Analysis of Brownfields Cleanup Alternatives

Former Ibrahim "Chism Trail" Site
544 and 645 Jackson Avenue
Memphis, TN 38105

Prepared by BRS, Inc. for the

City of Memphis and Shelby County Redevelopment Agency
850 North Manassas Street
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DRAFT

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ATTACHMENTS

A. Site Location Map
B. Summary of Public Comments and Responses

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1 EXECUTIVE SUMMARY

The work is to be performed at three adjoined lots at 544 and 645 Jackson Avenue in Memphis, Shelby County, Tennessee (Parcels #001107 00001, #001106 00001, and #001096 A00099).

One parcel includes a vacant grocery store building and an adjoined asphalt parking lot. This property was historically developed as residences. Since at least 1963, it was operated as a grocer, first as a Kroger and then Chism Trail Supermarket. It has been vacant since 2003.

Another parcel is currently a vacant, grass-covered lot in the southwest corner of the Site. This parcel began operating as a retail gasoline station with multiple underground storage tanks (USTs) before 1932. The gas station ceased operation in the 1990s and USTs were removed in 1992. By 1953, additional operations at the site included a laundry and dry cleaner. The site was later used for various retail businesses until it was razed in 2008.

The third parcel was historically part of the Jackson Avenue right-of-way, prior to its reconstruction to its current configuration. No prior commercial or industrial uses are believed to have operated.

The site is enrolled in the Tennessee Department of Environmental Conservation's (TDEC) Voluntary Oversight and Assistance Program (VOAP). Investigation activities began in 1992 when the USTs were decommissioned and continued intermittently. Presently, one monitoring well exhibits increasing concentrations of chlorinated solvents. An area of subsurface soil contamination is suspected to exist near the well. Under the preferred alternative, the remedial action will include removal of impacted soil and monitoring groundwater.

2 INTRODUCTION & BACKGROUND

The work is to be performed at three adjoined lots at 544 and 645 Jackson Avenue in Memphis, Shelby County, Tennessee (Parcels #001107 00001, #001106 00001, and #001096 A00099). The three parcels that comprise the site are bordered on all sides by roadways: Jackson Avenue to the North, Dunscomb Place to the east, North Parkway to the south, and Danny Thomas Boulevard to the west. **Attachment A** contains a Site Map.

The City of Memphis and Shelby County Redevelopment Agency (CRA) has contracted Brownfield Redevelopment Solutions, Inc. (BRS), to prepare this Analysis of Brownfields Cleanup Alternatives (ABCA) in support of EPA grant funding. The purpose of the ABCA is to:

- Identify reasonable brownfields cleanup alternatives considered for addressing the contamination identified at the site;
- Analyze the various factors influencing the selection of a preferred cleanup method, including effectiveness, implementability, costs, and sustainability;
- Select the preferred cleanup method, based on the analyses performed; and

- Provide community outreach and solicit public participation and comment on the remedial selection process prior to the final decision (see **Attachment B**).

The CRA will promote and facilitate community involvement with the environmental cleanup and site redevelopment project with the activities itemized below.

- The CRA has conducted public notice through publication in the Daily News, a daily newspaper circulated in Shelby County, TN.
- The CRA has provided an opportunity for members of the public to comment on the ABCA in a public meeting held on 1/13/2026.
- The CRA has published a notice of availability of the draft ABCA.
- The CRA has prepared written responses to the comments received and revised accordingly the cleanup plans and the ABCA as a result of the comments.

A Brownfields Cleanup Decision Memo will be prepared at the end of the public comment process, which will describe the cleanup options selected for the site. The ABCA and the Decision Memo will be included with the Administrative Record. The Administrative Record repository is available at the CRA.

2.1 Site Description and Previous Uses

The work is to be performed at three adjoined lots at 544 and 645 Jackson Avenue in Memphis, Shelby County, Tennessee (Parcels #001107 00001, #001106 00001, and #001096 A00099). The total area of the site is 3.3 acres and is currently vacant.

The property at 0 Danny Thomas Boulevard (Parcel 001096 A00099) measures 0.2 acres and is a vacant grass-covered lot in the northwest corner of the site. This parcel was historically part of the Jackson Avenue right-of-way, prior to its reconstruction to its current configuration.

The property at 544 Jackson Avenue (Parcel 001107 00001) is the largest, measuring over 2.76 acres. It includes a vacant grocery store building with a loading dock and an adjoined asphalt parking lot. This property was historically developed as residences. Since at least 1963, it was operated as a grocer, first as a Kroger and then Chism Trail Supermarket. It has been vacant since 2003.

The property at 645 Jackson Avenue (Parcel 001106 00001) measures 0.35 acres and is a vacant grass-covered lot in the southwest corner of the Site. This parcel began operating as a retail gasoline station with multiple underground storage tanks (USTs) before 1932. The gas station ceased operation in the 1990s and USTs were removed in 1992. By 1953, additional operations at the site included a laundry and dry cleaner. The site was later used for various retail businesses until it was razed in 2008.

2.2 Surrounding Land Use

The site is bordered on all sides by asphalt roadways. Properties to the north include commercial and residential uses. Properties to the east are asphalt paved parking lots. Properties to the south include warehouses and commercial buildings. The property to the west is a vacant, gross-covered lot. The St. Jude's Children's Research Hospital complex is to the south / southwest.

2.3 Project Goal (Reuse Plan)

CRA has received a development proposal to use the site for a grocery store, parking garage, and mixed-income residential above ground-level retail. All work will be overseen by the Tennessee Department of Environmental Conservation's (TDEC) Voluntary Oversight and Assistance Program (VOAP) to ensure the result is appropriate for these uses.

2.4 Summary of Environmental Conditions

Environmental conditions remaining at the site are associated with two Areas of Concern (AOCs). The former gasoline USTs and associated conveyance pipes in the southwest corner of the property were removed in 1992. Thereafter, approximately 600 cubic yards of impacted soil was removed and groundwater monitoring confirmed that concentrations attenuated to below site-specific criteria. A closure determination was issued by TDEC in 1997.

Following the 2008 demolition of the building at 645 Jackson Avenue, several potential sources of contamination were identified, as follows:

- A vertical tetrachloroethylene (PCE) UST was found. The vessel and 37 cubic yards of surrounding soil were reportedly removed.
- A Stoddard solvent UST was found. The vessel and 100 cubic yards of surrounding soil were reportedly removed.
- A buried 55-gallon drum of kerosene and motor oil was found. The container and 20 cubic yards of surrounding soil were reportedly removed.
- Buried product lines and two, two 4 ft by 4 ft by 3 ft concrete boxes (one containing contaminated soil) were also reportedly found and removed. No further information was available in the historical reports.
- A unknown manhole was found. The structure and 126 cubic yards of surrounding soil were reportedly removed and disposed as hazardous waste. Post excavation soil samples identified residual concentrations of PCE.

Thereafter, a total of eight groundwater monitoring wells were installed at the site. Historically, four wells evidenced impacts. All four contained chlorinated solvents and two additionally contained benzene and naphthalene. All contaminant concentrations have attenuated to below detection levels except for PCE in MW-4, which increased between

2016 and 2018, the last sample collected. The 2018 PCE concentrations currently exceed USEPA Regional Screening Levels (RSLs) and Maximum Contaminant Levels (MCLs).

In 2019, a limited soil gas survey was conducted. Four soil vapor samples were collected at the site and three were collected on an off-site property south of North Parkway. One sample, SG06, which was collected on-site near MW-4, exceeded the Commercial Vapor Intrusion Screening Levels (VISLs) for PCE and TCE.

2.5 Physical Setting

The site and surrounding area is generally flat, sloping downward slightly towards the south/southwest. The elevation at the property is between 243 and 254 feet above mean sea level, according to the United States Geological Survey (USGS) topographic quadrangle map.

Soils at the subject site were described as clayey silt and sandy silt to 18 ft bgs. No surface water bodies or wetlands are present on or adjacent to the Site.

2.6 Exposure Pathways

For contaminants from a site to pose a human health or environmental risk, one or more completed exposure pathways must link the contaminant to a receptor (human or ecological). A completed exposure pathway consists of four elements:

- A source and mechanism of substance release;
- A transport medium;
- A point of potential human or ecological contact with the substance ("exposure point"); and
- An "exposure route", such as dermal contact, ingestion, etc.

Site evaluation indicates the following potentially completed exposure pathways related to the site in its current condition (i.e., pre-remediation):

- **Direct contact with Soil**. Soil might be handled by children, nearby residents, occasional on-site construction workers or trespassers. This exposure pathway has been mitigated by implementation of a perimeter fence. The proposed cleanup activities, which include soil excavation and offsite disposal will remove all source material, thereby removing the hazard.
- **Direct contact with surface water**. There is no surface water at the Site.
- **Direct Contact with, or Ingestion of, Groundwater.** There are no current uses of onsite groundwater. However future use could expose someone to PCE above the MCL.
- **Vapor intrusion risk**. Soil gas sample SG04 exceeded the Commercial Vapor Intrusion Screening Levels (VISLs) for PCE and TCE. The results were further evaluated using TDEC's *VI Mitigation Risk Criteria for New Construction at DoR Sites*

(TDEC 2017). The sample exceeding TDEC's guidance risk threshold under the commercial exposure scenario.

3 APPLICABLE LAWS AND CLEANUP STANDARDS

All site remediation to be performed under this grant would be conducted in accordance with applicable Tennessee laws and regulations. Laboratory results will be compared to EPA's Regional Screening Levels (RSLs), the federal Maximum Contaminant Levels (MCLs) and, if applicable the Tennessee water quality standards (GWQS). Soil vapor contaminant concentrations will be compared to EPA's Vapor Intrusion Screening Levels (VISL); the state currently uses the EPA VISLs and also has a vapor mitigation guidance document.

All work will be overseen by the Tennessee Department of Environmental Conservation's (TDEC) Voluntary Oversight and Assistance Program (VOAP) to ensure the work is appropriate for these uses. A No Further Action determination from TDEC will be requested when the remediation is complete to document the site's status.

4 EVALUATION OF CLEANUP ALTERNATIVES

This section identifies various remediation alternatives that were considered in response to the impacts identified at the site. The following potential remedial alternatives were considered:

Alternative No. 1) No action;

Alternative No. 2) Groundwater Extraction;

Alternative No. 3) Impacted Soil and Groundwater Removal.

The following evaluation criteria were considered in comparing the remedial alternatives.

A. Effectiveness in providing compliance with TDEC regulations and increased protectiveness to public health and the environment;

B. Implementability of the considered alternative;

C. Cost of the considered alternative; and

D. Sustainability and resilience considerations.

4.1 Alternative No. 1 - No Action

If no environmental cleanup remedy were performed at this site:

- The site would remain out of compliance with TDEC's regulations and remain a source of nonpoint source pollution;
- The redevelopment of the site would be compromised and potentially non-viable.

4.1.1 Effectiveness

The "no action" alternative is not effective in that it does not provide for compliance with TDEC regulations, does not address a source of neighborhood contamination, and it fails to provide for the beneficial reuse of the site.

4.1.2 Sustainability and Resilience

The "no action" approach would not meet project remediation goals because the contamination would remain in place, untreated, and remain a significant source of nonpoint source pollution. As such, the "no action" approach would present a continuing risk to the public. Based on this, evaluation of the approach with regards to other sustainability criteria is not relevant.

4.1.3 Implementability

The "no action" alternative is technically feasible, although the presence of unremediated soil contaminants would not be in compliance with TDEC regulations.

4.1.4 Operation and Maintenance

Because there is no remedy implemented, there would also be no operation and maintenance requirements at the site.

4.1.5 Institutional Controls

As no action is taking place under this alternative, no institutional controls are proposed.

4.1.6 Cost

There would be no financial costs associated with this alternative.

4.2 Alternative No. 2 – Groundwater Extraction

Under this alternative, the remedial action will include extraction and either on-site treatment or off-site disposal of impacted groundwater. Remediation is necessary to address groundwater contamination in and near MW-4.

This remediation may require a groundwater Institutional Control if groundwater remains contaminated above the relevant standards after the remediation.

This remedy will allow for future use of groundwater and reduce the vapor intrusion risk to future development. Further details of the remediation plan would include:

- Installation of four groundwater extraction wells surrounding MW-4. Wells would be 4-inches in diameter and extend to approximately 20 ft deep.
- Six bi-weekly groundwater extraction events would be conducted. At least 10,000 gallons of groundwater impacted by dissolved chlorinated solvents is expected to be removed.

- Following the remediation, groundwater will be sampled. If impacts remain, it will be sampled quarterly for up to two years to document decreasing contaminant trends.
- To ensure the community is not exposed to contamination through groundwater use, an Institutional Control may be implemented.

Selection of this alternative will result in an informed redevelopment plan for the future use of the site and surrounding neighborhood. However, some contaminants may be left in place.

4.2.1 Effectiveness

The groundwater removal approach will remove impacted groundwater, which may result in compliance with relevant groundwater standards. However, residual soil impacts may continue to contaminate groundwater over time and may cause groundwater contaminant concentrations to increase over time.

4.2.2 Sustainability and Resilience

This criterion evaluates the degree to which the remedial alternative may reduce greenhouse gas discharges, reduce energy use, employ alternative energy sources, reduce volume of wastewater to be disposed, reduce volume of materials to be taken to a landfill, and/or allow for the reuse or recycling of materials during cleanup is considered, where applicable. The groundwater removal approach compares favorably to Alternative 3 (described in Section 4.3) with regard to sustainability and resilience metrics. The approach would result in decreased energy use, greenhouse gas emissions, and landfill disposal volume.

However, this approach provides less protectiveness of the remedy in light of reasonably foreseeable changing climate conditions such as increased precipitation and flooding events as some source material will be left in place.

4.2.3 Implementability

Groundwater extraction is a conventional means of addressing chlorinated solvent contaminants. Groundwater institutional controls are commonly used to protect the public from areas of contaminated groundwater. A Remedial Action Report is a routine submission to TDEC to document remedial activities.

The CRA would procure a contractor that is licensed, qualified, and OSHA-certified to perform work on hazardous materials sites.

4.2.4 Operation and Maintenance

Operation and Maintenance would be limited to submitting annual certifications to TDEC and conducting post-closure groundwater monitoring, if required.

4.2.5 Institutional Controls

A Groundwater Use Restriction may be established to prohibit groundwater use on the site, if warranted by post-remediation monitoring results.

4.2.6 Cost

The costs for completing remediation under this approach were estimated using the following elements and assumptions:

1) Project and Grant Management tasks, including public notification;
2) Prepare project specifications and bid documents;
3) Conduct procurement process to obtain remediation contractor;
4) Prepare Quality Assurance, and Health and Safety deliverables.
5) Remove approximately 10,000 gallons of impacted groundwater;
6) Post-remediation groundwater monitoring;
7) Prepare Remedial Action Report and other regulatory reporting requirements;
8) On-going Operation and Maintenance, if required.

The estimated cost for this cleanup alternative is $220,350.

4.3 Alternative No. 3 – Soil and Groundwater Removal

Under this alternative, the remedial action will include removal of contaminated soil and groundwater. Remediation is necessary to address soil contamination that is suspected to be present in the vicinity of MW-4 and is a continuing source of contamination to groundwater.

This remediation may require a groundwater Institutional Control if groundwater remains contaminated above the relevant standards after the remediation.

This remedy will prevent exposure to areas with chlorinated solvent contamination in soil and groundwater. Further details of the remediation plan would include:

- Approximately 1,067 tons of non-hazardous impacted soil will be removed from an area measuring 80 feet long, 30 feet wide, and extending to 8 feet below grade (fbg) and disposed of off-site. The excavation is anticipated to reach 4 feet below the shallow water table.
- A shoring plan that is protective of the adjacent roadway will be developed by a TN-licensed Professional Engineer and installed by a qualified contractor.
- Excavated soils will be sampled and characterized in accordance with the requirements of the designated disposal facility. The tasks will also include post-excavation sampling and analysis.
- An estimated 40,000 gallons of groundwater that is impacted by dissolved chlorinated solvents will be removed while dewatering the excavation.

- Emplacement of 1,000 tons of clean backfill will be compacted to prevent settlement. An additional 67 tons of topsoil will be spread and seeded to prevent erosion.
- A replacement monitoring well MW-4 will be installed after backfilling to re-assess groundwater in that area post-remediation. If groundwater in the area remain impacted, it will be sampled on a quarterly basis for two years to ensure concentrations are decreasing.
- To ensure the community is not exposed to contamination through groundwater use, an Institutional Control may be implemented.

Selection of this alternative will result in an informed redevelopment plan for the future use of the site and surrounding neighborhood. It is anticipated and all soil contamination will be removed.

4.3.1 Effectiveness

The site-wide soil removal approach will physically remove all impacted site soil and a significant volume of contaminated groundwater.

4.3.2 Sustainability and Resilience

The soil removal approach compares less favorably to Alternative 2 (described in Section 3.2) with regard to sustainability and resilience metrics. The approach would result in increased energy use, greenhouse gas emissions, and landfill disposal volume.

However, this approach provides protectiveness of the remedy in light of reasonably foreseeable changing climate conditions such as increased precipitation and flooding events as the source material will be removed.

4.3.3 Implementability

This alternative is feasible and implementable. This approach will involve soil excavation and is a conventional means of addressing contaminants associated with impacted soil. Groundwater institutional controls are commonly used to protect the public from areas of contaminated groundwater. A Remedial Action Report is a routine submission to TDEC to document remedial activities.

The CRA will retain a contractor that is licensed, qualified, and OSHA-certified to perform work on hazardous materials sites.

4.3.4 Operation and Maintenance

Operation and Maintenance would be limited to monitoring the excavation area for settlement and ensuring that grass seed germinates and thrives to prevent erosion of topsoil into the adjacent roadway and storm sewer system. If an institutional control is required, Operation and Maintenance consisting of annual certifications to TDEC and conducting post-closure groundwater monitoring, if required

4.3.5 Institutional Controls

A Groundwater Use Restriction may be established to prohibit groundwater use on the site, if warranted by post-remediation monitoring results.

4.3.6 Cost

The costs for completing remediation under this approach were estimated using the following elements and assumptions:

1) Project and Grant Management tasks, including public notification;
2) Prepare project specifications and bid documents;
3) Prepare Quality Assurance, and Health and Safety deliverables;
4) Conduct procurement process to obtain remediation contractor;
5) Removal of approximately 1,067 tons of impacted soil to a maximum depth of 8 feet.
6) Site restoration, including emplacement of fill material, top soil and seed.
7) Remove approximately 10,000 gallons of impacted groundwater;
8) Post-remediation groundwater monitoring;
9) Prepare Remedial Action Report and other regulatory reporting requirements;
10) On-going Operation and Maintenance, if required.

The estimated cost for this cleanup alternative is $629,490.

4.4 Preferred Alternative

The preferred alternative is Alternative No. 3 – Soil and Groundwater Removal. Soil excavation and groundwater removal are proven methods, environmentally effective and productive for long term, community-wide use. Excavation equipment is readily available. Soil excavation as proposed eliminates direct contact with fill contaminants. Groundwater extraction removes a large volume of dissolved contaminants.

The remedial remedy can be completed within the timeframe of the USEPA Brownfields Cleanup monies.

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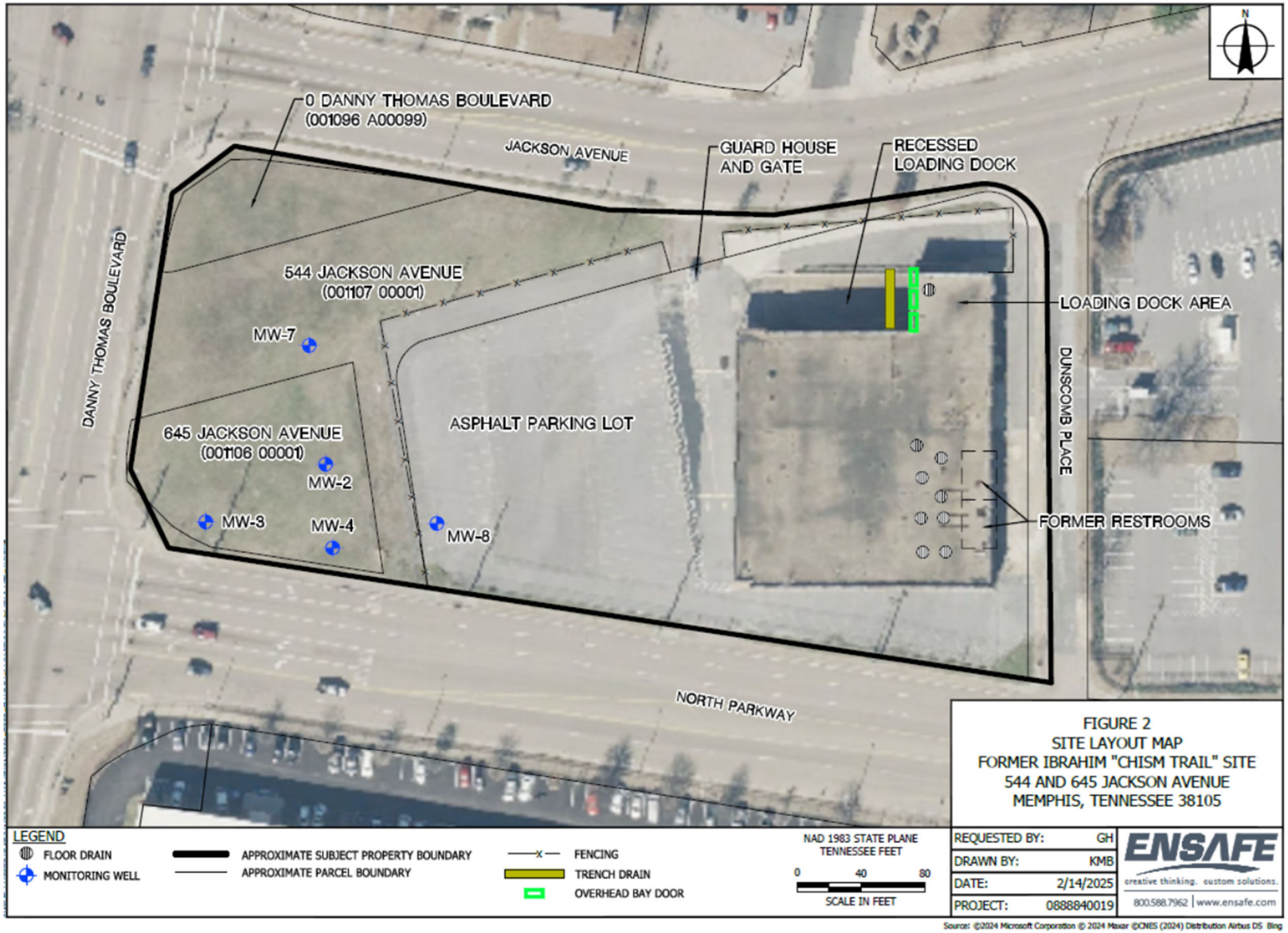
Attachment A
Site Map


N
0 DANNY THOMAS BOULEVARD
(001096 A00099)
JACKSON AVENUE
GUARD HOUSE
AND GATE
RECESSED
LOADING DOCK
544 JACKSON AVENUE
(001107 00001)
LOADING DOCK AREA
DANNY THOMAS BOULEVARD
DUNSCOMB PLACE
MW-7
645 JACKSON AVENUE
(00106 00001)
ASPHALT PARKING LOT
MW-2
MW-3
MW-4
MW-8
FORMER RESTROOMS
NORTH PARKWAY
LEGEND
FLOOR DRAIN
MONITORING WELL
APPROXIMATE SUBJECT PROPERTY BOUNDARY
APPROXIMATE PARCEL BOUNDARY
FENCING
TRENCH DRAIN
OVERHEAD BAY DOOR
NAD 1983 STATE PLANE
TENNESSEE FEET
0 40 80
SCALE IN FEET
FIGURE 2
SITE LAYOUT MAP
FORMER IBRAHIM "CHISM TRAIL" SITE
544 AND 645 JACKSON AVENUE
MEMPHIS, TENNESSEE 38105
REQUESTED BY: GH
DRAWN BY: KMB
DATE: 2/14/2025
PROJECT: 0888840019
ENSAFE
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ATTACHMENT B

Summary of Public Comments and Responses

TO BE ADDED WHEN AVAILABLE