternative 3 is more cost effective. In summary, Alternative 3 achieves RAOs for meeting an acceptable site-wide risk for the composite site worker, redevelopment or reuse of the site as a commercial property will not be limited, and Alternative 3 is cost effective and easily implemented.

Alternative 3 consists of five tasks: 1) removal of the hydraulic oil reservoir, piping, and associated contaminated soil, 2) preparation and implementation of land use controls, 3) preparation and implementation of a soil management plan, 4) focused hotspot delineation sampling to define extent of BEQ-contaminated soil, and 5) soil excavation and disposal activities. The estimated cost for implementing Alternative 3 is $52,600. (pages iv-vi)

The Executive Summary further states:

It is recommended that Tennessee Department of Environment and Conservation (TDEC) approval of the remedial action work plan be obtained prior to implementation to ensure that the plan is consistent with the latest standards and regulations regarding cleanup. Upon completion of the remedial

action, it will be necessary to submit a report, which includes the quantities and disposition of any impacted soil removed, to TDEC for completeness of the publicly available state file generated as part of the Shelby County Wolf River Brownfields project. If the redevelopment plan is for residential reuse, it will be necessary to revise the RAOs to a residential cleanup level to obtain TDEC approval.

The Remediation Plan for implementation of Alternative 3 will involve the following activities:

- Establishment of land use controls to restrict redevelopment of the property to commercial use and prohibit the use of groundwater.

- Preparation of a detailed soil management plan to be implemented whenever soil onsite is disturbed.

- Removal and offsite disposal of the hydraulic oil reservoir, associated piping, and contaminated soil (if present).

- Confirmation sampling to ensure removal of contaminated soil associated with the hydraulic reservoir.

- Delineation sampling of hotspots with BEQ concentrations above acceptable risk-based RAOs.

- Removal and offsite disposal of BEQ-contaminated soil from the hotspots.

- Backfill placement in the excavated areas and site restoration in accordance with the redevelopment plan.

Land Use Controls
An attorney will prepare a land use control in the form of a Notice of Land Use Restriction (NLUR) for TDEC approval and file the TDEC-approved NLUR with the Shelby County Register of Deeds. Land use controls must be implemented and recorded on the property deed to ensure that future development of the site is restricted to commercial use. In addition, the land use controls will prohibit the use of groundwater/installation of water supply wells onsite. The groundwater restriction will not affect the site's redevelopment because the property is within the Memphis city limits where water is supplied by the Memphis Light, Gas and Water Division, as required by the Shelby County Well Construction Code, Section 12, paragraph 12.01 G.

Soil Management Plan
To ensure that soil with BEQ concentrations that exceed industrial RSLs is properly handled onsite and properly disposed of if removed from the site, a soil

management plan will be developed. The soil management plan will address best management practices for onsite soil handling and management, and if the soil is removed from the site, best management practices for stockpiling, characterizing, transporting, and disposing of the soil in an approved, permitted landfill. Based on the available soil sampling results, it is assumed that soil removed from the G.E. Patterson site will be classified as a non-hazardous special waste.

Remediation Work Plan

The Remediation Work Plan will describe the proposed removal actions and include a Sampling and Analysis Plan and Quality Assurance Project Plan for the hotspot delineation sampling and confirmation sampling after reservoir removal, and a Health and Safety Plan. As previously noted, TDEC approval of the Remediation Plan is recommended.

Hydraulic Oil Reservoir Removal

Removal and disposal of the hydraulic oil reservoir and associated piping in the northern corner of the site can be performed in conjunction with site redevelopment and incorporated into the site preparation activities. The removal would consist of selecting and mobilizing a contractor for the work, excavating soil to expose the reservoir and piping, stockpiling the soil onsite, removing the reservoir and piping, disposing of the reservoir and piping as scrap metal offsite, conducting sampling to identify contaminated soil, removing contaminated soil, stockpiling contaminated soil onsite, repeating soil sampling and removal until project action levels are met, characterizing stockpiled soil for disposal, transporting and disposing of contaminated soil as non-hazardous special waste, backfilling the excavation with uncontaminated stockpiled soil and offsite borrow material as needed, and restoring the surface in accordance with the redevelopment design.

Focused Hotspot Delineation Sampling

The Phase II ESA determined the highest concentrations of BEQ in soil are present in the southeastern corner of the property. Therefore, before conducting BEQ-contaminated soil removal, additional soil sampling and analysis should be completed to better define the extent of the contamination. Once the extent of BEQ contamination has been determined, the sampling results will also serve as post removal confirmation sampling because the dimensions of the removal area would be adequately defined.

Excavation and Disposal Activities

Excavation will be performed using a small excavator. Removed soil will be loaded into roll-off containers and transported to an appropriately permitted landfill for offsite disposal. It is anticipated that the soil will be classified as a non-hazardous special waste. The excavated area will be backfilled with clean soil obtained from an offsite borrow area. The backfill soil source will be tested to ensure it is contaminant-free before bringing the soil onsite. The disturbed

area will be seeded to establish vegetation or otherwise restored to prevent erosion. An environmental specialist will be onsite during the excavation to: 1) perform visual inspections of the soil for obvious signs of contamination, 2) monitor to ensure contaminated soil is adequately removed, and 3) observe backfill placement and compaction.

Removal Action Completion Report

Upon completion of the removal actions at the site, the environmental oversight consultant will prepare a Removal Action Completion Report. The report will document: 1) removal and disposal of the hydraulic oil reservoir, piping, and associated contaminated soil, 2) hotspot delineation sampling results, and 3) removal and disposal of the BEQ-contaminated soil from the hotspots.

The report will include a summary of the work performed, analytical laboratory reports, information from the log book, and photographs of daily activities. In addition to documenting the remedial activities, the report will include a soil management plan. The purpose of the soil management plan will be to ensure that, the long-term, soil with BEQ concentrations exceeding industrial RSLs is properly handled onsite and properly disposed of if removed from the site.

The soil management plan will include best management practices for onsite soil handling and management, and if the soil is removed from the site, best management practices for stockpiling, characterizing, transporting, and disposing of the soil in an approved, permitted landfill. Based on the available soil sampling results, for the purpose of this ABCA, it is assumed that soil removed from the G.E. Patterson site will be classified as a non-hazardous special waste.

The report, documenting the hydraulic reservoir removal, hotspot delineation sampling, and contaminated soil removal actions, will be submitted to the property owner/site developer and, for completeness of the publicly available state file generated as part of the Shelby County Wolf River Brownfields project, to the TDEC. If brownfields cleanup grant funds are used, a copy of the report should be sent to U.S. EPA, as required by grant conditions.

Hydraulic oil reservoirs do not fall under the underground storage tank regulations; however, regulatory review and approval by TDEC are recommended. In addition, a summary report to TDEC is needed for completeness of the publicly available state file generated as part of the Shelby County Wolf River Brownfields project. (Executive Summary, pages vi-ix)

Gerald Robinson of Inner Vision Memphis was contacted by Don Brignole about purchasing his portion of Site 2. If Mr. Robinson had been successful, a Phase I and Phase II ESA application

would have been submitted on the Brignole parcel. Mr. Robinson was not able to negotiate a sales agreement.

This site has great visibility coming from the west on South Third Street: it is slightly elevated, providing a great vista. The best development opportunity would be to assemble both parcels and develop the site as a whole. As mentioned above, this option is not currently possible. If the mixed entertainment venue is successful, this parcel could be used for parking (with the approval of a special exception) or some type of outdoor venue in the short term and possibly expansion of the entertainment venue, restaurant, retail or a mixed use development in the long term.

Figure 14 Aerial Photograph showing Inner Vision Site 2.

Redevelopment and Reinvestment:
EPA's total expenditure on this site will total $44,489.43 ($2,946 for a Phase I ESA, $36,989.43 for a Phase II ESA and $7,500 for a remediation plan).

AFTER PICTURE

Inner Vision Site #2

Chart 2 from the "Final Report: Wolf River Brownfields Assessment Grant" below shows Phase I ESAs and identifies pertinent site information.

	Site Name	# of ESAs	Project Area	Phase II ESA Results and Recommendations
1	26 South Main	1	DMC - CBID	Detected constituents in soil and soil-gas were below action levels. Reuse for mixed commercial may proceed. Manage asbestos-containing material (ACM) and lead-based paint (LBP) using standard construction practices during building renovation.
2	2630 Epping Way	1	Wolf River Greenway & Conservation Corridor	Detected constituents in surface water and sediment were below action levels. No further action recommended. Reuse for education and recreation may proceed.
3	Inner Vision - 1	1	DMC - CBID	Remove three underground storage tanks. Manage ACM and LBP using standard construction practices during site redevelopment. Detected constituents in soil and groundwater were below action levels.
4	Inner Vision - 2	1	DMC - CBID	Petroleum product contaminants were detected above commercial land use action levels and an abandoned hydraulic oil reservoir and piping were found. Recommendation was to perform an Analysis of Brownfields Cleanup Alternatives and develop a Remediation Plan.
5	John Little Drum (both parcels)	2	DMC - CBID	Sub-slab soil-gas identified volatile organic compounds exceeding ambient air action levels. Indoor air sampling results were below ambient air action levels. Further evaluation of onsite groundwater and potential vapor intrusion needed.

Lessons Learned

With every major project, it is important to take a few minutes to reflect on what was learned and how this knowledge can be shared to make the next opportunity better or at least, more informed on the front end of the project. The lessons learned below endeavor to provide that type of informed reflection and also recognize the strengths of the existing EPA Brownfield Assessment Grant structure that is in place between EPA, TDEC and other Region 4 grantees that help mentor new grantees through formalized training and conference opportunities.

1. The agency designated to administer the Brownfield Assessment Grant should either write the grant or collaborate closely with the grant writer on the project area boundaries, grant commitments, development incentives/leveraging opportunities within and designation of target areas, roles and responsibilities of grant partners and participating organizations, list of viable potential sites, etc. This will ensure a clear understanding of the time and commitment required of all participating organizations; result in a more actionable work plan; and manage expectations.

2. Grant project area boundaries are a critical element in the grant since the grant project area boundaries impact the quality and level of public engagement as well as the grant inventory/list of potential applicants for environmental assessment. While it is important to select a recognizable area, it is also important to right size your grant project area- an area should be selected that is neither too large to effectively engage community based organizations and potential applicants nor too small to provide the requisite number of potential sites. As you can see from the Phase I and Phase II ESA tables, the largest number of applications was located in areas identified for redevelopment and offered development incentives.

3. When selecting a grant project area, the grant writer and administering agency should choose target areas that offer development incentives that will enhance and leverage EPA Brownfield Assessment grant funds. These redevelopment areas are areas the community has identified for redevelopment and provided incentives to encourage property owners and developers. These areas already have a certain synergy as well as redevelopment professionals working in these areas who are familiar with the various properties and property owners that can assist the grant project team.

4. The most effective grant project team is one in which the members of the team are in the direct chain of command of the grant program director or grant project manager. This arrangement provides project continuity, consistency and better management and distribution of the grant work.

5. Develop by-laws that provide flexibility by creating a moderate number of Brownfield Council Members required for a quorum. Also understand that everyone no matter how dedicated cannot attend every meeting. Establish alternate representatives for Brownfield Council Members who can attend the meetings so that all groups are represented and can participate in the ongoing grant activities. Also create liaison positions for subject matter

experts such as your state environmental agency representative to encourage communication and collaboration.

6. Develop a good relationship with your state environmental agency representatives and EPA Grant Project Officer. It is important that this relationship result in good communication and a cooperative collaboration so when unanticipated complications arise or grant changes are needed, you have the support of your state environmental agency representatives and EPA Project Officer.

7. Develop a good working relationship with the State Historic Preservation Office (SHPO) and your community's historic preservation officer. A good working relationship will ensure that the grant manager understands and respects the Section 106 process. If your local historic preservation officer reviews and understands your assessment activities, the local historic preservation officer can respond quickly to the SHPO in support of your assessment activities and notify the SHPO if any assessments are located in local historic districts or on the National Register of Historic Places and how best to minimize the Phase II ESA activities. Ultimately, this will result in better collaboration and possibly a quicker review and response from the SHPO.

8. The process that the Tennessee Department of Environment and Conservation (TDEC) uses to issue petroleum determination letters allows the grantee to maximize the funding for petroleum products. Mark Braswell, Andy Shivas and Paula Larson of TDEC worked with us to expedite the review and several of the petroleum letters needed for the grant. This was extremely helpful in meeting the grant schedule.

9. Selection of a local environmental professional with EPA Brownfield Grant experience was essential to assist a grant project team with no EPA Brownfield Assessment Grant experience. EnSafe donated the time its president and CEO who worked on the grant and provided the type of philanthropy and community involvement grant project staff was seeking. Claire Barnett, the EnSafe Project Manager, provided excellent customer service and worked closely with the grant manager to meet various grant requirements and deadlines.

10. The Rhodes College Partnership provided a unique opportunity to work with the Environmental Program whose faculty and students in the Environmental Studies and Environmental Science program are interested in coordinating academic resources to promote "healthy, clean and safe communities". Dr. Rosanna Cappellato served as the Rhodes College liaison and Brownfield Council Member that supervised the initial research on potential Brownfields sites in the four grant target areas. This work began early in the grant cycle after EPA announced the grant award to Shelby County Government and helped formalize many elements of the grant application process and right-of entry requirements.

11. EPA provides excellent training and continuing education opportunities for its grantees. The initial training session provided information that was not necessary contained in grant requirements or guidelines such as asking your environmental professional to provide a

short section on potential work and cost for the next environmental step. The Brownfield Conferences are equally comparable to other national professional conferences in terms of variety of subjects, content of information, and continuing education credits for the novice and seasoned Brownfield Grant administrator. This is a great benefit that EPA should continue.

12. This grant represents the successful culmination of the residents of Memphis and Shelby County and the grant target areas, community based organizations in the grant project area, the members and alternate members of the Shelby County Brownfield Council, Mayor Mark H. Luttrell, Jr., the staffs of EPA and TDEC, the EnSafe team, the grant project staff, and last but certainly not least, the key people in the Division and Office of Planning and Development whose support was essential to the implementation of this grant.

The Brownfield Assessment Grant provided great experience to the grant project team and various individuals that participated in the grant such as applicants, committee members, council members, alternate representatives or interested parties. The Brownfield Assessment Grant helped move certain projects closer to development and provided the initial investment necessary to begin the development process for other projects.

Brownfield Funded Technical Reports

All Brownfield funded technical reports were submitted to Olice Carter on a compact discs when completed by the environmental professional, EnSafe, Inc.

Final Request for Reimbursement

The final request for reimbursement was submitted on July 10, 2013 for $9,815.32. Funds have been received by Shelby County Government. Refer to Exhibit A.

Final Federal Financial Report

The final Federal Financial Report, SF 425, is included as Exhibit B.

Final Minority/Women Owned Business Enterprise Utilization Report

The final Minority/ Women owned Business Enterprise Utilization Report, form 5700 52a, is included as Exhibit C.

Lobbying and Litigation Certification

The final Lobbying and Litigation Certification, form 7500-53, is included as Exhibit D.

Final Brownfield Assessment Grant Status Report

The final Brownfield Assessment Grant Status Report submitted June 30, 2013 is included as Exhibit E.

Public Grant Closeout Document

The public grant closeout document entitled "Final Report: Wolf River Brownfields Assessment Grant" dated June 30, 2013 is included as Exhibit F.