Cahaba/Liberty Trail Feasibility Study
APPLE Program
Overton Road and Old Overton Road

Prepared for:
City of Vestavia
Regional Planning Commission of Greater Birmingham

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Executive Summary

Project Initiation
The project was initiated by the City of Vestavia Hills through the Advanced Planning, Programming, and Logical Engineering (APPLE) program developed by the Regional Planning Commission of Greater Birmingham. The City of Vestavia Hills requested professional planning assistance in evaluating the expected impacts associated with the installation of a multi-modal transportation trail along Overton Road and Old Overton Road beginning at River Run Drive and connecting to property owned by the Freshwater Land Trust located near the Carraway-Davie House. During the initial alternatives development it was decided that the area would be better served by recreational focused improvements along the Cahaba River and Overton Road/Old Overton Road.

Purpose of Study
This study was undertaken to assess the feasibility of providing recreational facilities within the project area that would allow pedestrians and cyclists the opportunity to enjoy the environment offered by the Cahaba River. These features would be accessible to the immediate community as well as attract others to the area. The project area includes a 1.4 mile stretch of roadway beginning at the proposed Cahaba River Park near the intersection of River Run Drive and Overton Road, continuing along Overton Road and then following Old Overton Road ending at the property owned by the Freshwater Land Trust near the Carraway-Davie house. This document summarizes:

- existing and expected transportation system operational conditions and deficiencies,
- the process used to identify potential alternatives for recreational use,
- the resulting alternatives that were developed from that process, and
- an evaluation of potential positive and negative impacts to the area and adjacent properties that may be associated with each potential improvement.

The purpose of this study is not to select a preferred alternative, but to identify feasible layouts and their potential impacts. If the City of Vestavia Hills chooses to move forward with an improvement project for the area, a preferred layout would be selected during a detailed Environmental Planning study.

Purpose and Need for Improvements
There are currently no pedestrian accommodations in the project area and although cyclists are, by law, allowed to use travel ways, there are no dedicated paths or additional pavement for them to utilize. Some sidewalk exists on the western end of the project area along Overton Road and Oakdale Drive and a park is also proposed in this area. Property located on the eastern end of the project near the Carraway-Davie House is owned by the Freshwater Land Trust. Plans for this property include the addition of recreational trails. In addition to the recreational opportunities provided by the proposed park, an existing canoe launch is located on Old Overton Road. This launch is one of the most popular access points for the Cahaba River. The addition of more recreational facilities would enhance the quality of life while taking advantage of the scenic views provided by the Cahaba River.

Improvement Options
Different options for improvement exist for the study area and are listed below:
No Build – The No Build Option assumes no additional improvements are constructed. This option provides no improvement to pedestrian or bicycle accommodations.
Build Option 1 – Install a multi-use path along Overton Road and a sidewalk along Old Overton Road.
Build Option 2 – Construct a nature trail loop near the proposed Mountain Brook Park.
Build Option 3 – Add improvements to the existing Canoe Launch.
Build Option 4 – Add observation areas along the Cahaba River.

Build Option 1 includes the use of a 10’ multi-use path along the right side of Overton Road and the installation of sidewalk along Old Overton Road. With Build Option 1, bicycles would use the existing roadway along Old Overton Road. The existing shoulders on Overton Road are wider than the shoulders found along Old Overton Road which allows for the installation of a multi-use path. The improvements associated with Build Option 1 are located on
the right side (south) of the roadway due to the fact that residences and a larger portion of in-place utilities are located on the left side (north) of the roadway. Construction along the right side of the roadway would also have a lesser impact to residences and utilities. A path located on the south side also allows for more scenic views of the Cahaba River.

**Build Option 2** would expand the proposed Mountain Brook Park walking path by incorporating a nature trail that winds beneath the River Run Road bridge and extend down a portion of Overton Road. Additional recreational amenities including benches and picnic tables could also be incorporated throughout the trail.

**Build Option 3** includes improvements to the existing canoe launch that would enhance its appearance, safety, and access. These improvements would promote use of the canoe launch and provide additional information about the Cahaba River to visitors. Signage incorporating maps, destinations, park rules, and education regarding the River’s biodiversity would be installed. Improvements to the canoe launch could aid efforts in establishing the Cahaba River Blueway.

**Build Option 4** includes the incorporation of observation areas along the Cahaba River within the study area. These areas would provide the opportunity to enjoy the river environment without direct access to the water. Amenities like benches and picnic tables would be installed to allow for additional recreational uses.

**Stakeholder Involvement**
An in-field stakeholder meeting was held on October 24, 2013. Participants met near the western terminus of the study area where an overview of the study was presented including the purpose and need for the project and three possible alternatives developed to satisfy the purpose and need. Stakeholders explored the project area by walking along Overton Road and then traveling to the Canoe Launch located on Old Overton Road. At the time of this stakeholder meeting the build options presented had a distinct focus on providing strictly transportation facilities. One of the options presented included bike lanes and sidewalks on both sides of Overton Road. All of the stakeholders felt that installing bike lanes and sidewalk along both sides of the road would create too large of a roadway footprint and cause too great of an adverse impact to the Cahaba River and its banks. All felt strongly that this option be eliminated from further investigation.

During the meeting one stakeholder suggested utilizing nature trails that would meander through the existing vegetation and would allow the user to be closer to the river. These trails would be considered more natural and would not necessarily be paved. Additional suggestions made by the stakeholders included making improvements to the canoe launch area. Following the stakeholder meeting it was decided that the study should shift focus from providing transportation facilities and instead focus on ways to provide enhancements.

**Next Steps**
If the City of Vestavia Hills chooses to move forward with implementing any or some of the build options and would like to pursue Federal funding, the next step would be to request inclusion of a project in the Birmingham Regional Transportation Plan. Once funds are in place for the project an environmental document will need to be prepared. The environmental document must include must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, design would be finalized, followed by construction. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.
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1 Introduction

1.1 Purpose of the Feasibility Study
This study was undertaken to assess the feasibility of providing pedestrian and bicycle accommodations along a 1.4 mile stretch of roadway beginning at the proposed Mountain Brook Park near the intersection of River Run Drive and Overton Road, continuing along Overton Road and then following Old Overton Road ending at the property owned by the Freshwater Land Trust near the Carraway-Davie house. Over the course of the study options for improvements within the study area transformed from solely multi-modal transportation alternatives to a focus on recreational facilities that would allow access to the Cahaba River environment and enhance the quality of life for the immediate community as well as draw others from surrounding communities to the area. This document summarizes:

- existing and expected transportation system operational conditions and deficiencies,
- the process used to identify potential alternatives for pedestrian and bicycle accommodations and facilities,
- the resulting alternatives that were developed from that process, and
- an evaluation of potential positive and negative impacts to the area and adjacent properties that may be associated with each potential improvement.

The purpose of this study is not to select a preferred alternative, but to identify feasible layouts and their potential impacts. If the City of Vestavia Hills chooses to move forward with an improvement project for the area, a preferred layout would be selected during a detailed Environmental Planning study.

1.2 Study Approach
The study was performed using a two-stage process. Step one included an evaluation of the existing conditions and constraints. After all constraints were identified, an evaluation of future conditions was conducted and alternatives were developed to address identified deficiencies.

For stage one, existing traffic data was collected and capacity analyses of the existing conditions were prepared. A base map was prepared using aerial images and available GIS data. All information was compiled and evaluated to define the needs that should be addressed by the project along with constraints and opportunities for improvement. A field review was performed as part of stage one. This field review consisted of walking the study area, taking measurements and inventory, observing peak traffic patterns, and investigating what impacts various improvement options would have to the study area.

For stage two, future traffic volumes were projected and analyzed with the existing roadway connectivity ("No Build Option"). Then additional options were prepared and evaluated relative to their ability to address the purpose and need for the project ("Build Options"). Following discussions with stakeholders, additional field reviews were performed in order to investigate their suggested improvements. These field reviews included traveling to four different parks in the Birmingham area to inventory the recreational amenities that they offered. Stage two concluded with the preparation of comparative cost estimates, development of an evaluation matrix, and a presentation to the City.
2 Base Conditions

2.1 Description of the Study Area
The study area, as highlighted in Figure 1, is located along the Cahaba River less than a mile from Mountain Brook High School and consists mainly of residential areas. There are some retail and office buildings that are located on the western side of the project area. The City of Vestavia Hills maintains all of Overton Road within the study area and a portion of Old Overton Road. The remaining portion of Old Overton Road including the canoe launch is owned by Jefferson County. Appendix A provides a map showing the municipal and county boundaries.

![Figure 1 Project Area](image)

The study area is located within an upper income suburban community of the City of Vestavia Hills, Jefferson County, Alabama. A portion of the project area also falls within an unincorporated section of Jefferson County, Alabama. The study area is bordered by the City of Mountain Brook and the City of Birmingham. Of the total population of the City of Vestavia Hills, 90% of residents are Caucasian and less than 3% of families live below the poverty level. This make up is also reflected in the two census tracts, 108.05 and 127.03, that the study area is located within. These characteristics are evidence that there are no potential environmental justice issues anticipated for the study area. Tables 1 and 2 provide a summary of demographic characteristics for the two census tracts that surround the study area and a comparison of their characteristics to the City of Vestavia Hills and Jefferson County as a whole.
Table 1 Study Area - % of Total Population by Race

<table>
<thead>
<tr>
<th>Race</th>
<th>Census Tract 108.05</th>
<th>City of Vestavia Hills</th>
<th>Jefferson County</th>
</tr>
</thead>
<tbody>
<tr>
<td>White</td>
<td>92.3%</td>
<td>85.6%</td>
<td>90.4%</td>
</tr>
<tr>
<td>Black/African American</td>
<td>4.6%</td>
<td>7.9%</td>
<td>3.8%</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>0.1%</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Asian</td>
<td>1.6%</td>
<td>3.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Other</td>
<td>1.4%</td>
<td>3.3%</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, American Fact Finder, 2010 Demographic Profile Data

Table 2 Study Area - Income and Poverty %

<table>
<thead>
<tr>
<th>Economic Characteristic</th>
<th>Census Tract 108.05</th>
<th>City of Vestavia Hills</th>
<th>Jefferson County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Household Income</td>
<td>$114,583</td>
<td>$136,399</td>
<td>$85,417</td>
</tr>
<tr>
<td>% of Families with Income Below Poverty Level</td>
<td>3.1%</td>
<td>2.3%</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau, American Fact Finder, 2008-2012 Selected Economic Characteristics

2.2 Geometrics

The existing lane widths along Overton Road are primarily 11’ where the lane widths on Old Overton Road vary from 10’ to 10.5’. The portion of Overton Road located within the project area is approximately 0.40 miles in length and is located between River Run Drive/Oakdale Drive, a signalized intersection, and Old Overton Road. Figure 2 shows the eastbound view on Overton Road and Figure 3 shows the eastbound view on Old Overton Road. Old Overton Road is stop controlled at its intersection with Overton Road. The length of Old Overton Road associated with this study is approximately 1.0 mile in length. Both roadways are two-lane facilities; however, Overton Road widens to three lanes to allow for a left turn lane onto River Run Drive and widens to a five lane section beneath the I-459 overpass. The shoulder widths vary along both roadways.

Figure 2 Overton Road Eastbound

Figure 3 Old Overton Road Eastbound
Some sidewalk exists at the western terminus of the project and the bridge that crosses the Cahaba River on River Run Drive also provides a pedestrian path but it is not considered ADA compliant. This path could be modified to address ADA requirements. The existing sidewalk along Overton Road wraps around the northwest quadrant of the intersection before crossing to the east side of the roadway continuing north along Oakdale Drive. There are currently no crosswalks that cross the actual intersection of Overton Road and River Run Drive. An aerial image of the Overton Road and River Run Drive intersection is shown in Figure 4. The image shown in Figure 5 is that of Old Overton Road’s intersection with Overton Road.

The existing storm drainage located at the intersection of the Overton Road / River Run Drive appears to function efficiently as no signs of flooding were observed during the field review. Modifications to this existing storm system would most likely be required to incorporate bicycle and pedestrian accommodations.

**Figure 4 Aerial View of Overton Road at River Run Drive**

![Aerial View of Overton Road at River Run Drive](image)

**Figure 5 Aerial View of Old Overton Road at Overton Road**

![Aerial View of Old Overton Road at Overton Road](image)
2.3 Traffic Operations Evaluation

An evaluation of traffic operations for the study area was performed in the summer of 2013 which included collecting 24-hour traffic volumes at three locations within the study area. Traffic volumes were collected for weekday and weekend traffic. Analysis of the collected data reveals that the traffic operations within the study area currently function with acceptable levels of service ranging between “A” and “C” during the week and between “A” and “B” during weekend time frames. For motor vehicle traffic, level of service (LOS) is a measure of congestion stated in a range from “A” to “F”, with “A” representing the lowest level of congestion and “F” representing extreme congestion where traffic volumes exceed the capacity of the roadway. Using projected volumes for a 2033 horizon year, the study area does experience some failing levels of service along Overton Road south of I-459. This failing LOS occurs during the week with the weekend still expected to produce acceptable levels of service. Old Overton Road maintains an LOS of “A” with projected traffic volume growth for the 2033 horizon year. The complete traffic operations evaluation is available in Appendix B.

2.4 Pedestrian and Bicycle Overview

There are currently no pedestrian accommodations in the project area and although cyclists are allowed to use travel ways, there are no dedicated paths or additional pavement for them to utilize. Some sidewalk exists on the western end of the project area along Overton Road and Oakdale Drive, and a park is also proposed in this area. Property located on the eastern end of the project near the Carraway-Davie House is owned by the Freshwater Land Trust. Plans for this property include the addition of recreational trails.

The lack of sidewalk and narrow pavement widths found on Overton Road prove problematic for pedestrians and cyclists traveling this roadway because traffic volumes on this facility are high. Old Overton Road, however, provides acceptable levels of service for both pedestrians and cyclists because it has very low traffic volumes. Several pedestrians and groups of pedestrians were observed on Old Overton Road during the field review. Level of service (LOS) for bicycles and pedestrians is a measure of how safe or comfortable one feels based on the roadway geometry and the characteristics of the traffic. Table 3 displays the levels of service on both roadways for motor vehicles, pedestrians, and bicycles for existing conditions. All data collected for the determination of bicycle and pedestrian LOS is shown in Appendix C.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Automobile Weekday LOS</th>
<th>Automobile Weekend LOS</th>
<th>Pedestrian Weekday LOS</th>
<th>Pedestrian Weekend LOS</th>
<th>Bicycle Weekday LOS</th>
<th>Bicycle Weekend LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overton Road</td>
<td>C</td>
<td>B</td>
<td>D</td>
<td>D</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Old Overton Road</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
</tr>
</tbody>
</table>

The existing level of service experienced by motorists along Overton Road is acceptable and the pedestrian level of service is considered average. Although, there are no sidewalks located along Overton Road within the project area the existing shoulders allow for a sidewalk area and provide pedestrians with a grassy path outside the motor vehicle travel way. The level of service for bicycles shows that conditions are failing. This can be attributed to narrow travel lanes and the volume of traffic on Overton Road. Old Overton Road experiences acceptable levels of service for all three modes of transportation due to low vehicular traffic even though there are no dedicated facilities for walking or biking.
Levels of Service were also determined for the 2033 horizon year. Table 4 shows the results of this analysis. No change between 2013 and 2033 is seen in the levels of service for Old Overton Road. However, the LOS for all three modes of transportation on Overton Road worsens.

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Automobile Weekday LOS</th>
<th>Automobile Weekend LOS</th>
<th>Pedestrian Weekday LOS</th>
<th>Pedestrian Weekend LOS</th>
<th>Bicycle Weekday LOS</th>
<th>Bicycle Weekend LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overton Road</td>
<td>E</td>
<td>C</td>
<td>E</td>
<td>E</td>
<td>F</td>
<td>F</td>
</tr>
<tr>
<td>Old Overton Road</td>
<td>A</td>
<td>A</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
</tr>
</tbody>
</table>

Based on the walking and cycling conditions reflected by the levels of service on Overton Road, users would experience an immediate benefit from the addition of pedestrian and bicycle accommodations. Although Old Overton Road experiences acceptable levels of service consistently, the addition of pedestrian and bicycle accommodations would provide an improved connection between two recreational facilities and might attract more bicycle and pedestrian traffic.
3 Environmental Features

A search of documents, databases, and a field review were conducted to identify environmental features in the project area. This inventory includes features that enhance or are unique to the project area, threatened and endangered species, wetlands, historical or archaeological properties, public recreational areas, and hazardous materials sites.

3.1 The Cahaba River

The study area winds along the scenic Cahaba River, the main drinking water source for the Birmingham area. Along with its scenic beauty, the Cahaba River boasts an impressive range of biodiversity including fish, mussels, crayfish, turtles, and snails. The Cahaba River has not only garnered attention within the state but has also been highlighted by The Nature Conservancy and The National Geographic College Atlas of the World, 2007 edition, for its biological diversity. These many reasons show the Cahaba River to be an asset to the individual cities in which it meanders and to the state of Alabama as a whole.

The Cahaba River Society (CRS), a nonprofit organization founded in 1988, serves as the main ambassador for the Cahaba River and strives to “restore and protect the Cahaba River watershed and its rich diversity of life.” In addition to their protection efforts, CRS also encourages recreational use of the Cahaba and is committed to educating others about what makes the Cahaba so unique. CRS is considered a project stakeholder and their input was incorporated into this feasibility study.

3.2 Threatened and Endangered Species

A letter was sent to the United States Fish and Wildlife Service to obtain background information on potential items of concern. Following is a summary of those findings.

Response from the US Fish and Wildlife Service indicates that there are several endangered and threatened species located within the project area. The section of the Cahaba River located between US 280 and Grants Mill Road is considered critical habitat for eight of the below listed species.

- Gray bat, *Myotis grisescens* – Endangered
- Indiana bat, *Myotis sodalis* – Endangered
- Cahaba shiner, *Notropis cahabae* – Endangered
- Alabama moccasinshell, *Medionidus acutissimus* – Threatened (Critical Habitat)
- Fine-lined pocketbook, *Hamiota altilis* – Threatened (Critical Habitat)
- Orange-nacre mucket, *Hamiota perovalis* – Threatened (Critical Habitat)
- Ovate clubshell, *Pleurobema perovatum* – Endangered (Critical Habitat)
- Southern acornshell, *Epioblasma othcaloogensis* – Endangered (Critical Habitat)
- Southern clubshell, *Pleurobema decisum* – Endangered (Critical Habitat)
- Triangular kidneyshell, *Ptychobranchs greenii* – Endangered (Critical Habitat)
- Upland combshell, *Epioblasma metastratiata* – Endangered (Critical Habitat)
- Georgia aster, *Symphyotrichum georgianum* – Candidate (Could be listed in the future)

In regards to the gray bat and the Indiana bat, a thorough site investigation will be needed to determine the presence of any karst features (i.e. sinkholes, sinking streams, caves). If so, USFW should be contacted so that they may determine if further consultation is required. USFW recommends that a habitat assessment be performed for the Indiana bat. If no work will be done in the Cahaba River or its tributaries, surveys for the aquatic species need not be conducted provided best management practices are implemented to avoid aquatic systems (described in letter, see appendix D).
3.3 Wetlands and Floodplain
Wetlands do exist within the project area due to the presence of the Cahaba River. These areas are contained within the banks of the River and due to the large elevation difference between the River and the roadway do not extend much further. The entire project area is located within the 100-year floodplain of the Cahaba River. However, no evidence of the roadway being flooded was noted during a field review. See appendix E for a map of the wetlands and floodplain.

Should it be determined during the design that wetlands will be impacted, mitigation measures may be required. The United States Army Corps of Engineers (USACOE) will require that a permit be obtained for any construction projects that will impact the River or wetlands, including discharge of storm runoff. In addition to the USACOE permit, the Alabama Department of Environmental Management (ADEM) will also require a stormwater permit for the discharge of storm runoff associated with any construction project that disturbs an acre or more of land. ADEM considers any site located within the Cahaba River watershed to be a priority construction site since the River is impaired due to high levels of siltation. Great care must be taken during construction to maintain erosion and sediment controls.

3.4 Historic and Archaeological Properties
A search of the National Register of Historic Places (NRHP) indicates that there are no nationally registered historic properties located within the project area. The Carraway-Davie House is considered historic per the Jefferson County Historic Society; however, it is not listed on the national register. A field review did not reveal any potential historic properties.

The University of Alabama’s Office of Archaeological Research (OAR) performed a background search for the study area. Results of this search revealed two previously recorded archaeological sites within the study area. One of the sites is located at the western terminus of the study area and the other site is located near the eastern terminus. Other than being described as “unknown aboriginal”, little is known about the western most site where future recreational facilities are planned. The research performed by OAR describes the eastern site as NRHP eligible but it is not currently listed on the NRHP. The only build option presented in this report that would touch the eastern site is Build Option 1. Despite lack of information, these sites should be treated with care when installing improvements. If federal funding is utilized, a Phase 1 Cultural Resources Study will be required. Additionally, two more sites were identified in close proximity of the study area but outside the limits of any of the build options.

3.5 Public Recreational Areas
There is an existing recreational resource, a canoe launch, located on Old Overton Road across from the River Terrace neighborhood. This canoe launch is a popular River access point for canoeing and kayaking. Remnants of a foot bridge are located in the Cahaba River at the launch. The purpose of the foot bridge or when the bridge was constructed is unknown. There does not appear to be a destination across the River from the Canoe launch nor does the topography across from the canoe launch appear to be conducive to installation of a trail connecting to the Liberty Park side of the River. Currently the canoe launch is located on property owned by Jefferson County.

3.6 Hazardous Materials Properties
A search of the Environmental Protection Agency’s (EPA) database shows that the study area contains no cleanup sites or sites listed on the National Priorities List (NPL). Additionally, no potential hazardous sites were noted during the field review.
4 Purpose and Need for Improvements

There are currently no pedestrian accommodations in the project area and although cyclists are allowed to use travel ways, there are no dedicated paths or additional pavement for them to utilize. Some sidewalk exists on the western end of the project area along Overton Road and Oakdale Drive, and a park is also proposed in this area. Property located on the eastern end of the project near the Carraway-Davie House is owned by the Freshwater Land Trust. Plans for this property include the addition of recreational trails. The scenic setting of the study area created by the Cahaba River, a unique environmental feature, provides an opportunity to build upon the existing and proposed recreational amenities in this community. There is an existing recreational focus in this area due to the heavily used canoe launch. Additional recreational amenities will enhance quality of life for the immediate area as well as encourage economic development by attracting visitors to the area.

5 Options for Improvement

The goal for incorporating improvements into the study area is to offer additional recreational areas that allow people the opportunity to enjoy the scenic environment of the Cahaba River. This section of the report details four different build options that strive to achieve this goal. For the purpose of this study each option is listed separately; however, the City could select to implement all four options or select a portion of each option to employ.

5.1 No Build Option

The No Build Option assumes no improvements are constructed. This option provides no improvement to pedestrian or bicycle accommodations and does not provide any recreational facility upgrades or installations.

5.2 Build Option 1 – Multi-use Path and Sidewalk

Build Option 1 includes the use of a 10’ multi-use path along the right side of Overton Road and the installation of sidewalk along Old Overton Road. This 10’ multi-use path on Overton Road could be utilized by both pedestrians and cyclists. Bicycles would use the existing roadway along Old Overton Road since the bicycle levels of service are considered acceptable in this area. However, in order to accommodate pedestrians on Old Overton Road a sidewalk would be required. Due to the close proximity of the Cahaba River, curb and gutter is utilized in the typical section to allow for a smaller corridor footprint. The Typical Section shown in Appendix F shows a 6’ sidewalk and then a tie slope to tie to the existing ground. There are some locations along Old Overton Road where there is not enough flat area before the bank slopes down to the River. In these areas a retaining wall or a boardwalk system with handrails would be required to lessen impacts to the Cahaba River. The boardwalk system could consist of wood plank and post construction or other manufactured materials.

The improvements associated with Build Option 1 are located on the right side (river side) of the roadway due to the fact that residences and a larger portion of in-place utilities are located on the left side (non-river side) of the roadway. A path located on the right side allows for more scenic views of the Cahaba River and the avoidance of the in-place facilities located on the left side of the roadway. A field review revealed evidence of underground telephone infrastructure along portions of the right side of Old Overton Road; however, it appears that this utility is located within the roadway right-of-way and if relocation is necessary it would be at no cost to the City. If during design it is discovered that the telephone line is located within its own easement, the City would have to fund the relocation. A map of the in-place water and sewer mains is located in Appendix F. Typically relocation of water or sewer mains is done so at the expense of the project sponsor. Figure 6 shows a northbound view of existing Overton Road and Figure 7 shows a northbound view of existing Old Overton Road. Appendix G contains the
typical sections and a concept drawing for Build Option 1. Build Option 1 would provide connectivity between the in place pedestrian facilities located at the western terminus and the proposed Freshwater Land Trust trails at the eastern terminus of the study area. There are no immediate plans for construction of the Freshwater Land Trust trails due to lack of funding.

Concerns associated with Build Option 1 include the potential impact to the banks of the Cahaba River. Vegetation is very important in maintaining the stability of the River banks as well as providing habitats for wildlife. It is understood that improvements cannot be made without some sort of vegetation alteration; however, a conscious effort to minimize these alterations should be made. Concern about limiting the amount of storm runoff discharging into the river during construction has also been expressed. Per the Cahaba River Society, the river has been adversely impacted by development in the northern portion of its watershed and is beginning to experience increased bank collapses. The addition of hardscape and impervious area in the study area could increase the possibility of bank failure.
5.3 **Build Option 2 – Nature Trail Loop**

The western terminus of the study area is located at the intersection of Overton Road and River Run Road. The southeast quadrant of this intersection is home to the City of Mountain Brook’s Cahaba River Park. Cahaba River Park is currently under construction but should be completed during the first quarter of 2015. The park will be accessed from Overton Road and will provide user parking along with a walking path, an outdoor classroom, and a pavilion. Appendix H shows a plan view of the park courtesy of the City of Mountain Brook. The current plan for Cahaba Park details a path that crosses beneath the River Run Road bridge and extends to Overton Road connecting to existing sidewalk. Figure 8 shows a view of the Cahaba River from the top of the River Run Road bridge.

Build Option 2 would extend the Cahaba Park walking path by incorporating a looping nature trail that would extend along the riverbank northward down a portion of Overton Road until reaching a major bend in the River. This bend in the river is located approximately 200 feet south of Stoneleigh Drive. At this location the bank of the river becomes very steep and will not allow for continuation of the trail. Additional recreational amenities including benches and picnic tables would also be incorporated throughout the trail. Appendix I shows a concept layout for Build Option 2. Figure 9 shows the view looking beneath the River Run Road bridge toward the site of the Cahaba River Park. Figure 10 shows a relatively flat area that could house a picnic table, or bench. Improvements presented in Build Option 2 would require coordination between the City of Vestavia Hills and the City of Mountain Brook.
An example of a trail like that which is proposed with Build Option 2 can be seen in Figure 11. Figure 11 is a photo of Creekside Trail, an Eagle Scout project, located in Jemison Park in Mountain Brook. The path consists of compacted earth and gravel and meanders along Shades Creek. Other features seen in Jemison Park that can be utilized with Build Option 2 are picnic tables (see Figure 12) and birdhouses (see Figure 13). Figure 14 shows an example of a bench found in a neighborhood park Wildflower Park located in Hoover.

Like with Build Option 1, a concern associated with Build Option 2 is the impact to vegetation along the Cahaba River. However, unlike Build Option 1, Build Option 2 would cause less impact since vegetation removal would be minimal, less hardscape would be installed meaning a smaller amount of impervious area would be required, and few if any trees would have to be removed.
5.4 Build Option 3 – Canoe Launch Improvements

5.4.1 Existing Conditions at the Canoe Launch
Per the Cahaba River Society, the section of the Cahaba River between the Grants Mill Road launch and the Old Overton Road launch is the most floated section of the river. Although the Old Overton Road canoe launch is heavily used, upgrades could be made to the area that would enhance the user’s experience. Currently, the canoe launch is accessed via a steep concrete walk as shown in Figure 15. The walk reaches a small landing area, seen in Figure 16, and then turns somewhat parallel with the River to another small landing, seen in Figure 17, before sloping toward the river to the flat concrete launch area, seen in Figure 18. Figure 18 also shows remnants of a concrete bridge that used to cross the River. The history of this bridge is unknown. There does not appear to be a destination on the other side of the River and the existing topography would be difficult to navigate for a trail.

![Figure 15 Concrete Walk for Old Overton Road Canoe Launch](image1)

![Figure 16 First Landing on Concrete Walk](image2)

![Figure 17 Second Landing on Concrete Walk](image3)

![Figure 18 Concrete Launch Area and Bridge Remnants](image4)

A small, parking area exists at the canoe launch and on heavily used days, users park in the grassy areas along Old Overton Road. The parking area has some paving but is mostly gravel. Adjacent to the parking area is a picnic area separated from the parking area by a stacked rock half-wall. This picnic area is circular and contains one concrete picnic table. There is a center circle cut out of the concrete pad (see Figure 19). As shown in Figure 20, there is a worn path that leads from the picnic area, opposite the parking area, to the River where it appears canoers and kayakers have created an alternate river access. In addition to this access point, it appears that canoe launch visitors have also created a path that leads from the first landing of the launch north along the river. Currently, this pathway is very narrow and very close to the edge of the bank where the existing ground drops almost vertically to
the river below. Figure 21 shows this pathway. There is strong evidence that additional recreational amenities would be utilized if installed at or around the canoe launch area.

5.4.2 Initial Canoe Launch Improvement Options
Build Option 3 includes improvements to the existing canoe launch that would improve its appearance, safety, and access. These improvements would promote use of the canoe launch and provide additional information about the Cahaba River. Improvements to the canoe launch will aid efforts in establishing the Cahaba River Blueway. A blueway is a trail that flows via waterway and incorporates campsites, points of interest along the water trail, and launch sites.

There are several improvements that could be incorporated at the canoe launch. Discussions with a local kayaker that frequents the canoe launch provided insight into issues that users feel would benefit the area. The first of these being the slope of the concrete walkway that leads to the launch. The walkway is steep and can be slippery when wet or when carrying a long, heavy kayak or canoe. Considering the topography at the launch, flattening the walkway would be difficult without extending further into the river or impacting the river banks. Less invasive solutions could include installing handrails and providing a more textured material on the concrete to prevent
slippage. The concrete pad launch itself is difficult to maneuver. Adding a sloped entry would provide users with a more convenient access. There is a definite lack of signage at this canoe launch. The addition of signs providing information regarding upstream and downstream destinations, information about the Cahaba River, and canoe launch rules would be beneficial to users. Figure 22 and Figure 23 show examples of potential signage.

![Figure 22 Example of Upstream and Downstream Location Maps](image)

![Figure 23 Example of Park Rules](image)

There is evidence of worn paths that originate at the canoe launch and extend a short way north and south of the launch. Along these paths are flatter areas that could be utilized for small pocket parks with grassed areas, picnic tables, and benches. Figure 24 shows a flat area adjacent to the existing picnic area at the canoe launch. This area is large enough that it could provide space for additional picnic tables and an open area for recreational use. Figure 25 shows the path that heads north of the launch where a trail and benches could be installed amongst the existing trees. Although these improvements would require clearing of underbrush, trees could be maintained and more manicured landscaping could be installed to aid in the stabilization of the River banks. Finally, the appearance of the existing picnic area would benefit from graffiti removal, the addition of another picnic table, additional lighting, and landscaping or focal point in the center cut out.
There is evidence of canoe launch users parking on the shoulders along Old Overton Road. At the time of the field review the use of these areas did not appear to be causing any adverse impacts to the shoulders. However, if the use of the shoulders for parking becomes a maintenance issue, the City may opt to install compacted aggregate surfacing or grass pavers which would function as a permeable pavement and allow for stormwater storage.

![Figure 24 Area for Potential Pocket Park at Canoe Launch](image1)

![Figure 25 Area for Potential Trail and Bench just North of Canoe Launch](image2)

The River Terrace neighborhood is located directly across Old Overton Road from the canoe launch. A representative of the homeowner’s association expressed concern from residents over criminal activity occurring at the canoe launch during nighttime hours. Additional lighting and increased patrol would help to minimize this problem.

As with all the Build Options, vegetation removal is associated with Build Option 3. However, most if not all trees could be maintained and additional, more maintained landscaping would be installed to aid in soil stabilization and provide areas for recreation.

5.4.3 Stakeholder Input Concerning Improvements at the Canoe Launch

The canoe launch improvement options discussed above were presented at a stakeholder meeting on December 12, 2014. Stakeholders provided input on the suggested improvements and offered additional feedback concerning the launch and how to best improve it. Table 5 offers a summary of the suggested improvements and feedback received from stakeholders. The meeting minutes from the stakeholder meeting can be found in Appendix J.
### Table 5 Summary of Improvements to Canoe Launch Areas with Stakeholder Feedback

<table>
<thead>
<tr>
<th>Improvement Type</th>
<th>Description</th>
<th>Stakeholder Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handrails and Textured Material on Concrete Walkway</td>
<td>The addition of handrails and a more textured material on the walkway would improve user safety.</td>
<td>A handrail, depending on the user, can be a help or a hindrance. Older users may like the sturdiness offered by the handrail and a handrail can be used as a prop for transporting boats. However, a handrail can interfere with launching and exiting especially when water levels are high and the handrail becomes submerged.</td>
</tr>
<tr>
<td>Sloped Launch Entry</td>
<td>Adding a more gradually (less steep) sloped entry into the River would provide users with more convenient access.</td>
<td>Several recommendations were made for improving the ramp and entry to the river: extend the ramp parallel to the river allowing for a gentler slope which provides easier access during all water levels; flatten the ramp from the parking lot by utilizing the flat area to the left of the ramp; provide an additional access point that originates at the picnic area since there is evidence that users are already accessing the river from this location and it provides a natural beach area; finally, discussion about the in-place concrete pad varied from the recommendation to remove it to the suggestion to maintain it since it is used by swimmers.</td>
</tr>
<tr>
<td>Signage</td>
<td>The incorporation of signage would provide users with information regarding upstream and downstream amenities and destinations as well as inform users about the biodiversity of the Cahaba River.</td>
<td>The Cahaba Blueway Steering Committee is working to prepare best practice guidelines for access points and wayfinding sign guidelines. The Blueway Steering Committee would like to see the City officially designate the launch as a Cahaba Blueway site.</td>
</tr>
<tr>
<td>Pocket Park Adjacent to the in-place Picnic Area</td>
<td>A pocket park would take advantage of the naturally flat area and provide an additional recreational spot.</td>
<td>The biggest limiting factor for the launch is the limited amount of parking that is available. Installing playground equipment or pocket parks in the area of the launch would expand the user base and potentially worsen the parking situation. Increasing parking along the street, striping the current available parking, and expanding the current parking could be beneficial to the launch.</td>
</tr>
<tr>
<td>Nature Trail</td>
<td>A nature trail beginning at the first walkway landing would provide an additional recreational use at the canoe launch and provide onlookers an area to observe passing kayakers, canoe groups, and wildlife.</td>
<td></td>
</tr>
<tr>
<td>Enhance Existing Picnic Area</td>
<td>Improving the existing picnic area would enhance the overall look and feel of the launch.</td>
<td></td>
</tr>
</tbody>
</table>

Additional stakeholder feedback included concern over the ownership of the launch. The launch is currently owned by Jefferson County but is being maintained by the City of Vestavia Hills. Additions or improvements would require coordination between the two parties. The City is currently working toward obtaining an ownership or maintenance agreement with the County. It was noted that the amount of trash and graffiti found at a site typically increases when the ownership is unclear and thus no enforcement present. Many stakeholders expressed desire for increased patrol of the area to aid in the efforts to keep the launch site safe and free of debris. Also discussed, was the presence of bridge remnants located in the middle of the river. Stakeholders feel that these remnants are hazards and would prefer that they be removed if feasible. Other suggestions included installing hitching posts and a restroom. A hitching post allows users a place to store boats while they retrieve their car. Stakeholders realize that a restroom is perhaps a long term improvement option but feel that it would enhance the area overall.
5.4.4 Investigation of Other Area Canoe Launches

Following the stakeholder meeting, a field visit was made to five different canoe launch sites. The goal of these visits was to take inventory and see if amenities currently being used at these locations could be incorporated at the Old Overton Road launch. Sites were located using The Cahaba Blue Trail developed by the Cahaba River Society and accessed via their website. These five sites included two locations upstream of the Old Overton Road launch and three sites downstream. Photos of the sites can be found in Appendix K.

The most upstream location visited is referred to as US Hwy 78 to Grants Mill. This site is located just off Highway 78 in the Leeds area and is accessed near a bridge that crosses the Cahaba River. Although there is a somewhat wide gravel path that leads to the river bank, the area is not signed as a launch site nor does it have any sort of ramp to the water. In fact the area is posted as private property. There is evidence that the River is being accessed at this location but there is no infrastructure like that found at the Old Overton Road launch.

Location two is the Grants Mill Road launch and is located in the City of Irondale. A plaque posted at the site indicates the launch is part of the Cahaba River Trail and was established as a cooperative effort between the City of Irondale and the Freshwater Land Trust. The amenities offered at this site include: a small gravel parking area, picnic tables, trash receptacles, signage including posted rules, and a concrete path approximately six feet in width that leads to the Cahaba River. It is assumed that two wooden posts located near the parking area were once used as hitching posts; however, the u-bolts or other securing hardware have been removed. In addition to the canoe launch, there is also a gravel path that leads away from the launch along the Cahaba River. The concrete ramp that leads down the riverbank to a concrete pad is similar to that found at the Old Overton Road launch; however, the ramp at Grants Mill Road appears to be steeper and much longer. It also seems that the ramp is experiencing some washout beneath the concrete which can be expected given the fluctuating water levels and flows of the Cahaba River. Some level of maintenance is required for any facilities located on or near waterways.

The last three sites are located downstream of the Old Overton Road launch. The first of these three is not mapped on The Cahaba Blue Trail; however, it was mentioned during the December 2014 stakeholder meeting as being recently cleared out. The area being used for a launch is accessed near the soccer fields in the Hoover Sports Park East located on Old Rocky Ridge Road. The path to the Cahaba River is mostly dirt and on the day of the field visit the area was extremely muddy; however, the area was flat and the river was easily accessible in the sense that there was no drop off to the river or steep ramp to traverse. The entry was more beach-like. Near the launch site is the entrance to a foot bridge that crosses the Cahaba River; however, there doesn’t appear to be a clear destination located on the other side of the river. Perhaps, there are future plans for this area.

Riverford Drive is the fourth location visited and is positioned at the end of a cul-de-sac on Riverford Drive. Riverford Drive is approximately 1.5 miles south of the Hoover Sports Park East and like Hoover Sports Park East and US Highway 78, the Riverford Drive launch site is not signed. A small concrete path, approximately three feet in width, extends from the cul-de-sac and wraps around what appears to be a building used by the neighborhood association. The path continues a short distance beyond the building. At the end of the concrete walkway a small path continues to the river. The area is overgrown and doesn’t provide much room to navigate. It appears that this launch site is not frequently used.

The fifth and final launch site visited is referred to as Bains Bridge and it is located in Hoover, Alabama just off Lorna Road at a bridge over the Cahaba River. This location is mapped on The Cahaba Blue Trail; however, signage located at the entrance to the small park shows that it is closed. This sign along with the presence of trash and a large quantity of graffiti indicate that no patrol or enforcement occurs around the park. Despite the current state
of the park, the actual launch area appears like it is being used. The concrete ramp to the river runs parallel to the river before turning perpendicular to allow access. It is unclear if the concrete extends all the way to the entry point due to all the dirt and mud located near the access point. Also noted, was the presence of an earthen berm between the ramp and the river. This berm most likely provides some protection against washout beneath the ramp.

### 5.4.5 Old Overton Road Canoe Launch Recommendations

Taking into account all of the information gathered during the visits to the five launch areas, feedback from stakeholders and Old Overton Road launch users, the recommendations for improving the canoe launch were revised and are shown in Table 6. A sketch of these improvements is included in Appendix L. The improvements, shown in Table 6, have been prioritized based on the presence of existing features and stakeholder demand. Further explanation of each improvement item is discussed following Table 6. Details for the cost estimates shown in Table 6 are provided in Appendix M. Improvement options 2 and 3 do not include an estimate for preliminary engineering (PE). For other improvements 15% of the total construction cost is included for the PE fee.

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Improvement</th>
<th>Description</th>
<th>Cost Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ramp Improvements</td>
<td>Improve user created path that begins at the existing picnic area and leads to a natural beach area. Repair washout areas beneath existing concrete ramps.</td>
<td>$23,000-$38,000</td>
</tr>
<tr>
<td>2</td>
<td>Park Signage &amp; Hitching Posts</td>
<td>Install signage listing park rules, destinations upstream and downstream, and where to best access the river. Install hitching posts for boaters’ use.</td>
<td>$7,000</td>
</tr>
<tr>
<td>3</td>
<td>Picnic Area Improvements</td>
<td>Clean existing picnic area, add an additional picnic table, &amp; landscape center cutout</td>
<td>$9,000</td>
</tr>
<tr>
<td>4</td>
<td>Parking Area</td>
<td>Install permeable parking surface along Old Overton Road for approximately 200 feet to allow for additional parking.</td>
<td>$54,000</td>
</tr>
<tr>
<td>5</td>
<td>Create Nature Trail Loop &amp; Grassy Area</td>
<td>Clear underbrush and expand the existing user created path leading from the first launch landing. Clear underbrush and install sod for grassy area.</td>
<td>$15,000</td>
</tr>
</tbody>
</table>

#### 5.4.5.1 Improvement 1

The main goal of the canoe launch area is to allow users of the Cahaba River a convenient access point to the river. Altering the way boaters are allowed to access the river at this location enhances the existing features of this recreation facility and improves the overall experience of the user. This reasoning is why ramp improvements have been given top priority amongst the other improvement recommendations. Based on discussions with stakeholders, canoers and kayakers prefer to put-in and take-out at natural beach areas. Evidence of this is found at the Old Overton Road launch site where a path has been created that leads from the picnic area down to a sandy, natural beach area, see figure 26. Due to this preference
and the fact that the framework exists, the top priority improvement for installation includes improving the user created path leading to the natural beach area. Issues along this path are shown in figures 27-29. The goal of all three improvement options presented in this section is to address these three issues. Figure 27 shows ruts along the path created by water runoff. Figure 28 shows a dip or valley area that exists along the path and Figure 29 is a photo of the steep slope that leads to the beach area.

Figure 27 Example of Rutting
Figure 28 Valley Along Path
Figure 29 Slope to Beach

Options for improving this access are presented here:

- **Option 1** includes improving the existing path by filling in rut areas shown in figure 27 with backfill material and installing sandy fill over the entire path. To address the valley area, option 1 recommends installing a boardwalk to span the area. The boardwalk would be approximately six feet wide and twenty feet in length. The existing slope leading to the beach area is steep. In fact, it is steeper than the slopes experienced along the concrete launch but the sandy material on the slope provides more traction and stability for users especially during wet conditions. Recommendations for improving the slope include adding additional sandy fill material on the slope and installing a kayak/canoe ramp along the bank side. This ramp would be constructed of wood and would allow users to use the ramp to transport their boat. Having a ramp removes the burden of carrying the vessel and allows users to focus on their footing. An example of the ramp being proposed is shown in Figure 30. A sketch showing the improvements discussed for option 1 is shown in Appendix L.

- **Option 2** is similar to option 1. The major difference between the two is the location of the slope down to the beach area. In Figure 28 there is a tree that exists to the left of the existing path down to the beach. Option 2 includes development of a new path to the left of the tree. This path could be graded so that it is flatter than the existing slope. Option 2 would also include filling in rut areas shown in figure 27 with backfill material and installing sandy fill over the entire path and installing a kayak/canoe ramp along the bank side. A sketch showing the improvements discussed for option 2 is shown in Appendix L.

Figure 30 Ramp Example
• **Option 3** For option 3, the valley area would be filled with backfill material with the river side of the valley being secured with a natural stone retaining wall. Option 3 also includes the addition of stone steps down the slope to the beach area along with a kayak/canoe ramp along the bank side. An example of the proposed steps can be seen in Figure 31. The photo shown in Figure 31 was taken at the nearby Cahaba River Park. These steps provide access the river from the park. In addition to these items filling in rut areas with backfill material and sand is also included. A sketch showing the improvements discussed for option 3 is shown in Appendix L.

Even though these improvements create an official second river access point, the existing concrete ramp should be maintained to allow swimmers and other visitors an area to access the river. The concrete pad is used by swimmers during the summer. However, the concrete areas are experiencing some washout. Therefore repairing these areas is included in the ramp improvements recommendation. Regular maintenance can be expected for options 1-3 due to the nature of materials used and the inevitable changing river water levels that could potentially wash away these materials.

5.4.5.2 Improvement 2
The improvements listed after ramp improvements continue the trend of enhancing the canoe launch user’s experience and could be installed along with the ramp improvements or as a separate project. Improvement 2 includes park signage that indicates what rules are implemented at the park as well as provide destination information. The Cahaba Blueway Steering Committee has developed way finding signage guidelines that can be used to develop the signage for the canoe launch. Improvement 2 also includes adding several hitching posts at various locations at the launch. The proposed locations are shown on the sketch provided in Appendix J. Figure 32 provides an example of a bike rack that could be repurposed for a hitching post. Ideally hitching posts are constructed of metal or concrete and provide a way to secure a kayak or canoe while the owner retrieves their car.
5.4.5.3 Improvement 3
Improvement 3 focuses on the picnic area and includes cleaning the area of any trash and graffiti. In addition to clean up items, Improvement 3 adds an additional picnic table, trash receptacle, and landscaping for the existing concrete cutout. Options for landscaping vary from small plantings to a single small tree.

5.4.5.4 Improvement 4
Improvement 4 provides more parking for the launch by installing permeable parking surface along the shoulder of Old Overton Road for a length of approximately two-hundred feet. The City could choose to shorten or lengthen this distance. Installing this material would provide approximately nine additional parking spaces which will be beneficial when the launch area is busy. A product researched for the purpose of this report is EZ Roll Grass Pavers, a product developed by NDS, Inc. The installation sequence of the material begins with preparing the subgrade by compacting the in-place soils and installing six inches of crushed rock or road base. Next a layer of planting base is installed followed by the grass pavers and then seeding or sod finishes the installation. The EZ Roll Grass Pavers have a multitude of applications and have been used on roadway shoulders and parking lots. It should also be noted that EZ Roll Grass Pavers have proven to be effective at preventing erosion on slopes and ditch swales. EZ Roll Gravel Pavers are also an option for the parking area. The gravel pavers are similar to the grass pavers. For installation the grass paver is replaced with a gravel paver and instead of installing sod or seed on top of the paver, a layer of gravel is installed. Four gravel colors are available for this option. For cost estimating, it was assumed that EZ Roll Grass Pavers would be used on Old Overton Road.

5.4.5.5 Improvement 5
Item 5 expands the user base for the launch and is geared toward recreation other than canoeing or kayaking. This recommendation includes the creation of a nature trail loop approximately 300 feet in length and the addition of a grassy area that could be used for playground equipment, outdoor gym facilities, or simply an open area for free play. These additions add to the recreational appeal of the canoe launch site and could be used by those wishing to enjoy the environment of the river without actually being in or on the river.
5.5 Build Option 4 – Observation Areas

Build Option 4 includes the incorporation of observation areas along the Cahaba River within the study area. These areas would provide the opportunity to enjoy the River environment without direct access to the water. Amenities like benches and picnic tables would be installed to allow for additional recreational uses. These observation areas could be as simple as clearing underbrush and installing a bench or picnic table in a suitable area to more involved improvements such as building a boardwalk type observation deck that extends over the Cahaba River and allows users to watch passing kayakers or wildlife. Figure 33 shows an observation area in Jemison Park that includes a bench. Figure 34 is an example of a boardwalk used on Broadway Street in Homewood, Alabama. A boardwalk structure would lessen the impact to the River banks and allow users to experience the environment of the Cahaba River. Concerns associated with Build Option 4, as with all build options, include preventing runoff during construction activities and maintaining the integrity of the River banks.

Figure 34 Boardwalk on Broadway Street, Homewood, Alabama

Figure 33 Example of Observation Area with Bench
5.6 Funding Sources

Costs associated with the build options could exceed the City’s current available resources. This section discusses federal and private funding sources that are available to aid in design and installation of the described build options. Federal programs are administered by the Alabama Department of Transportation. Table 7 details funding sources, the category of the source and what type of project the funding can be used to accomplish.

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Category</th>
<th>Relevant Project Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Alternatives Program (TAP)</td>
<td>Federal</td>
<td>On and off road pedestrian and bicycle facilities, overlooks and viewing areas</td>
</tr>
<tr>
<td>Recreational Trails Program (RTP)</td>
<td>Federal</td>
<td>Development and maintenance of recreational trails and trail-related facilities</td>
</tr>
<tr>
<td>National Park Service Land &amp; Water Conservation Fund (LWCF)</td>
<td>Federal</td>
<td>Outdoor recreational areas</td>
</tr>
<tr>
<td>American Hiking Society’s National Trails Fund</td>
<td>Private</td>
<td>Recreational hiking projects</td>
</tr>
<tr>
<td>American Forests Global ReLeaf</td>
<td>Private</td>
<td>Trail tree plantings</td>
</tr>
</tbody>
</table>

Federal Funding

The use of federal funding for the construction of pedestrian facilities within a transportation project includes the condition that the new facilities be accessible to all, meaning standards set forth by the Americans with Disabilities Act (ADA) be followed. For outdoor developed areas the Federal Highway Administration (FHWA) references guidelines established by the United States Access Board and the Architectural Barriers Act (ABA) Accessibility Standards. The requirements established in these Standards apply to national parks and other federally developed outdoor areas. Outdoor areas developed with federal grants or loans are not required to comply with these Standards. Additional information as well as access to the Board’s provisions concerning outdoor areas can be found at [www.access-board.gov](http://www.access-board.gov). Below provides a brief description of available federal funding programs.

- The Transportation Alternative Program (TAP) is authorized by The Moving Ahead for Progress in the 21st Century Act (MAP-21) and replaces the funding that was previously held by other pre-MAP-21 programs. TAP eligible activities that are relevant to the build options described in this report include the planning, design, and construction of on-road and off-road trail facilities for pedestrians and cyclists as well as the construction of turnouts, overlooks, and viewing areas. TAP funds are administered by the Alabama Department of Transportation and are required to meet standards set forth by the Americans with Disabilities Act. [http://www.fhwa.dot.gov/environment/transportation_alternatives/](http://www.fhwa.dot.gov/environment/transportation_alternatives/)

- The Recreational Trails Program (RTP) is a subset of TAP. The State is required to administer its own program and to set aside funds from their TAP funds to fund projects associated with recreational trails. Eligible projects include the development and maintenance of recreational trails and trail related facilities for motorized and non-motorized uses. [http://www.fhwa.dot.gov/environment/recreational_trails/](http://www.fhwa.dot.gov/environment/recreational_trails/)
During its lifetime, the National Park Service’s Land & Water Conservation Fund (LWCF) has provided over forty thousand grants to state and local governments. The bulk of grants issued have gone to the implementation of “close-to-home recreation opportunities”. Grants have been applied to small recreation projects as well as significant state and national parks.  
http://www.nps.gov/ncrc/programs/lwcf/fed_state.html

Private Funding
In addition to the available federal funding, private funding is also available. The following list provides a brief description of private funding options.

- The American Hiking Society’s National Trails Fund provides grants once per year for projects improving hiking access. In order to receive a grant the City will have to become a member of the Hiking Alliance. Grants range from $500 to $5000.  
http://www.americanhiking.org/national-trails-fund/

- The American Forests Global ReLeaf program works to restore forests with the goal of restoring forest ecosystems. Typical Global ReLeaf projects cover areas of 20 acres or more. Although their main focus is tree planning, Global ReLeaf offers funding for maintenance and invasive species removal.  

5.7 Summary Comparison of Options
Four build options were evaluated. Table 8 presents an evaluation matrix that summarizes a comparison of each option. All four build options provide recreational opportunities and one of the options, build option 1, provides a non-motorized travel connection between the proposed Cahaba Park and the proposed trails at the eastern terminus of the project area. The biggest concern for these build options is the potential threat to the Cahaba River. Table 8 ranks the options on a numerical scale with the number 4 indicating the greatest potential to impact the river banks and 0 having the least potential. However, it should be noted that there is a big difference between the 3 and 4 rankings. Although improvements to the canoe launch have been assigned the number 3, the severity of impacts associated with improvements to the launch is considerably less than the impacts associated with installing a multi-use path. Improvements associated with the launch are localized whereas the improvements associated with build option 1 encompass a much larger area.

Utility and right-of-way costs were not included in the cost estimate since it appears that all work could be done within the present right-of-way and utility relocations would be the responsibility of the utility owner. The construction cost for build option 1 includes pricing for a traditional timber boardwalk system. The construction cost for build option 4 includes pricing for the installation of traditional timber observation areas. Appendix M provides more detailed cost estimates as well as additional information concerning material options for boardwalk systems.
### Table 8 Evaluation Matrix

<table>
<thead>
<tr>
<th>Evaluation Measure</th>
<th>No Build</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endangered &amp; Threatened Species</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>100-year Floodplain</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>NRHP listed properties</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Previously Recorded Archaeological Sites</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Known Cemeteries/Churches</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Known HazMat Sites</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Impact to Cahaba River banks</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Potential Residential/Commercial Relocations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Provides connectivity for pedestrians and cyclists between proposed recreational areas</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Provides recreational opportunity</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Required ROW (acre)</td>
<td>0</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>NA</td>
<td>$1,282,000</td>
<td>$33,000</td>
<td>$35,000</td>
<td>$42,000</td>
</tr>
<tr>
<td>Utility Relocation Cost</td>
<td>NA</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
</tr>
<tr>
<td>Project Design Cost</td>
<td>NA</td>
<td>$321,000</td>
<td>$9,000</td>
<td>$5,000</td>
<td>$11,000</td>
</tr>
<tr>
<td>Total Cost</td>
<td>NA</td>
<td>$1,603,000</td>
<td>$42,000</td>
<td>$40,000</td>
<td>$53,000</td>
</tr>
</tbody>
</table>

**Notes**

- **Build Option 1** – Install a multi-use path along Overton Road and a sidewalk along Old Overton Road.
- **Build Option 2** – Construct a nature trail loop near the proposed Mountain Brook Park.
- **Build Option 3** – Add improvements to the existing Canoe Launch. Cost includes improvement number 1 option 1, improvement 2, and improvement 3.
- **Build Option 4** – Add observation areas along the Cahaba River

The degree of impact to the banks of the Cahaba River is indicated by a numerical scale with 0 being no impact and 4 having the greatest impact.

It is assumed that the present ROW is sufficient for all build options.

Utility Relocation assumed to be responsibility of utility owner. However, typically water and sewer relocations would be funded by the project sponsor.

The need for additional ROW and utility relocation should be re-evaluated during design.

For total construction costs, structural plastic timber material was assumed for areas where not enough existing ground is available for the installation of pedestrian accommodations. Also, structural plastic timber material is assumed in total construction costs for the observation decks recommended with build option 4.
6 Other Considered Alternatives

Initially, this feasibility study was undertaken to assess the feasibility of providing pedestrian and bicycle accommodations along Overton Road and Old Overton Road between the proposed Cahaba River Park at the River Run Drive intersection and the planned trails to be installed on property owned by the Freshwater Land Trust. From a transportation viewpoint, pedestrian and bicycle accommodations in the project area would provide connectivity for non-motorized transportation between the proposed Cahaba River Park and the Freshwater Land Trust property. However, the study area is limited in space due to the close proximity of the Cahaba River and its steep banks. Even though there are some areas where widening for sidewalks and bike lanes could be constructed, the overall availability of land is inconsistent, and increases in the overall footprint of Overton Road and Old Overton Road could compromise the stability of the banks of the River. For these reasons the build options described in this section received strong criticism from stakeholders during the in-field review meeting and were eliminated from further study.

6.1 Build Option 5 – Bike Lanes and Sidewalks

The first option to be eliminated, referred to as Build Option 5, would require the largest corridor footprint of all the build options. The roadway option would require 3.5’ of widening along each side of the road, installation of a 2’ curb and gutter, a two foot offset and then a 6’ sidewalk for a total of 13.5’ per side of increased area. Due to the topography of the area, new ditches would also have to be installed thus further increasing the width of the corridor footprint along the left side of the roadway. Ditch installation would require extensive rock excavation along Old Overton Road and would thus increase both cost and construction time. In addition, a retaining wall would also have to be installed along the right side of Old Overton Road. This build option has the most potential to impact residential properties and utility lines and the highest cost can also be assumed with this option. Installing bike and pedestrian accommodations along the left side of the roadway also presents a safety concern due to the fact that there are more residential driveways located on this side of the roadway. These driveways create conflict points between the motorist and the cyclist and pedestrian. By placing the accommodations along the right side of the road, the number of conflict points can be reduced. Appendix N contains the typical section for this option along Overton Road and the typical section for this build option on Old Overton Road.

6.2 Build Option 6 – 10’ Multi-Use Path

The second option to be eliminated, Build Option 6, consists of installing a 10’ multi-use path from River Run Road to the property owned by the Freshwater Land Trust that could be utilized by both pedestrians and cyclists. Installing a 10’ path along the left side (north) of the two roadways was eliminated considering the potential to impact residential properties and in-place utilities located along the left side of the roadway. Rock also exists along the left side of Old Overton Road. The existence of rock causes the cost and difficulty of excavation to increase. As with Build Option 5, installation of a multi-use path along the left side of the roadway creates more conflict points between the motorist and the cyclist and pedestrian. By placing the accommodations along the right side of the road, the number of conflict points can be reduced. Appendix N contains the typical section for this option along Overton Road and the typical section for this build option on Old Overton Road.

Installation of a multi-use path along the right side (south) of Overton Road is feasible. There appears to be enough existing shoulder width to provide a two foot offset from the travel way and still have 10’ for the multi-use path. Although there appears to be room to construct this path without direct impacts to the Cahaba River waterway, there would be impacts to the vegetation and river banks which are sensitive to bank failure. See Appendix N for Build Option 6 typical sections. In addition, extensive retaining walls would be required to install a 10’ multi-use path along the right side of Old Overton Road. The use of retaining walls received negative feedback from stakeholders and was a factor in eliminating Build Option 6.
7 Stakeholder Involvement
An in-field stakeholder meeting was held on October 24, 2013. Participants including representatives from the City of Vestavia, the Regional Planning Commission of Greater Birmingham, the City of Mountain Brook, the Cahaba River Society, Alabama Innovative Engineers, Liberty Park, Freshwater Land Trust, and homeowners met at Piggly Wiggly located on River Run Drive near the western terminus of the study area. An overview of the study was presented including the purpose and need for the project and three possible alternatives developed to satisfy the purpose and need. Stakeholders explored the project area by walking along Overton Road and then traveling to the Canoe Launch located on Old Overton Road. Stakeholders were encouraged to provide feedback and give input on other options for a possible trail.

All of the stakeholders felt that installing bike lanes and sidewalk along both sides of the road would be too large of a roadway footprint and cause too great of an adverse impact to the Cahaba River and its banks. All felt strongly that this option be eliminated from further investigation. During the meeting one stakeholder suggested utilizing nature trails that would meander through the existing vegetation and would allow the user to be closer to the River. These trails would be considered more natural and not necessarily paved. In areas where the trail couldn’t continue along the river bank due to slopes the trail would convert to a more traditional sidewalk along the roadway.

Additional suggestions made by the stakeholders included making improvements to the canoe launch area. These improvements include lighting, additional parking areas, and security. Comments from stakeholders can be found in Appendix O along with a summary of their comments.

A second stakeholder meeting was held on December 12, 2014 at the City of Vestavia Hills City Hall. The purpose of this meeting was to discuss potential improvements to the canoe launch. Further discussion of the stakeholder feedback and how it was incorporated into the study can be found in section 5.4 of this report.

8 Next Steps
The purpose of this study was to determine the feasibility of possible improvements along a section of Overton Road and Old Overton Road. The overall consensus of stakeholders is that federal money could be used for Build Option 1, the multi-use path. However, the remaining improvement options are primarily recreational and could be installed by the City.

If the City of Vestavia chooses to move forward with implementing any or some of the build options and would like to pursue Federal funding, the next step would be to request inclusion of a project in the Birmingham Regional Transportation Improvement Plan. Once funds are in place for the project an environmental document will need to be prepared. The environmental document must include technical studies and public involvement outreach necessary to comply with procedures of the National Environmental Policy Act (NEPA). Once the environmental study has been completed, design would be finalized, followed by construction. If it is determined that additional right-of-way is required, acquisition would be conducted prior to construction.

If the City elects to pursue projects described in this study without federal funding it is possible for these options to be installed via community projects or with City forces. If federal funds are not used, then compliance with NEPA is not required.
Appendix A

Municipality Boundaries and Census Tracts
Appendix B

Traffic Evaluation Analysis
Introduction

Sain Associates conducted an evaluation of traffic operations at the intersection of Overton Road at Liberty Parkway. Our efforts included the following:

- Collection of peak hour turning movement count data at the stop controlled intersection of Overton Road and Liberty Parkway.
- Collection of 24-hour traffic volumes at one location on Overton Road west of the study intersection, and two locations on Old Overton Road east of the study intersection.
- Field observations of traffic interaction at the stop controlled intersection of Overton Road and Liberty Parkway.

Existing Transportation Network

Overton Road is a two-lane collector street with a posted speed limit of 30 mph. At its intersection with Liberty Parkway, it merges with Liberty Parkway, a four-lane collector street, and continues north. North River Road is a two-lane local residential cul-de-sac that intersects with Overton Rd. west of the I-459 overpass. Old Overton Road is a two-lane local residential street that diverges from Overton Road west of the intersection with Liberty Parkway, where it follows the Cahaba River into a residential area. River Terrace Dr. and River Terrace Rd. are both two-lane local residential cul-de-sacs that intersect Old Overton Rd. River Terrace Dr. is the southernmost of the two roads and connects to a larger residential development. Figure 1 shows the location of the study intersection in red, as well as the locations for each of the 24-hour counts in blue.
Turning Movements

Turning movement counts were collected at the intersection of Liberty Parkway and Overton Rd. during the morning and afternoon peak hours on Thursday, May 2, 2013. The intersection is an all-way stop-controlled intersection. The data collected is presented in Table 1, including corresponding level of service information.

Table 1
Overton Road at Liberty Parkway: Peak Hour Turning Movement Counts (2013)

<table>
<thead>
<tr>
<th>Hour</th>
<th>Overton Road Eastbound</th>
<th>Overton Road Southbound</th>
<th>Liberty Parkway Northbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Left</td>
<td>Right</td>
<td>Thru</td>
</tr>
<tr>
<td>7-8 AM</td>
<td>305</td>
<td>10</td>
<td>57</td>
</tr>
<tr>
<td>8-9 AM</td>
<td>199</td>
<td>10</td>
<td>540</td>
</tr>
<tr>
<td>Total</td>
<td>504</td>
<td>19</td>
<td>1182</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>4-5 PM</td>
<td>335</td>
<td>14</td>
<td>287</td>
</tr>
<tr>
<td>5-6 PM</td>
<td>304</td>
<td>14</td>
<td>289</td>
</tr>
<tr>
<td>Total</td>
<td>639</td>
<td>35</td>
<td>576</td>
</tr>
<tr>
<td>LOS*</td>
<td>C</td>
<td>A</td>
<td>B</td>
</tr>
</tbody>
</table>

*Reference field observations for more information on traffic operations

Using historical traffic data gathered by the Regional Planning Commission of Greater Birmingham, a traffic growth rate of 1.69% was calculated for the area using the straight-line growth method. This growth rate was then applied to the collected traffic counts on a 20 year horizon to project future levels of service given a “no build” scenario. These projections are presented in Table 2.

Table 2
Overton Road at Liberty Parkway: Projected Volumes (2033 – “No Build” Scenario)

<table>
<thead>
<tr>
<th>Hour</th>
<th>Overton Road Eastbound</th>
<th>Overton Road Southbound</th>
<th>Liberty Parkway Northbound</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Left</td>
<td>Right</td>
<td>Thru</td>
</tr>
<tr>
<td>7-8 AM</td>
<td>426</td>
<td>13</td>
<td>898</td>
</tr>
<tr>
<td>8-9 AM</td>
<td>278</td>
<td>14</td>
<td>755</td>
</tr>
<tr>
<td>Total</td>
<td>705</td>
<td>27</td>
<td>1653</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
<td>A</td>
<td>F</td>
</tr>
<tr>
<td>4-5 PM</td>
<td>468</td>
<td>29</td>
<td>401</td>
</tr>
<tr>
<td>5-6 PM</td>
<td>425</td>
<td>20</td>
<td>404</td>
</tr>
<tr>
<td>Total</td>
<td>893</td>
<td>49</td>
<td>805</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
<td>A</td>
<td>C</td>
</tr>
</tbody>
</table>
Speed and Volume

Speed and volume characteristics were collected at three locations on Overton Road from Thursday, May 2 through Sunday, May 5, 2013. Table 3 represents the speed characteristics of the highest 24-hour weekday count period. Table 4 and Table 5 represent the volume and corresponding level of service characteristics of the highest 24-hour weekday and weekend count period.

| Table 3 |
|------------------|------------------|------------------|------------------|------------------|------------------|
| Weekday Speed Characteristics |
| <$> 30 mph (£) | 31–35 mph (£) | 36–40 mph (£) | 41–45 mph (£) | 46–50 mph (£) | £50 mph (£) |
| **EB Overton Rd.** | **South of North River Rd.** | | | | | |
| 146 (4%) | 277 (7%) | 953 (26%) | 1494 (40%) | 699 (19%) | 166 (4%) |
| **WB Overton Rd.** | **South of North River Rd.** | | | | | |
| 98 (2%) | 276 (7%) | 800 (19%) | 1585 (39%) | 1052 (26%) | 308 (7%) |
| **EB Old Overton Rd.** | **West of River Terrace Dr.** | | | | | |
| 19 (5%) | 46 (13%) | 96 (28%) | 117 (34%) | 57 (16%) | 14 (4%) |
| **WB Old Overton Rd.** | **West of River Terrace Dr.** | | | | | |
| 14 (4%) | 32 (11%) | 74 (24%) | 94 (31%) | 57 (19%) | 33 (11%) |
| **NB Old Overton Rd.** | **South of River Terrace Rd.** | | | | | |
| 19 (16%) | 15 (12%) | 32 (26%) | 27 (22%) | 24 (20%) | 5 (4%) |
| **SB Old Overton Rd.** | **South of River Terrace Rd.** | | | | | |
| 13 (15%) | 19 (22%) | 18 (21%) | 21 (25%) | 12 (14%) | 2 (2%) |

| Table 4 |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| Weekday Volume Characteristics (2013) |
| **Volume** | **Total Weekday Volume** | **Level of Service** | **% Trucks** |
| **EB Overton Rd. South of North River Rd.** | **WB Overton Rd. South of North River Rd.** | | | |
| 3860 | 4255 | 8115 | C | 12% 14% |
| **EB Old Overton Rd. West of River Terrace Dr.** | **WB Old Overton Rd. West of River Terrace Dr.** | | | |
| 352 | 320 | 672 | A | 15% 21% |
| **NB Old Overton Rd. South of River Terrace Rd.** | **SB Old Overton Rd. South of River Terrace Rd.** | | | |
| 126 | 85 | 211 | A | 24% 19% |
Table 5
Weekend Volume Characteristics (2013)

<table>
<thead>
<tr>
<th></th>
<th>Volume</th>
<th>Total Weekend Volume</th>
<th>Level of Service</th>
<th>% Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB Overton Rd. South of North River Rd.</td>
<td>2645</td>
<td>5382</td>
<td>B</td>
<td>9%</td>
</tr>
<tr>
<td>WB Overton Rd. South of North River Rd.</td>
<td>2737</td>
<td></td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>EB Old Overton Rd. West of River Terrace Dr.</td>
<td>282</td>
<td>539</td>
<td>A</td>
<td>12%</td>
</tr>
<tr>
<td>WB Old Overton Rd. West of River Terrace Dr.</td>
<td>257</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>NB Old Overton Rd. South of River Terrace Rd.</td>
<td>58</td>
<td>132</td>
<td>A</td>
<td>12%</td>
</tr>
<tr>
<td>SB Old Overton Rd. South of River Terrace Rd.</td>
<td>74</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
</tbody>
</table>

The same calculated growth rate (1.69%) and projected horizon (20 years) was applied to these volumes to obtain future levels of service. These projections are presented in Table 6 and Table 7.

Table 6
Projected Weekday Volume Characteristics (2033 – “No Build” Scenario)

<table>
<thead>
<tr>
<th></th>
<th>Volume</th>
<th>Total Weekday Volume</th>
<th>Level of Service</th>
<th>% Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB Overton Rd. South of North River Rd.</td>
<td>5397</td>
<td>11,346</td>
<td>E</td>
<td>12%</td>
</tr>
<tr>
<td>WB Overton Rd. South of North River Rd.</td>
<td>5949</td>
<td></td>
<td></td>
<td>14%</td>
</tr>
<tr>
<td>EB Old Overton Rd. West of River Terrace Dr.</td>
<td>492</td>
<td>940</td>
<td>A</td>
<td>15%</td>
</tr>
<tr>
<td>WB Old Overton Rd. West of River Terrace Dr.</td>
<td>447</td>
<td></td>
<td></td>
<td>21%</td>
</tr>
<tr>
<td>NB Old Overton Rd. South of River Terrace Rd.</td>
<td>176</td>
<td>295</td>
<td>A</td>
<td>24%</td>
</tr>
<tr>
<td>SB Old Overton Rd. South of River Terrace Rd.</td>
<td>119</td>
<td></td>
<td></td>
<td>19%</td>
</tr>
</tbody>
</table>

Table 7
Projected Weekend Volume Characteristics (2033 – “No Build” Scenario)

<table>
<thead>
<tr>
<th></th>
<th>Volume</th>
<th>Total Weekend Volume</th>
<th>Level of Service</th>
<th>% Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EB Overton Rd. South of North River Rd.</td>
<td>3698</td>
<td>7525</td>
<td>C</td>
<td>9%</td>
</tr>
<tr>
<td>WB Overton Rd. South of North River Rd.</td>
<td>3827</td>
<td></td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>EB Old Overton Rd. West of River Terrace Dr.</td>
<td>394</td>
<td>754</td>
<td>A</td>
<td>12%</td>
</tr>
<tr>
<td>WB Old Overton Rd. West of River Terrace Dr.</td>
<td>359</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>NB Old Overton Rd. South of River Terrace Rd.</td>
<td>81</td>
<td>185</td>
<td>A</td>
<td>12%</td>
</tr>
<tr>
<td>SB Old Overton Rd. South of River Terrace Rd.</td>
<td>103</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
</tbody>
</table>
Field Observations at Overton Road/Liberty Park Intersection

AM Peak

Some heavy vehicles were observed during the AM peak period, including school buses, delivery trucks, landscaping vehicles, and one tractor-trailer. No operational issues were noted as a result of these vehicles.

Queues during the AM peak reached their longest point early in the peak period, at approximately 7:30 AM. The longest queue on eastbound Overton Rd. reached the intersection with Old Overton Rd., but didn’t consistently block it. An example of the queue can be seen in Figure 2. The longest queue on southbound Overton Rd. extended to the entrance of the right turn lane, but also did not block it. This can be seen in Figure 3. Queuing was not an issue for the northbound Liberty Parkway approach.

PM Peak

No heavy vehicles were observed during the PM peak.

Queuing activity for the intersection was at its worst between 5 and 5:30 PM. This was partially due to queue development from the signalized intersection adjacent to the I-459 ramps, which extended south into the intersection of Overton Rd. and Liberty Parkway. This caused vehicles travelling northbound on Liberty Parkway and eastbound on Overton Rd. to delay their turns while they waited for an opening in the queue. This activity can be seen in Figure 4. Northbound Liberty Parkway queues extended to the end of the bridge, while eastbound Overton Rd. queues extended beyond the overpass. Eastbound Overton Rd. queues did not seem to affect traffic turning to and from Old Overton Road because drivers allowed gaps for these vehicles. Examples of both of these queues can be seen in Figure 5 and Figure 6 respectively.

Traffic at the intersection operated awkwardly as volumes increased. Southbound Overton Rd. vehicles regularly came to a sudden stop at the intersection, causing vehicles turning left from eastbound Overton Rd. to hesitate before crossing. Vehicles turning left from eastbound Overton Rd. and vehicles traveling straight in the outside lane from northbound Liberty Parkway would typically enter the intersection at the same time, though this seemed to meet driver expectation based on their behavior.
Figure 2
Looking west on Overton Rd. from the intersection (AM)

Figure 3
Looking north on Overton Rd. from the intersection (AM)
Figure 4
Queue extension from the signalized intersection (PM)

Figure 5
Looking south on Liberty Parkway from the intersection (PM)
Figure 6
Looking west on Overton Rd. from the intersection (PM)
Appendix C

Bicycle and Pedestrian LOS
<p>| Segment ID | Town   | Road Name | From | To | Length (mi) | Direction | ADT Weekday | ADT Weekend | % Heavy Trucks Weekday | % Heavy Trucks Weekend | Posted Speed | Type | Wt | Wl | Wps | Total Parking | PC1 | PC2 | % with Sidewalk | % with Bike Lane | Bike Lane | Parking | Bike Off Peak LOS | Pedestrian Off Peak LOS | Pedestrian Peak LOS | Pedestrian Off Peak LOS | Pedestrian Peak LOS | Bike % Heavy Truck | Bike % Heavy Truck | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS | Pedestrian LOS |
|------------|--------|-----------|------|----|-------------|-----------|-------------|-------------|------------------------|------------------------|-------------|------|----|----|----|----------------|-----|-----|----------------|----------------|-----------|---------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------|------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1.0        | Vestavia | Overton Road | Oakdale Road | Stoneleigh Drive | 0.2 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 2.0        | Vestavia | Overton Road | Stoneleigh Drive | N. River Road | 0.1 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 3.0        | Vestavia | Overton Road | Stoneleigh Drive | Liberty Parkway | 0.2 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 4.0        | Jefferson | County | Old Overton Road | Liberty Parkway | 0.4 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 5.0        | Jefferson | County | Old Overton Road | River Terrace Drive | 0.4 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 6.0        | Jefferson | County | Old Overton Road | River Terrace Drive | 0.4 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 7.0        | Jefferson | County | Old Overton Road | Trail Entrance | 0.3 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 8.0        | Jefferson | County | Old Overton Road | Trail Entrance | 0.1 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |
| 9.0        | Jefferson | County | Old Overton Road | Trail Entrance | 0.3 | EB | 8115 | 14% | 5382 | 10% | 35 | 2 | NA | U | 11 | 0 | 0 | 22 | NA | 3 | NA | N | S | NA | NA | NA | NA | 3 | 3 | F | F | F | D | D | D | D |</p>
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Appendix D

USFW Letter
Ms. Jennifer G. Brown
Project Engineer
SAIN Associates
Two Perimeter Park South, Suite 500 East
Birmingham, AL 35243

Dear Ms. Brown:

Thank you for your July 22, 2013, letter requesting a list of endangered and threatened species that may occur in the vicinity of the proposed 1.4-mile Cahaba Liberty Trail along the Cahaba River and Overton Road and Old Overton Road in Jefferson County, Alabama. The project site is located at approximately 33° 29' 20.36" N and 86° 41' 55.58" W. We have reviewed your information and are providing the following comments in accordance with the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. et seq.), the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), and the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. § 668-668d) (BGEPA).

**Endangered, Threatened and Candidate Species**

The following federally listed species may occur within the proposed project area. In addition, the Cahaba River from U.S. Highway 82 upstream to Jefferson County Road 143 is designated as critical habitat (CH) for eight of these species:

- Gray bat, *Myotis grisescens* - Endangered
- Indiana bat, *Myotis sodalis* - Endangered
- Cahaba shiner, *Notropis cahabae* - Endangered
- Alabama moccasinshell, *Medionidus acutissimus* - Threatened (CH)
- Fine-lined pocketbook, *Hamiota altilis* - Threatened (CH)
- Orange-nacre mucket, *Hamiota perovalis* - Threatened (CH)
- Ovate clubshell, *Pleurobema perovatum* - Endangered (CH)
- Southern acornshell, *Epiploasma othcauloogensis* - Endangered (CH)
- Southern clubshell, *Pleurobema decism* - Endangered (CH)
Triangular kidneyshell, *Psychobranchus greenii* - Endangered (CH)
Upland combshell, *Epioblasma metaspiata* - Endangered (CH)
Georgia aster, *Symphyotrichum georgianum* – Candidate¹

With respect to the gray bat and Indiana bat, we recommend a thorough site investigation for any karst features on the site (i.e., sinkholes, sinking streams, caves). If such topographic features are located on or near the subject property, we request that you inform our agency of their location so that we may determine if further consultation is necessary. For the Indiana bat, we also recommend a habitat assessment and adherence to the procedures identified in the 2013 Revised Range-wide Indiana Bat Summer Survey Guidelines (May 2013) (http://www.fws.gov/midwest/Endangered/mammals/inba/inbasummersurveyguidance.html).

If no work will be done in the Cahaba River or its tributaries, surveys for the aquatic species need not be conducted provided best management practices are implemented to avoid impacts to aquatic systems, as described below.

**Recommended Best Management Practices**

We recommend incorporating the following measures into the project design to protect water quality:

- Implement best management practices (BMPs) to minimize erosion and storm water runoff, and prevent sedimentation of drainages in the project area, both during and after construction.

- Develop an erosion control plan tailored to the site. All erosion and sediment controls should be inspected routinely, especially during and immediately following significant rain events, to ensure no impacts to nearby surface waters and aquatic habitat. Immediate corrective action should be taken if erosion or sedimentation is observed.

- Maintain a naturally vegetated buffer (preferably 100 feet or greater) adjacent to any ditches or drainages to reduce erosion and protect water quality.

- Immediately revegetate any disturbed areas with a native species or an annual grass.

- To the extent feasible, complete any work that results in exposed earth during periods when significant rainfall is not predicted.

¹ Candidate species are afforded no protection under the ESA. A survey for this species in any appropriate habitat is recommended, but not required. This information is being provided to alert you that the species could be listed in the future. Therefore, if the proposed work is not carried out in the next year, it would be prudent to contact this office to determine if any changes have occurred to the status of this species.
- Conduct any work that involves clearing large tracts of land in phases, where practicable, with rapid revegetation upon completion of each phase.

- If possible, locate all work at least 100 feet from any nearby intermittent or permanent streams to reduce sediment runoff and subsequent turbidity in the stream and downstream.


**Bald and Golden Eagle Protection Act**

Potential bald eagle (*Haliaeetus leucocephalus*) nesting habitat includes large trees, often near river systems, reservoirs, lakes, bays and other fish-bearing bodies of water. Nests are usually located near the tops of the tallest trees and are added to and reused year after year. The project areas should be thoroughly surveyed to determine if this federally protected species or its nests may occur in the impact areas. The enclosed National Bald Eagle Management Guidelines (2007) provide information on how to avoid disturbance of bald eagles and their nest sites. If such disturbance cannot be avoided, you should consult with the U.S. Fish and Wildlife Service’s Migratory Bird office (Tel. (404) 679-7070; Fax (404) 679-4180; Email permitsR4MB@fws.gov).

**Conclusion**

If you have any questions, please contact Ms. Karen Marlowe of my staff at (205) 726-2667. Please use the reference number located at the top of this letter in future phone calls or written correspondence.

Sincerely,

Dan Everson  
Deputy Field Supervisor  
Alabama Ecological Services Field Office

Enclosure
NATIONAL BALD EAGLE MANAGEMENT GUIDELINES

U.S. Fish and Wildlife Service

May 2007
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INTRODUCTION

The bald eagle (Haliaeetus leucocephalus) is protected by the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act (MBTA). The MBTA and the Eagle Act protect bald eagles from a variety of harmful actions and impacts. The U.S. Fish and Wildlife Service (Service) developed these National Bald Eagle Management Guidelines to advise landowners, land managers, and others who share public and private lands with bald eagles when and under what circumstances the protective provisions of the Eagle Act may apply to their activities. A variety of human activities can potentially interfere with bald eagles, affecting their ability to forage, nest, roost, breed, or raise young. The Guidelines are intended to help people minimize such impacts to bald eagles, particularly where they may constitute "disturbance," which is prohibited by the Eagle Act.

The Guidelines are intended to:

1. Publicize the provisions of the Eagle Act that continue to protect bald eagles, in order to reduce the possibility that people will violate the law;

2. Advise landowners, land managers and the general public of the potential for various human activities to disturb bald eagles, and

3. Encourage additional nonbinding land management practices that benefit bald eagles (see Additional Recommendations section).

While the Guidelines include general recommendations for land management practices that will benefit bald eagles, the document is intended primarily as a tool for landowners and planners who seek information and recommendations regarding how to avoid disturbing bald eagles. Many States and some tribal entities have developed state-specific management plans, regulations, and/or guidance for landowners and land managers to protect and enhance bald eagle habitat, and we encourage the continued development and use of these planning tools to benefit bald eagles.

Adherence to the Guidelines herein will benefit individuals, agencies, organizations, and companies by helping them avoid violations of the law. However, the Guidelines themselves are not law. Rather, they are recommendations based on several decades of behavioral observations, science, and conservation measures to avoid or minimize adverse impacts to bald eagles.

The U.S. Fish and Wildlife Service strongly encourages adherence to these guidelines to ensure that bald and golden eagle populations will continue to be sustained. The Service realizes there may be impacts to some birds even if all reasonable measures are taken to avoid such impacts. Although it is not possible to absolve individuals and entities from liability under the Eagle Act or the MBTA, the Service exercises enforcement discretion to focus on those individuals, companies, or agencies that take migratory birds without regard for the consequences of their actions and the law, especially when conservation measures, such as these Guidelines, are available, but have not been implemented. The Service will prioritize its enforcement efforts to focus on those individuals or entities who take bald eagles or their parts, eggs, or nests without implementing appropriate measures recommended by the Guidelines.
The Service intends to pursue the development of regulations that would authorize, under limited circumstances, the use of permits if "take" of an eagle is anticipated but unavoidable. Additionally, if the bald eagle is delisted, the Service intends to provide a regulatory mechanism to honor existing (take) authorizations under the Endangered Species Act (ESA).

During the interim period until the Service completes a rulemaking for permits under the Eagle Act, the Service does not intend to refer for prosecution the incidental "take" of any bald eagle under the MBTA or Eagle Act, if such take is in full compliance with the terms and conditions of an incidental take statement issued to the action agency or applicant under the authority of section 7(b)(4) of the ESA or a permit issued under the authority of section 10(a)(1)(B) of the ESA.

The Guidelines are applicable throughout the United States, including Alaska. The primary purpose of these Guidelines is to provide information that will minimize or prevent violations only of Federal laws governing bald eagles. In addition to Federal laws, many states and some smaller jurisdictions and tribes have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines. If you are planning activities that may affect bald eagles, we therefore recommend that you contact both your nearest U.S. Fish and Wildlife Service Field Office (see the contact information on p.16) and your state wildlife agency for assistance.

**LEGAL PROTECTIONS FOR THE BALD EAGLE**

**The Bald and Golden Eagle Protection Act**

The Eagle Act (16 U.S.C. 668-668c), enacted in 1940, and amended several times since then, prohibits anyone, without a permit issued by the Secretary of the Interior, from “taking” bald eagles, including their parts, nests, or eggs. The Act provides criminal and civil penalties for persons who "take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle ... [or any golden eagle], alive or dead, or any part, nest, or egg thereof." The Act defines "take" as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." "Disturb" means:

"Disturb means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior."

In addition to immediate impacts, this definition also covers impacts that result from human-induced alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle=s return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantially interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.
A violation of the Act can result in a criminal fine of $100,000 ($200,000 for organizations), imprisonment for one year, or both, for a first offense. Penalties increase substantially for additional offenses, and a second violation of this Act is a felony.

The Migratory Bird Treaty Act
The MBTA (16 U.S.C. 703-712), prohibits the taking of any migratory bird or any part, nest, or egg, except as permitted by regulation. The MBTA was enacted in 1918; a 1972 agreement supplementing one of the bilateral treaties underlying the MBTA had the effect of expanding the scope of the Act to cover bald eagles and other raptors. Implementing regulations define “take” under the MBTA as “pursue, hunt, shoot, wound, kill, trap, capture, possess, or collect.”


State laws and regulations
Most states have their own regulations and/or guidelines for bald eagle management. Some states may continue to list the bald eagle as endangered, threatened, or of special concern. If you plan activities that may affect bald eagles, we urge you to familiarize yourself with the regulations and/or guidelines that apply to bald eagles in your state. Your adherence to the Guidelines herein does not ensure that you are in compliance with state laws and regulations because state regulations can be more specific and/or restrictive than these Guidelines.

NATURAL HISTORY OF THE BALD EAGLE

Bald eagles are a North American species that historically occurred throughout the contiguous United States and Alaska. After severely declining in the lower 48 States between the 1870s and the 1970s, bald eagles have rebounded and re-established breeding territories in each of the lower 48 states. The largest North American breeding populations are in Alaska and Canada, but there are also significant bald eagle populations in Florida, the Pacific Northwest, the Greater Yellowstone area, the Great Lakes states, and the Chesapeake Bay region. Bald eagle distribution varies seasonally. Bald eagles that nest in southern latitudes frequently move northward in late spring and early summer, often summering as far north as Canada. Most eagles that breed at northern latitudes migrate southward during winter, or to coastal areas where waters remain unfrozen. Migrants frequently concentrate in large numbers at sites where food is abundant and they often roost together communally. In some cases, concentration areas are used year-round: in summer by southern eagles and in winter by northern eagles.

Juvenile bald eagles have mottled brown and white plumage, gradually acquiring their dark brown body and distinctive white head and tail as they mature. Bald eagles generally attain adult plumage by 5 years of age. Most are capable of breeding at 4 or 5 years of age, but in healthy populations they may not start breeding until much older. Bald eagles may live 15 to 25 years in the wild. Adults weigh 8 to 14 pounds (occasionally reaching 16 pounds in Alaska) and have wing spans of 5 to 8 feet. Those in the northern range are larger than those in the south, and females are larger than males.
Where do bald eagles nest?
Breeding bald eagles occupy "territories," areas they will typically defend against intrusion by other eagles. In addition to the active nest, a territory may include one or more alternate nests (nests built or maintained by the eagles but not used for nesting in a given year). The Eagle Act prohibits removal or destruction of both active and alternate bald eagle nests. Bald eagles exhibit high nest site fidelity and nesting territories are often used year after year. Some territories are known to have been used continually for over half a century.

Bald eagles generally nest near coastlines, rivers, large lakes or streams that support an adequate food supply. They often nest in mature or old-growth trees; snags (dead trees); cliffs; rock promontories; rarely on the ground; and with increasing frequency on human-made structures such as power poles and communication towers. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support a nest that can weigh more than 1,000 pounds. Nest sites typically include at least one perch with a clear view of the water where the eagles usually forage. Shoreline trees or snags located in reservoirs provide the visibility and accessibility needed to locate aquatic prey. Eagle nests are constructed with large sticks, and may be lined with moss, grass, plant stalks, lichens, seaweed, or sod. Nests are usually about 4-6 feet in diameter and 3 feet deep, although larger nests exist.

The range of breeding bald eagles in 2000 (shaded areas). This map shows only the larger concentrations of nests; eagles have continued to expand into additional nesting territories in many states. The dotted line represents the bald eagle's wintering range.
When do bald eagles nest?  
Nesting activity begins several months before egg-laying. Egg-laying dates vary throughout the U.S., ranging from October in Florida, to late April or even early May in the northern United States. Incubation typically lasts 33-35 days, but can be as long as 40 days. Eaglets make their first unsteady flights about 10 to 12 weeks after hatching, and fledge (leave their nests) within a few days after that first flight. However, young birds usually remain in the vicinity of the nest for several weeks after fledging because they are almost completely dependent on their parents for food until they disperse from the nesting territory approximately 6 weeks later.

The bald eagle breeding season tends to be longer in the southern U.S., and re-nesting following an unsuccessful first nesting attempt is more common there as well. The following table shows the timing of bald eagle breeding seasons in different regions of the country. The table represents the range of time within which the majority of nesting activities occur in each region and does not apply to any specific nesting pair. Because the timing of nesting activities may vary within a given region, you should contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16) and/or your state wildlife conservation agency for more specific information on nesting chronology in your area.
Chronology of typical reproductive activities of bald eagles in the United States:

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<td><strong>SOUTHEASTERN U.S. (FL, GA, SC, NC, AL, MS, LA, TN, KY, AR, eastern 2 of TX)</strong></td>
<td>Nest Building</td>
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<td><strong>CHESAPEAKE BAY REGION (NC, VA, MD, DE, southern 2 of NJ, eastern 2 of PA, panhandle of WV)</strong></td>
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<td><strong>NORTHERN U.S. (ME, NH, MA, RI, CT, NY, northern 2 of NJ, western 2 of PA, OH, WV exc. panhandle, IN, IL, MI, WI, MN, IA, MO, ND, SD, NB, KS, CO, UT)</strong></td>
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<td><strong>SOUTHWESTERN U.S. (AZ, NM, OK panhandle, western 2 of TX)</strong></td>
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<td><strong>ALASKA</strong></td>
<td>Nest Building</td>
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How many chicks do bald eagles raise?
The number of eagle eggs laid will vary from 1-3, with 1-2 eggs being the most common. Only one eagle egg is laid per day, although not always on successive days. Hatching of young occurs on different days with the result that chicks in the same nest are sometimes of unequal size. The overall national fledging rate is approximately one chick per nest, annually, which results in a healthy expanding population.

What do bald eagles eat?
Bald eagles are opportunistic feeders. Fish comprise much of their diet, but they also eat waterfowl, shorebirds/colonial waterbirds, small mammals, turtles, and carrion. Because they are visual hunters, eagles typically locate their prey from a conspicuous perch, or soaring flight, then swoop down and strike. Wintering bald eagles often congregate in large numbers along streams to feed on spawning salmon or other fish species, and often gather in large numbers in areas below reservoirs, especially hydropower dams, where fish are abundant. Wintering eagles also take birds from rafts of ducks at reservoirs and rivers, and congregate on melting ice shelves to scavenge dead fish from the current or the soft melting ice. Bald eagles will also feed on carcasses along roads, in landfills, and at feedlots.

During the breeding season, adults carry prey to the nest to feed the young. Adults feed their chicks by tearing off pieces of food and holding them to the beaks of the eaglets. After fledging, immature eagles are slow to develop hunting skills, and must learn to locate reliable food sources and master feeding techniques. Young eagles will congregate together, often feeding upon easily acquired food such as carrion and fish found in abundance at the mouths of streams and shallow bays and at landfills.

The impact of human activity on nesting bald eagles
During the breeding season, bald eagles are sensitive to a variety of human activities. However, not all bald eagle pairs react to human activities in the same way. Some pairs nest successfully just dozens of yards from human activity, while others abandon nest sites in response to activities much farther away. This variability may be related to a number of factors, including visibility, duration, noise levels, extent of the area affected by the activity, prior experiences with humans, and tolerance of the individual nesting pair. The relative sensitivity of bald eagles during various stages of the breeding season is outlined in the following table.
### Nesting Bald Eagle Sensitivity to Human Activities

<table>
<thead>
<tr>
<th>Phase</th>
<th>Activity</th>
<th>Sensitivity to Human Activity</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Courtship and Nest Building</td>
<td>Most sensitive period; likely to respond negatively</td>
<td>Most critical time period. Disturbance is manifested in nest abandonment. Bald eagles in newly established territories are more prone to abandon nest sites.</td>
</tr>
<tr>
<td>II</td>
<td>Egg laying</td>
<td>Very sensitive period</td>
<td>Human activity of even limited duration may cause nest desertion and abandonment of territory for the breeding season.</td>
</tr>
<tr>
<td>III</td>
<td>Incubation and early nestling period (up to 4 weeks)</td>
<td>Very sensitive period</td>
<td>Adults are less likely to abandon the nest near and after hatching. However, flushed adults leave eggs and young unattended; eggs are susceptible to cooling, loss of moisture, overheating, and predation; young are vulnerable to elements.</td>
</tr>
<tr>
<td>IV</td>
<td>Nestling period, 4 to 8 weeks</td>
<td>Moderately sensitive period</td>
<td>Likelihood of nest abandonment and vulnerability of the nestlings to elements somewhat decreases. However, nestlings may miss feedings, affecting their survival.</td>
</tr>
<tr>
<td>V</td>
<td>Nestlings 8 weeks through fledging</td>
<td>Very sensitive period</td>
<td>Gaining flight capability, nestlings 8 weeks and older may flush from the nest prematurely due to disruption and die.</td>
</tr>
</tbody>
</table>

If agitated by human activities, eagles may inadequately construct or repair their nest, may expend energy defending the nest rather than tending to their young, or may abandon the nest altogether. Activities that cause prolonged absences of adults from their nests can jeopardize eggs or young. Depending on weather conditions, eggs may overheat or cool too much and fail to hatch. Unattended eggs and nestlings are subject to predation. Young nestlings are particularly vulnerable because they rely on their parents to provide warmth or shade, without which they may die as a result of hypothermia or heat stress. If food delivery schedules are interrupted, the young may not develop healthy plumage, which can affect their survival. In addition, adults startled while incubating or brooding young may damage eggs or injure their young as they abruptly leave the nest. Older nestlings no longer require constant attention from the adults, but they may be startled by loud or intrusive human activities and prematurely jump from the nest before they are able to fly or care for themselves. Once fledged, juveniles range up to ¾ mile from the nest site, often to a site with minimal human activity. During this period, until about six weeks after departure from the nest, the juveniles still depend on the adults to feed them.

**The impact of human activity on foraging and roosting bald eagles**

Disruption, destruction, or obstruction of roosting and foraging areas can also negatively affect bald eagles. Disruptive activities in or near eagle foraging areas can interfere with feeding, reducing chances of survival. Interference with feeding can also result in reduced productivity (number of young successfully fledged). Migrating and wintering bald eagles often congregate at specific sites for purposes of feeding and sheltering. Bald eagles rely on established roost sites because of their proximity to sufficient food sources. Roost sites are usually in mature trees where the eagles are somewhat sheltered from the wind and weather. Human activities near or within communal roost sites may prevent eagles
from feeding or taking shelter, especially if there are not other undisturbed and productive feeding and roosting sites available. Activities that permanently alter communal roost sites and important foraging areas can altogether eliminate the elements that are essential for feeding and sheltering eagles.

Where a human activity agitates or bothers roosting or foraging bald eagles to the degree that causes injury or substantially interferes with breeding, feeding, or sheltering behavior and causes, or is likely to cause, a loss of productivity or nest abandonment, the conduct of the activity constitutes a violation of the Eagle Act’s prohibition against disturbing eagles. The circumstances that might result in such an outcome are difficult to predict without detailed site-specific information. If your activities may disturb roosting or foraging bald eagles, you should contact your local Fish and Wildlife Service Field Office (see page 16) for advice and recommendations for how to avoid such disturbance.

**RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT NEST SITES**

In developing these Guidelines, we relied on existing state and regional bald eagle guidelines, scientific literature on bald eagle disturbance, and recommendations of state and Federal biologists who monitor the impacts of human activity on eagles. Despite these resources, uncertainties remain regarding the effects of many activities on eagles and how eagles in different situations may or may not respond to certain human activities. The Service recognizes this uncertainty and views the collection of better biological data on the response of eagles to disturbance as a high priority. To the extent that resources allow, the Service will continue to collect data on responses of bald eagles to human activities conducted according to the recommendations within these Guidelines to ensure that adequate protection from disturbance is being afforded, and to identify circumstances where the Guidelines might be modified. These data will be used to make future adjustments to the Guidelines.

To avoid disturbing nesting bald eagles, we recommend (1) keeping a distance between the activity and the nest (distance buffers), (2) maintaining preferably forested (or natural) areas between the activity and around nest trees (landscape buffers), and (3) avoiding certain activities during the breeding season. The buffer areas serve to minimize visual and auditory impacts associated with human activities near nest sites. Ideally, buffers would be large enough to protect existing nest trees and provide for alternative or replacement nest trees.

The size and shape of effective buffers vary depending on the topography and other ecological characteristics surrounding the nest site. In open areas where there are little or no forested or topographical buffers, such as in many western states, distance alone must serve as the buffer. Consequently, in open areas, the distance between the activity and the nest may need to be larger than the distances recommended under Categories A and B of these guidelines (pg. 12) if no landscape buffers are present. The height of the nest above the ground may also ameliorate effects of human activities; eagles at higher nests may be less prone to disturbance.

In addition to the physical features of the landscape and nest site, the appropriate size for the distance buffer may vary according to the historical tolerances of eagles to human activities in particular localities, and may also depend on the location of the nest in relation
to feeding and roosting areas used by the eagles. Increased competition for nest sites may lead bald eagles to nest closer to human activity (and other eagles).

Seasonal restrictions can prevent the potential impacts of many shorter-term, obtrusive activities that do not entail landscape alterations (e.g. fireworks, outdoor concerts). In proximity to the nest, these kinds of activities should be conducted only outside the breeding season. For activities that entail both short-term, obtrusive characteristics and more permanent impacts (e.g., building construction), we recommend a combination of both approaches: retaining a landscape buffer and observing seasonal restrictions.

For assistance in determining the appropriate size and configuration of buffers or the timing of activities in the vicinity of a bald eagle nest, we encourage you to contact the nearest U.S. Fish and Wildlife Service Field Office (see page 16).

Existing Uses
Eagles are unlikely to be disturbed by routine use of roads, homes, and other facilities where such use pre-dates the eagles’ successful nesting activity in a given area. Therefore, in most cases ongoing existing uses may proceed with the same intensity with little risk of disturbing bald eagles. However, some intermittent, occasional, or irregular uses that pre-date eagle nesting in an area may disturb bald eagles. For example: a pair of eagles may begin nesting in an area and subsequently be disturbed by activities associated with an annual outdoor flea market, even though the flea market has been held annually at the same location. In such situations, human activity should be adjusted or relocated to minimize potential impacts on the nesting pair.

ACTIVITY-SPECIFIC GUIDELINES

The following section provides the Service's management recommendations for avoiding bald eagle disturbance as a result of new or intermittent activities proposed in the vicinity of bald eagle nests. Activities are separated into 8 categories (A – H) based on the nature and magnitude of impacts to bald eagles that usually result from the type of activity. Activities with similar or comparable impacts are grouped together.

In most cases, impacts will vary based on the visibility of the activity from the eagle nest and the degree to which similar activities are already occurring in proximity to the nest site. Visibility is a factor because, in general, eagles are more prone to disturbance when an activity occurs in full view. For this reason, we recommend that people locate activities farther from the nest structure in areas with open vistas, in contrast to areas where the view is shielded by rolling topography, trees, or other screening factors. The recommendations also take into account the existence of similar activities in the area because the continued presence of nesting bald eagles in the vicinity of the existing activities indicates that the eagles in that area can tolerate a greater degree of human activity than we can generally expect from eagles in areas that experience fewer human impacts. To illustrate how these factors affect the likelihood of disturbing eagles, we have incorporated the recommendations for some activities into a table (categories A and B).

First, determine which category your activity falls into (between categories A – H). If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity represented.
If your activity is under A or B, our recommendations are in table form. The vertical axis shows the degree of visibility of the activity from the nest. The horizontal axis (header row) represents the degree to which similar activities are ongoing in the vicinity of the nest. Locate the row that best describes how visible your activity will be from the eagle nest. Then, choose the column that best describes the degree to which similar activities are ongoing in the vicinity of the eagle nest. The box where the column and row come together contains our management recommendations for how far you should locate your activity from the nest to avoid disturbing the eagles. The numerical distances shown in the tables are the closest the activity should be conducted relative to the nest. In some cases we have included additional recommendations (other than recommended distance from the nest) you should follow to help ensure that your activity will not disturb the eagles.

Alternate nests
For activities that entail permanent landscape alterations that may result in bald eagle disturbance, these recommendations apply to both active and alternate bald eagle nests. Disturbance becomes an issue with regard to alternate nests if eagles return for breeding purposes and react to land use changes that occurred while the nest was inactive. The likelihood that an alternate nest will again become active decreases the longer it goes unused. If you plan activities in the vicinity of an alternate bald eagle nest and have information to show that the nest has not been active during the preceding 5 breeding seasons, the recommendations provided in these guidelines for avoiding disturbance around the nest site may no longer be warranted. The nest itself remains protected by other provisions of the Eagle Act, however, and may not be destroyed.

If special circumstances exist that make it unlikely an inactive nest will be reused before 5 years of disuse have passed, and you believe that the probability of reuse is low enough to warrant disregarding the recommendations for avoiding disturbance, you should be prepared to provide all the reasons for your conclusion, including information regarding past use of the nest site. Without sufficient documentation, you should continue to follow these guidelines when conducting activities around the nest site. If we are able to determine that it is unlikely the nest will be reused, we may advise you that the recommendations provided in these guidelines for avoiding disturbance are no longer necessary around that nest site.

This guidance is intended to minimize disturbance, as defined by Federal regulation. In addition to Federal laws, most states and some tribes and smaller jurisdictions have additional laws and regulations protecting bald eagles. In some cases those laws and regulations may be more protective (restrictive) than these Federal guidelines.

Temporary Impacts
For activities that have temporary impacts, such as the use of loud machinery, fireworks displays, or summer boating activities, we recommend seasonal restrictions. These types of activities can generally be carried out outside of the breeding season without causing disturbance. The recommended restrictions for these types of activities can be lifted for alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched (depending on the distance between the alternate nest and the active nest).
In general, activities should be kept as far away from nest trees as possible; loud and disruptive activities should be conducted when eagles are not nesting; and activity between the nest and the nearest foraging area should be minimized. If the activity you plan to undertake is not specifically addressed in these guidelines, follow the recommendations for the most similar activity addressed, or contact your local U.S. Fish and Wildlife Service Field Office for additional guidance.

If you believe that special circumstances apply to your situation that increase or diminish the likelihood of bald eagle disturbance, or if it is not possible to adhere to the guidelines, you should contact your local Service Field Office for further guidance.

**Category A:**
Building construction, 1 or 2 story, with project footprint of ½ acre or less.
Construction of roads, trails, canals, power lines, and other linear utilities.
Agriculture and aquaculture – new or expanded operations.
Alteration of shorelines or wetlands.
Installation of docks or moorings.
Water impoundment.

**Category B:**
Building construction, 3 or more stories.
Building construction, 1 or 2 story, with project footprint of more than ½ acre.
Installation or expansion of marinas with a capacity of 6 or more boats.
Mining and associated activities.
Oil and natural gas drilling and refining and associated activities.

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<tr>
<th>If there is no similar activity within 1 mile of the nest</th>
<th>If there is similar activity closer than 1 mile from the nest</th>
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<tr>
<td>If the activity will be visible from the nest</td>
<td>660 feet. Landscape buffers are recommended.</td>
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<tr>
<td>If the activity will not be visible from the nest</td>
<td>Category A: 330 feet. Clearing, external construction, and landscaping between 330 feet and 660 feet should be done outside breeding season.</td>
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</table>

Category B:
If the activity will be visible from the nest:
660 feet.

Category B:
If the activity will not be visible from the nest:
330 feet, or as close as existing tolerated activity of similar scope. Clearing, external construction and landscaping within 660 feet should be done outside breeding season.

The numerical distances shown in the table are the closest the activity should be conducted relative to the nest.
Category C. Timber Operations and Forestry Practices

- Avoid clear cutting or removal of overstory trees within 330 feet of the nest at any time.

- Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the breeding season within 660 feet of the nest. The distance may be decreased to 330 feet around alternate nests within a particular territory, including nests that were attended during the current breeding season but not used to raise young, after eggs laid in another nest within the territory have hatched.

- Selective thinning and other silviculture management practices designed to conserve or enhance habitat, including prescribed burning close to the nest tree, should be undertaken outside the breeding season. Precautions such as raking leaves and woody debris from around the nest tree should be taken to prevent crown fire or fire climbing the nest tree. If it is determined that a burn during the breeding season would be beneficial, then, to ensure that no take or disturbance will occur, these activities should be conducted only when neither adult eagles nor young are present at the nest tree (i.e., at the beginning of, or end of, the breeding season, either before the particular nest is active or after the young have fledged from that nest). Appropriate Federal and state biologists should be consulted before any prescribed burning is conducted during the breeding season.

- Avoid construction of log transfer facilities and in-water log storage areas within 330 feet of the nest.

Category D. Off-road vehicle use (including snowmobiles). No buffer is necessary around nest sites outside the breeding season. During the breeding season, do not operate off-road vehicles within 330 feet of the nest. In open areas, where there is increased visibility and exposure to noise, this distance should be extended to 660 feet.

Category E. Motorized Watercraft use (including jet skis/personal watercraft). No buffer is necessary around nest sites outside the breeding season. During the breeding season, within 330 feet of the nest, (1) do not operate jet skis (personal watercraft), and (2) avoid concentrations of noisy vessels (e.g., commercial fishing boats and tour boats), except where eagles have demonstrated tolerance for such activity. Other motorized boat traffic passing within 330 feet of the nest should attempt to minimize trips and avoid stopping in the area where feasible, particularly where eagles are unaccustomed to boat traffic. Buffers for airboats should be larger than 330 feet due to the increased noise they generate, combined with their speed, maneuverability, and visibility.

Category F. Non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting, birdwatching, kayaking, canoeing). No buffer is necessary around nest sites outside the breeding season. If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity.
Category G. Helicopters and fixed-wing aircraft.  
Except for authorized biologists trained in survey techniques, avoid operating aircraft within 1,000 feet of the nest during the breeding season, except where eagles have demonstrated tolerance for such activity.

Category H. Blasting and other loud, intermittent noises.  
Avoid blasting and other activities that produce extremely loud noises within 1/2 mile of active nests, unless greater tolerance to the activity (or similar activity) has been demonstrated by the eagles in the nesting area. This recommendation applies to the use of fireworks classified by the Federal Department of Transportation as Class B explosives, which includes the larger fireworks that are intended for licensed public display.

RECOMMENDATIONS FOR AVOIDING DISTURBANCE AT FORAGING AREAS AND COMMUNAL ROOST SITES

1. Minimize potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas.

2. Locate long-term and permanent water-dependent facilities, such as boat ramps and marinas, away from important eagle foraging areas.

3. Avoid recreational and commercial boating and fishing near critical eagle foraging areas during peak feeding times (usually early to mid-morning and late afternoon), except where eagles have demonstrated tolerance to such activity.

4. Do not use explosives within ½ mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the U.S. Fish and Wildlife Service and your state wildlife agency.

5. Locate aircraft corridors no closer than 1,000 feet vertical or horizontal distance from communal roost sites.
ADDITIONAL RECOMMENDATIONS TO BENEFIT BALD EAGLES

The following are additional management practices that landowners and planners can exercise for added benefit to bald eagles.

1. Protect and preserve potential roost and nest sites by retaining mature trees and old growth stands, particularly within ½ mile from water.

2. Where nests are blown from trees during storms or are otherwise destroyed by the elements, continue to protect the site in the absence of the nest for up to three (3) complete breeding seasons. Many eagles will rebuild the nest and reoccupy the site.

3. To avoid collisions, site wind turbines, communication towers, and high voltage transmission power lines away from nests, foraging areas, and communal roost sites.

4. Employ industry-accepted best management practices to prevent birds from colliding with or being electrocuted by utility lines, towers, and poles. If possible, bury utility lines in important eagle areas.

5. Where bald eagles are likely to nest in human-made structures (e.g., cell phone towers) and such use could impede operation or maintenance of the structures or jeopardize the safety of the eagles, equip the structures with either (1) devices engineered to discourage bald eagles from building nests, or (2) nesting platforms that will safely accommodate bald eagle nests without interfering with structure performance.

6. Immediately cover carcasses of euthanized animals at landfills to protect eagles from being poisoned.

7. Do not intentionally feed bald eagles. Artificially feeding bald eagles can disrupt their essential behavioral patterns and put them at increased risk from power lines, collision with windows and cars, and other mortality factors.

8. Use pesticides, herbicides, fertilizers, and other chemicals only in accordance with Federal and state laws.

9. Monitor and minimize dispersal of contaminants associated with hazardous waste sites (legal or illegal), permitted releases, and runoff from agricultural areas, especially within watersheds where eagles have shown poor reproduction or where bioaccumulating contaminants have been documented. These factors present a risk of contamination to eagles and their food sources.
The following U.S. Fish and Wildlife Service Field Offices provide technical assistance on bald eagle management:

<table>
<thead>
<tr>
<th>State</th>
<th>City</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Daphne</td>
<td>(251) 441-5181</td>
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**State Agencies**

To contact a state wildlife agency, visit the Association of Fish & Wildlife Agencies’ website at [http://www.fishwildlife.org/where_us.html](http://www.fishwildlife.org/where_us.html)
GLOSSARY

The definitions below apply to these National Bald Eagle Management Guidelines:

Communal roost sites – Areas where bald eagles gather and perch overnight — and sometimes during the day in the event of inclement weather. Communal roost sites are usually in large trees (live or dead) that are relatively sheltered from wind and are generally in close proximity to foraging areas. These roosts may also serve a social purpose for pair bond formation and communication among eagles. Many roost sites are used year after year.

Disturb – To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.

In addition to immediate impacts, this definition also covers impacts that result from human-caused alterations initiated around a previously used nest site during a time when eagles are not present, if, upon the eagle's return, such alterations agitate or bother an eagle to a degree that injures an eagle or substantally interferes with normal breeding, feeding, or sheltering habits and causes, or is likely to cause, a loss of productivity or nest abandonment.

Fledge – To leave the nest and begin flying. For bald eagles, this normally occurs at 10-12 weeks of age.

Fledgling – A juvenile bald eagle that has taken the first flight from the nest but is not yet independent.

Foraging area – An area where eagles feed, typically near open water such as rivers, lakes, reservoirs, and bays where fish and waterfowl are abundant, or in areas with little or no water (i.e., rangelands, barren land, tundra, suburban areas, etc.) where other prey species (e.g., rabbit, rodents) or carrion (such as at landfills) are abundant.

Landscape buffer – A natural or human-made landscape feature that screens eagles from human activity (e.g., strip of trees, hill, cliff, berm, sound wall).

Nest – A structure built, maintained, or used by bald eagles for the purpose of reproduction. An active nest is a nest that is attended (built, maintained or used) by a pair of bald eagles during a given breeding season, whether or not eggs are laid. An alternate nest is a nest that is not used for breeding by eagles during a given breeding season.

Nest abandonment – Nest abandonment occurs when adult eagles desert or stop attending a nest and do not subsequently return and successfully raise young in that nest for the duration of a breeding season. Nest abandonment can be caused by altering habitat near a nest, even if the alteration occurs prior to the breeding season. Whether the eagles migrate during the non-breeding season, or remain in the area throughout the non-breeding season, nest abandonment can occur at any point between the time the eagles return to the nesting site for the breeding season and the time when all progeny from the breeding season have
dispersed.

**Project footprint** – The area of land (and water) that will be permanently altered for a development project, including access roads.

**Similar scope** – In the vicinity of a bald eagle nest, an existing activity is of similar scope to a new activity where the types of impacts to bald eagles are similar in nature, and the impacts of the existing activity are of the same or greater magnitude than the impacts of the potential new activity. Examples: (1) An existing single-story home 200 feet from a nest is similar in scope to an additional single-story home 200 feet from the nest; (2) An existing multi-story, multi-family dwelling 150 feet from a nest has impacts of a greater magnitude than a potential new single-family home 200 feet from the nest; (3) One existing single-family home 200 feet from the nest has impacts of a lesser magnitude than three single-family homes 200 feet from the nest; (4) An existing single-family home 200 feet from a communal roost has impacts of a lesser magnitude than a single-family home 300 feet from the roost but 40 feet from the eagles’ foraging area. The existing activities in examples (1) and (2) are of similar scope, while the existing activities in example (3) and (4) are not.

**Vegetative buffer** – An area surrounding a bald eagle nest that is wholly or largely covered by forest, vegetation, or other natural ecological characteristics, and separates the nest from human activities.
RELATED LITERATURE


Arizona Game and Fish Department. 1999. Bald Eagle Conservation Assessment and Strategy (draft).


Hansen, J.A. 1977. Population dynamics and night roost requirements of bald eagles wintering in the Nooksack River Valley, WA. Huxley College of Environmental Studies, Western Washington State College, Bellingham, WA. (Problem Series)


Maine (State of) Inland Fisheries and Wildlife Rules. Chapter 8.05 Essential Habitat for Species Listed as Threatened or Endangered.


Appendix E

Floodplain and Wetlands
Appendix F

Map of In-Place Water and Sewer Mains
Appendix G

Typical Sections and Concept Plan

for Build Option 1
TRAVEL LANES

2'

Not To Scale

CAHABA RIVER

BUILD 1

10' MULTI-USE PATH (BIKE/PED ACCOMMODATIONS)

* A handrail would be required in areas where a 2' offset behind the multi-use path could not be installed due to topography restrictions.

10' Multi-Use Path along Overton Road

Build Option 1
CAHABA RIVER

BUILD 1

6’ SIDEWALK
2’ CURB & GUTTER
TRAVEL LANES
BICYCLES WILL USE TRAVEL LANES

- Bicycles will use travel lanes on Old Overton Road.
- A handrail will be required in areas where a 2’ offset behind the sidewalk could not be installed due to topography restrictions.

Build Option 1
6’ Sidewalk along Old Overton Road
Appendix H

Cahaba Park Plan
NOTE:
REFER TO SHEET L.0 FOR COMPLETE SURVEY INFORMATION. SOME SURVEY INFORMATION HAS BEEN OMITTED FROM THIS SHEET FOR CLARITY.
Appendix I

Build Option 2 Concept Plan
Appendix J

Canoe Launch Stakeholder Meeting Minutes
Meeting Notes

Project No.: 12-0207
Project Name: Cahaba/Liberty Trail/APPLE Program
Project Location: Overton Road and Old Overton Road
Meeting Date: December 12, 2014
Meeting Location: City of Vestavia Hills
Meeting Purpose: Provide overview of evaluated alternatives and obtain stakeholder input concerning potential improvements at the canoe launch.

Attendees:

<table>
<thead>
<tr>
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DISCUSSION

1. General Discussion
   - RPCGB provided background of the APPLE program. The purpose of the APPLE program is to provide up front planning to assess feasibility of projects before committing to the design process.
   - Sain introduced the project background information including options that were evaluated. Previous stakeholder input eliminated transportation oriented options that included roadside bicycle and pedestrian accommodations. Options that were further investigated include:
     - A nature trail loop near Mountain Brook Park (Cahaba River Walk)
     - Improvements at the canoe launch
     - Observation areas along the Cahaba River

2. Canoe Launch Improvements – The City has elected to concentrate planning efforts on further developing an improvement of the canoe launch and decided to hold this meeting with the intent to...
gather input from stakeholders and users of the launch. This section of the meeting minutes summarizes discussion from the meeting attendees.

- The Cahaba River Society stated that the section of the Cahaba River between the Grants Mill Road launch and the Old Overton Road launch is the most floated section of the river.
- The canoe launch is actually owned by Jefferson County. The Five Mile Creek Partnership is a possible model for how to handle multi-jurisdictional issues.
- The City and the County have been investigating how to proceed with ownership and/or maintenance agreement options.
- The existing facilities were installed by Jefferson County, and they have performed some maintenance work to repair erosion behind the concrete ramp and pad.
- Trash cleanup is difficult because the nature of the trash itself (glass, fish hooks, etc.).
- Currently there is minimal law enforcement patrolling of the area. Graffiti and trash issues are significant. These issues appear to be worse in areas along the river where ownership is unclear and thus no enforcement. Responsiveness of the City in enforcement will be critical to maintaining a clean, safe launch site.
- Last summer the City of Hoover cleared out the launch at Hoover East. After this work was completed, the amount of trash found in the area was excessive. An overall plan to control and maintain the launch should be put in place. Non-profit groups can be utilized for clean-up efforts.
- Currently, Cahaba River Society has a presence in some local schools but is not involved in Mountain Brook High School. They would be willing to go to the school to provide education about stewardship of the river.
- The representative of the University of Alabama Center for Economic Development stated that events or festivals would go a long way to bring legitimate users to the river and crowd out the nefarious users.
- Plugging this site into the Alabama Blueway System is a great opportunity for the City. The Cahaba Blueway Steering Committee is working to prepare best practice guidelines for access points and wayfinding sign guidelines. The Blueway Steering Committee would like to see Vestavia officially designate this launch as a Cahaba Blueway site.
- The biggest limiting factor to the launch is the limited amount of parking that is available. Installing playground equipment or pocket parks in the area of the launch would expand the user base and potentially worsen the parking situation. Increasing parking along the street, striping the current available parking, and expanding the current parking could be beneficial to the launch. Hewitt-Trussville High School has an example of using eco-friendly surface material for parking between trees.
- In the summer, the water levels in this area are too low to enjoyably canoe; however, families frequently use the launch to access the river for swimming. The existing concrete pad is heavily used by swimmers.
- Suggested improvements to the launch:
o Installation of a handrail – a handrail, depending on the user, can be a help or a hindrance. Older users may like the sturdiness offered by the handrail and a handrail can be used as a prop for transporting boats. However, a handrail can interfere with launching/exiting especially when water levels are high and the handrail becomes submerged.

o Extend ramp parallel to the river. This allows for a gentler slope to the River which provides easier access during all water levels.

o Flatten sloped ramp from parking lot by taking advantage of the flat area to the left of the ramp. Installing this flatter ramp would eliminate the need for a handrail.

o Provide an additional access point that originates at the picnic area. There is evidence that current users are making a small path at this location to access the river. This access point is at a flatter slope and offers a more preferred launch site since it is a natural beach area.

o Discussion about the in place concrete pad varied from the recommendation to remove to suggestion to maintain it since it is used by swimmers.

o The bridge remnants located in the middle of the river at the launch are hazards and it would be good to remove these if feasible.

o Vegetation management is important to maintaining the slopes of the river. Per the Cahaba River Society, removal of invasive species is okay but erosion is encouraged if the sole purpose of removing vegetation is to improve the view. Cutting healthy, stable vegetation should be avoided.

o Install a hitching post to allow users a place to store boats while they retrieve their car. The best location for a hitching post would be between the river and the road. Out of sight from the roadway is ideal. A suggested construction type is a concrete pillar with u-bolts.

o Installing a bathroom would be beneficial, perhaps a long term improvement option.

3. Other Items Discussed
   • Installing a trail along the river that connects the new Mountain Brook Park to the canoe launch is desirable. The Advance Planning Report discusses this option. There are tight “pinch points” located between the river and the roadway that make trail construction difficult.
   • Local Eagle Scouts would be willing to install trails if the City would do the initial grading. Eagle Scouts have performed trail installation service projects in other local parks.
   • The National Park Service Land and Water Conservation Fund could be utilized to fund installation of a trail.

NEXT STEPS
   • Sain to investigate other existing canoe launches.
   • Sain to prepare a punch list of recommended canoe launch improvements and illustrations.
   • Sain to prepare cost estimate of improvements.
   • Sain to finalize the Advance Planning Report with incorporation of these additional items.
Brown, Jennifer

From: Mike Kaczorowski <MKaczorowski@RPCGB.ORG>
Sent: Tuesday, December 23, 2014 1:47 PM
To: David Butler; Brown, Jennifer; Conrad Garrison (CGarrison@vhal.org)
Cc: Gordon Black; Randy Haddock
Subject: RE: Canoe/Kayak "hitching post"

David,

It was good to meet you too. I am forwarding your comments to both the consultant and the City.

Jennifer and Conrad, please see Mr. Butler's comments below and consider them in your recommendations....

Thanks and Happy Holidays to you all,

Kaz

From: David Butler [mailto:david42240@yahoo.com]
Sent: Tuesday, December 16, 2014 12:02 PM
To: Mike Kaczorowski
Cc: Gordon Black; Randy Haddock
Subject: Canoe/Kayak "hitching post"

Mike,
Enjoyed meeting/speaking with you last Friday. Just wanted to follow up about the hitching post. Definitely think it would prevent a worthwhile number of people from trampling the surrounding vegetation. I see it all the time at my shop. I thought I had a picture of one handy, but can't find at the moment. The design is fairly simple though, either constructed of concrete or steel. The main priority would be that it was low maintenance and able to withstand the elements, both human and otherwise. You can provide 4-8 extension chains from a single post that allows an individual to use their lock/chain to connect to the post, or you could have holes through the post that a chain could run through. If you don't use chains or cable and depend on people bringing enough of their own, there may be some instances when it is crowded that people can't get their boat close enough to lock, so I would think the extensions would help. And if you use a post, you can also use it for directional information, much like an old wooden sign, with arrows displaying distance to the previous or next takeout location, which would be more aesthetically pleasing than a big ugly post.

Another thing to consider; Whether such a post should be placed closer to the water or the road. Initially, I thought away from the road, but in hindsight, it may make more sense to have it closer to the road, as people that use it wouldn't be leaving the boats long and it would keep it away from the river when it floods. If it were down by the river, a thief would be hidden from passing cars and the structure itself would be much more vulnerable to debris when the water rises. I really don't think one or the other eliminates the possibility that a boat will be stolen, but a chain alone will deter 90% of the culprits. The remaining 10% probably work harder to figure out how to steal than either of us does at our job, so stopping them completely is unlikely.

When I am able to dig up a picture, I will send to you. I also included Gordon Black from CRS, as he has seen many more rivers than I have, and Randy Haddock. Both might have some ideas that I overlooked.

If you have any questions, don't hesitate to ask.

David Butler
(205) 874-5623
www.facebook.com/canoethecahaba
Appendix K

Photos of Other Canoe Launches
Canoe Launches

US Hwy 78 to Grants Mill Road

Gravel Path to Cahaba River

View of US Hwy 78 Bridge and Cahaba River

Access to Cahaba River

Path Along River

Private Property Sign

View beneath US Hwy 78 Bridge
Canoe Launches

Grants Mill Road Launch

Picnic Tables and Posted Rules

Entrance to Launch

Cahaba River Trail Plaque

Potential Hitching Posts

Concrete Walkway to Launch

View Showing Ramp to Concrete Pad
Canoe Launches

Grants Mill Road Launch (Continued)

Washout Beneath Concrete Walkway

Gravel Trail
Canoe Launches

Hoover Sports Park East

Canoe Launch Area

Access Point

Path Leading from Launch Area

Path to Foot Bridge

Entrance to Foot Bridge

Foot Bridge
Canoe Launches

Hoover Sports Park East (Continued)

View of Launch from Bridge

End of Foot Bridge
Canoe Launches

Riverford Drive

Concrete Walkway

End of Concrete Walkway

Overgrown Area

Entrance to River
Canoe Launches

Bains Bridge

Park Closed

Picnic Area Beneath Bridge

Graffiti on Bridge Pier

Concrete Walk to River

Path to River (Berm on Left)

Canoe Put In/Take Out
Appendix L

Canoe Launch Improvement Sketch
Canoe Launch Improvements

Cahaba-Liberty Trail Feasibility Study
Vestavia Hills, Alabama

1 in = 50 ft

Improvement 1: Improve user-created path
Improvement 2: Repair washout
Improvement 3: Landscape center cutout
Improvement 4: New permeable parking area
Improvement 5: Grassy area
Improvement 5: Nature trail

Legend
- New Sign
- Garbage Can
- Picnic Table
- Hitching Post
- Improvement 1
- Improvement 2
- Improvement 3
- Improvement 4
- Improvement 5
Appendix M

Cost Estimates and Boardwalk Options
## Cahaba/Liberty Trail Feasibility Study

### Evaluation Matrix

<table>
<thead>
<tr>
<th>Evaluation Measure</th>
<th>No Build</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Endangered &amp; Threatened Species</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>100-year Floodplain</td>
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<td>yes</td>
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<td>yes</td>
<td>yes</td>
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<td>NRHP listed properties</td>
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<td>0</td>
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<td>Previously Recorded Archaeological Sites</td>
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<td>Known Cemeteries/Churches</td>
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<td>Known HazMat Sites</td>
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<td>Potential Residential/Commercial Relocations</td>
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<td>0</td>
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<tr>
<td>Provides connectivity for pedestrians and cyclists</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
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<tr>
<td>Provides recreational opportunity</td>
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<td>yes</td>
<td>yes</td>
<td>yes</td>
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<td>$0.00</td>
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<td>$42,000.00</td>
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<tr>
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<td>$0.00</td>
<td>$0.00</td>
<td>$0.00</td>
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<td>Project Design Cost</td>
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<td>Total Cost</td>
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<td>$42,000.00</td>
<td>$40,000.00</td>
<td>$53,000.00</td>
</tr>
</tbody>
</table>

### Notes

**Build Option 1** - Install a multi-use path along Overton Road and a sidewalk along Old Overton Road.

**Build Option 2** - Construct a nature trail loop near the proposed Mountain Brook Park.

**Build Option 3** - Add improvements to the existing Canoe Launch. Cost includes improvement number 1 option 1, improvement 2, and improvement 3.

**Build Option 4** - Add observation areas along the Cahaba River.

The degree of impact to the banks of the Cahaba River is indicated by a numerical scale with 0 being no impact and 4 having the greatest impact.

It is assumeded that the present ROW is sufficient for all build options.

Utility Relocation assumed to be responsibility of utility owner. However, typically water and sewer relocations would be funded by the project sponsor.

The need for additional ROW and utility relocation should be re-evaluated during design.

For total construction costs, structural plastic timber material was assumed for areas where not enough existing ground is available for the installation of pedestrian accommodations. Also, structural plastic timber material is assumed in total construction costs for the observation decks recommended with build option 4.

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 1 - Multi-Use Path Along Overton Road and Old Overton Road (Retaining Wall)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$8,000.00</td>
<td>$8,000.00</td>
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<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>3100</td>
<td>$15.00</td>
<td>$46,500.00</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>2000</td>
<td>$15.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>Structure Excavation</td>
<td>CY</td>
<td>1900</td>
<td>$16.00</td>
<td>$30,400.00</td>
</tr>
<tr>
<td>Foundation Backfill</td>
<td>CY</td>
<td>560</td>
<td>$35.00</td>
<td>$19,600.00</td>
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<tr>
<td>Crushed Aggregate Base (4”)</td>
<td>SY</td>
<td>2600</td>
<td>$20.00</td>
<td>$52,000.00</td>
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<tr>
<td>Asphalt (3”)</td>
<td>TON</td>
<td>435</td>
<td>$80.00</td>
<td>$34,800.00</td>
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<tr>
<td>Concrete Sidewalk</td>
<td>SY</td>
<td>4600</td>
<td>$50.00</td>
<td>$230,000.00</td>
</tr>
<tr>
<td>Retaining Wall</td>
<td>SF</td>
<td>6200</td>
<td>$100.00</td>
<td>$620,000.00</td>
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<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>4600</td>
<td>$15.00</td>
<td>$69,000.00</td>
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<tr>
<td>Storm Inlets</td>
<td>EACH</td>
<td>12</td>
<td>$2,500.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>Roadway Pipe</td>
<td>LF</td>
<td>2000</td>
<td>$35.00</td>
<td>$70,000.00</td>
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<tr>
<td>Erosion Control</td>
<td>LS</td>
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<td>$35,000.00</td>
<td>$35,000.00</td>
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<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$60,000.00</td>
<td>$60,000.00</td>
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<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
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<td>$129,524.10</td>
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<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
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<td>$19,042.71</td>
</tr>
</tbody>
</table>

Total: $1,484,000.00  
Preliminary Engineering (15%): $371,000.00  
Grand Total: $1,855,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 1 - Multi-Use Path Along Overton Road and Old Overton Road (Structural Plastic Timber)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$8,000.00</td>
<td>$8,000.00</td>
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<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>1050</td>
<td>$15.00</td>
<td>$15,750.00</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>550</td>
<td>$15.00</td>
<td>$8,250.00</td>
</tr>
<tr>
<td>Structure Excavation</td>
<td>CY</td>
<td>1900</td>
<td>$16.00</td>
<td>$30,400.00</td>
</tr>
<tr>
<td>Foundation Backfill</td>
<td>CY</td>
<td>560</td>
<td>$35.00</td>
<td>$19,600.00</td>
</tr>
<tr>
<td>Crushed Aggregate Base (4&quot;)</td>
<td>SY</td>
<td>2600</td>
<td>$20.00</td>
<td>$52,000.00</td>
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<tr>
<td>Asphalt (3&quot;)</td>
<td>TON</td>
<td>435</td>
<td>$80.00</td>
<td>$34,800.00</td>
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<tr>
<td>Concrete Sidewalk</td>
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<td>$50.00</td>
<td>$178,000.00</td>
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<tr>
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<td>$542,500.00</td>
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<td>LF</td>
<td>4600</td>
<td>$15.00</td>
<td>$69,000.00</td>
</tr>
<tr>
<td>Storm Inlets</td>
<td>EACH</td>
<td>12</td>
<td>$2,500.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>Roadway Pipe</td>
<td>LF</td>
<td>2000</td>
<td>$35.00</td>
<td>$70,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$35,000.00</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$60,000.00</td>
<td>$60,000.00</td>
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<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
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<td>$111,870.10</td>
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<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
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<td>$16,447.21</td>
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</tbody>
</table>

**Total:** $1,282,000.00  
**Preliminary Engineering (15%):** $321,000.00  
**Grand Total:** $1,603,000.00

---

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 1 - Multi-Use Path Along Overton Road and Old Overton Road (Concrete Decking Boardwalk)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$8,000.00</td>
<td>$8,000.00</td>
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<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
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<td>$15.00</td>
<td>$15,750.00</td>
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<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>550</td>
<td>$15.00</td>
<td>$8,250.00</td>
</tr>
<tr>
<td>Structure Excavation</td>
<td>CY</td>
<td>1900</td>
<td>$16.00</td>
<td>$30,400.00</td>
</tr>
<tr>
<td>Foundation Backfill</td>
<td>CY</td>
<td>560</td>
<td>$35.00</td>
<td>$19,600.00</td>
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<tr>
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<td>$20.00</td>
<td>$52,000.00</td>
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<td>Asphalt (3&quot;)</td>
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<td>$80.00</td>
<td>$34,800.00</td>
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<tr>
<td>Concrete Sidewalk</td>
<td>SY</td>
<td>3560</td>
<td>$50.00</td>
<td>$178,000.00</td>
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<tr>
<td>Concrete Boardwalk</td>
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<td>$69,000.00</td>
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<tr>
<td>Storm Inlets</td>
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<td>$30,000.00</td>
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<td>$35.00</td>
<td>$70,000.00</td>
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<tr>
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<tr>
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<td>$60,000.00</td>
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<tr>
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**Total: $1,575,000.00**

Preliminary Engineering (15%): $394,000.00  
Grand Total: $1,969,000.00  

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
OPINION OF PROBABLE COST
Build Option 1 - Multi-Use Path Along Overton Road and Old Overton Road (Traditional Timber)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing &amp; Grubbing ($4000/Acre)</td>
<td>LS</td>
<td>1</td>
<td>$8,000.00</td>
<td>$8,000.00</td>
</tr>
<tr>
<td>Unclassified Excavation</td>
<td>CY</td>
<td>1050</td>
<td>$15.00</td>
<td>$15,750.00</td>
</tr>
<tr>
<td>Borrow Excavation</td>
<td>CY</td>
<td>550</td>
<td>$15.00</td>
<td>$8,250.00</td>
</tr>
<tr>
<td>Structure Excavation</td>
<td>CY</td>
<td>1900</td>
<td>$16.00</td>
<td>$30,400.00</td>
</tr>
<tr>
<td>Foundation Backfill</td>
<td>CY</td>
<td>560</td>
<td>$35.00</td>
<td>$19,600.00</td>
</tr>
<tr>
<td>Crushed Aggregate Base (4&quot;)</td>
<td>SY</td>
<td>2600</td>
<td>$20.00</td>
<td>$52,000.00</td>
</tr>
<tr>
<td>Asphalt (3&quot;)</td>
<td>TON</td>
<td>435</td>
<td>$80.00</td>
<td>$34,800.00</td>
</tr>
<tr>
<td>Concrete Sidewalk</td>
<td>SY</td>
<td>3560</td>
<td>$50.00</td>
<td>$178,000.00</td>
</tr>
<tr>
<td>Traditional Timber Boardwalk</td>
<td>SF</td>
<td>12400</td>
<td>$40.00</td>
<td>$496,000.00</td>
</tr>
<tr>
<td>Curb &amp; Gutter</td>
<td>LF</td>
<td>4600</td>
<td>$15.00</td>
<td>$69,000.00</td>
</tr>
<tr>
<td>Storm Inlets</td>
<td>EACH</td>
<td>12</td>
<td>$2,500.00</td>
<td>$30,000.00</td>
</tr>
<tr>
<td>Roadway Pipe</td>
<td>LF</td>
<td>2000</td>
<td>$35.00</td>
<td>$70,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$35,000.00</td>
<td>$35,000.00</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$60,000.00</td>
<td>$60,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
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<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
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<td>$15,784.07</td>
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</tbody>
</table>

Total: $1,230,000.00
Preliminary Engineering (15%): $308,000.00
Grand Total: $1,538,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
OPINION OF PROBABLE COST

Build Option 2 - Nature Trail Loop near the proposed Mountain Brook Park

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Surfacing</td>
<td>TONS</td>
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<td>$1,375.00</td>
</tr>
<tr>
<td>Picnic Tables</td>
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<td>$4,000.00</td>
</tr>
<tr>
<td>Benches</td>
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<td>$1,500.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Trash Receptacles</td>
<td>EACH</td>
<td>2</td>
<td>$300.00</td>
<td>$600.00</td>
</tr>
<tr>
<td>Landscaping*</td>
<td>LS</td>
<td>1</td>
<td>$15,000.00</td>
<td>$15,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$5,000.00</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$2,810.58</td>
<td>$2,810.58</td>
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<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
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</tr>
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</table>

Total: $33,000.00  
Preliminary Engineering (15%): $9,000.00  
Grand Total: $42,000.00

*Landscaping to include plantings, identification signs, birdhouses, etc.

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 3 - Ramp Improvements (Option 1)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork including Sand</td>
<td>LS</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Cement Mortar Flowable Backfill</td>
<td>CY</td>
<td>10</td>
<td>$500.00</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Structural Plastic Timber</td>
<td>LF</td>
<td>20</td>
<td>$350.00</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>Kayak/Canoe Ramp</td>
<td>LS</td>
<td>1</td>
<td>$500.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,358.00</td>
<td>$1,358.00</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$199.65</td>
<td>$199.65</td>
</tr>
</tbody>
</table>

Total: $19,000.00

Preliminary Engineering (15%): $5,000.00

Grand Total: $24,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
### OPINION OF PROBABLE COST

**Build Option 3 - Ramp Improvements (Option 2)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork including Sand</td>
<td>LS</td>
<td>1</td>
<td>$10,000.00</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Cement Mortar Flowable Backfill</td>
<td>CY</td>
<td>10</td>
<td>$500.00</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Kayak/Canoe Ramp</td>
<td>LS</td>
<td>1</td>
<td>$500.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$679.00</td>
<td>$679.00</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$99.83</td>
<td>$99.83</td>
</tr>
</tbody>
</table>

Total: $18,000.00  
Preliminary Engineering (15%): $5,000.00  
Grand Total: $23,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 3 - Ramp Improvements (Option 3)**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earthwork including Sand</td>
<td>LS</td>
<td>1</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>Cement Mortar Flowable Backfill</td>
<td>CY</td>
<td>10</td>
<td>$500.00</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Natural Stone Retaining Wall</td>
<td>LS</td>
<td>1</td>
<td>$6,000.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Natural Stone Steps</td>
<td>LS</td>
<td>1</td>
<td>$12,000.00</td>
<td>$12,000.00</td>
</tr>
<tr>
<td>Kayak/Canoe Ramp</td>
<td>LS</td>
<td>1</td>
<td>$500.00</td>
<td>$500.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$2,425.00</td>
<td>$2,425.00</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$356.53</td>
<td>$356.53</td>
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</tbody>
</table>

Total: $30,000.00  
Preliminary Engineering (15%): $8,000.00  
Grand Total: $38,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signage</td>
<td>LS</td>
<td>1</td>
<td>$5,000.00</td>
<td>$5,000.00</td>
</tr>
<tr>
<td>Hitching Posts</td>
<td>EACH</td>
<td>3</td>
<td>$250.00</td>
<td>$750.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$557.75</td>
<td>$557.75</td>
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<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$82.00</td>
<td>$82.00</td>
</tr>
</tbody>
</table>

Total: $7,000.00

*Landscaping to include plantings, identification signs, cleaning, etc.

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

### Build Option 3 - Improvement 3

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Picnic Tables</td>
<td>EACH</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EACH</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Landscaping</td>
<td>LS</td>
<td>1</td>
<td>$2,000.00</td>
<td>$2,000.00</td>
</tr>
<tr>
<td>Graffiti Cleaning</td>
<td>LS</td>
<td>1</td>
<td>$3,000.00</td>
<td>$3,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$727.50</td>
<td>$727.50</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$106.96</td>
<td>$106.96</td>
</tr>
</tbody>
</table>

Total: $9,000.00

---

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
### OPINION OF PROBABLE COST

#### Build Option 3 - Improvement 4

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>EZ Roll Grass Pavers</td>
<td>EACH</td>
<td>27</td>
<td>$360.00</td>
<td>$9,720.00</td>
</tr>
<tr>
<td>Crushed Aggregate Base (6”)</td>
<td>SY</td>
<td>275</td>
<td>$25.00</td>
<td>$6,875.00</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>30</td>
<td>$20.00</td>
<td>$600.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EACH</td>
<td>1</td>
<td>$300.00</td>
<td>$300.00</td>
</tr>
<tr>
<td>Landscaping</td>
<td>LS</td>
<td>1</td>
<td>$1,000.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Traffic Control</td>
<td>LS</td>
<td>1</td>
<td>$20,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$1,939.52</td>
<td>$1,939.52</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$545.15</td>
<td>$545.15</td>
</tr>
</tbody>
</table>

**Total:** $43,000.00  
**Preliminary Engineering (15%):** $11,000.00  
**Grand Total:** $54,000.00

---

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

### Build Option 3 - Improvement 5

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing and Grubbing ($4000/acre)</td>
<td>LS</td>
<td>1</td>
<td>$4,000.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Aggregate Surfacing</td>
<td>TONS</td>
<td>40</td>
<td>$20.00</td>
<td>$800.00</td>
</tr>
<tr>
<td>Topsoil</td>
<td>CY</td>
<td>50</td>
<td>$20.00</td>
<td>$1,000.00</td>
</tr>
<tr>
<td>Solid Sodding</td>
<td>SY</td>
<td>450</td>
<td>$8.00</td>
<td>$3,600.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$1,500.00</td>
<td>$1,500.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$669.30</td>
<td>$669.30</td>
</tr>
<tr>
<td>Engineering Controls(1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$98.40</td>
<td>$98.40</td>
</tr>
</tbody>
</table>

Total: $12,000.00  
Preliminary Engineering (15%): $3,000.00  
Grand Total: $15,000.00

---

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 4 - Observation Decks Constructed with Structural Plastic Timber**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Surfacing</td>
<td>TONS</td>
<td>4</td>
<td>$25.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Picnic Tables</td>
<td>EACH</td>
<td>2</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Benches</td>
<td>EACH</td>
<td>4</td>
<td>$1,500.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EACH</td>
<td>2</td>
<td>$300.00</td>
<td>$600.00</td>
</tr>
<tr>
<td>Structural Plastic Observation Deck</td>
<td>LF</td>
<td>60</td>
<td>$350.00</td>
<td>$21,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$6,000.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$3,647.20</td>
<td>$3,647.20</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$536.21</td>
<td>$536.21</td>
</tr>
</tbody>
</table>

**Total:** $42,000.00  
Preliminary Engineering (15%): $11,000.00  
Grand Total: $53,000.00

**NOTE:** ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

### Build Option 4 - Observation Decks Constructed with Concrete Decking

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Surfacing</td>
<td>TONS</td>
<td>4</td>
<td>$25.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Picnic Tables</td>
<td>EACH</td>
<td>2</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Benches</td>
<td>EACH</td>
<td>4</td>
<td>$1,500.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EACH</td>
<td>2</td>
<td>$300.00</td>
<td>$600.00</td>
</tr>
<tr>
<td>Concrete Observation Deck</td>
<td>SF</td>
<td>600</td>
<td>$65.00</td>
<td>$39,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$6,000.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$5,393.20</td>
<td>$5,393.20</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$792.91</td>
<td>$792.91</td>
</tr>
</tbody>
</table>

Total: $62,000.00  
Preliminary Engineering (15%): $16,000.00  
Grand Total: $78,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
## OPINION OF PROBABLE COST

**Build Option 4 - Observation Decks Constructed with Traditional Timber**

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit Price</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate Surfacing</td>
<td>TONS</td>
<td>4</td>
<td>$25.00</td>
<td>$100.00</td>
</tr>
<tr>
<td>Picnic Tables</td>
<td>EACH</td>
<td>2</td>
<td>$2,000.00</td>
<td>$4,000.00</td>
</tr>
<tr>
<td>Benches</td>
<td>EACH</td>
<td>4</td>
<td>$1,500.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Trash Receptacle</td>
<td>EACH</td>
<td>2</td>
<td>$300.00</td>
<td>$600.00</td>
</tr>
<tr>
<td>Traditional Timber Observation Deck</td>
<td>SF</td>
<td>600</td>
<td>$40.00</td>
<td>$24,000.00</td>
</tr>
<tr>
<td>Erosion Control</td>
<td>LS</td>
<td>1</td>
<td>$6,000.00</td>
<td>$6,000.00</td>
</tr>
<tr>
<td>Mobilization (9.7% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$3,938.20</td>
<td>$3,938.20</td>
</tr>
<tr>
<td>Engineering Controls (1.3% of Overall Cost)</td>
<td>LS</td>
<td>1</td>
<td>$579.00</td>
<td>$579.00</td>
</tr>
</tbody>
</table>

Total: $46,000.00

Preliminary Engineering (15%): $12,000.00

Grand Total: $58,000.00

NOTE: ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST PROVIDED IS MADE ON THE BASIS OF ENGINEER'S EXPERIENCES AND QUALIFICATION AND REPRESENTS ENGINEER'S BEST JUDGMENT WITH THE INDUSTRY. ENGINEER DOES NOT GUARANTEE THAT PROPOSALS, BIDS, OR ACTUAL COST WILL NOT VARY FROM ENGINEER'S OPINION OF PROBABLE COST.
Boardwalk Materials Options

An alternative to a retaining wall system is a boardwalk. A boardwalk provides opportunity to lessen impacts to the surrounding area which is a concern for areas with environmental features. There are many different materials that can be used when installing a boardwalk system. There are both positive and negative attributes to each. Three different available options are traditional timber, concrete decking, and structural plastic lumber. Photos showing examples of these materials are included. A table summarizing the different decking types can be found at the end of this section.

**Traditional timber** is a natural product and popular building material. Advantages for using traditional timber include low construction costs and the fact that this material is readily available. Contractors are typically more familiar with this material. On the other hand, more maintenance is required due to growth of algae and moss which can make the surface slippery. Rot and splintering are also maintenance concerns. The chemicals used to treat pressure-treated timber can also find their way into surrounding soils. The cost for installing traditional timber is approximately $40 per square foot and has a lifespan of roughly 12 years. Figure 1 shows a picture of a traditional timber boardwalk used in Homewood, Alabama along Broadway Street. Figure 2 shows a timber pedestrian bridge and observation deck that was installed at the Alabama Nature Center by Nature Bridges.

**Concrete decking** consists of a pre-cast concrete boardwalk system. This material will not rot or decay so little to no maintenance costs are associated with concrete decking boardwalks. Different colors and textures can be selected. No chemical sealants are used with this material. Concrete decking experiences long-term durability with a lifespan of 50-75 years. However, front end costs are more expensive than traditional timber installation costs at $65 per square foot. Due to the nature of the product, changes to width or alignment during construction are challenging. Figure 3 is an example of a concrete boardwalk used in Beckett Park in Beckett Ridge, Ohio. Figure 4 shows an example of a concrete decking system used for the White Oak Greenway in Cary, North Carolina.
Figure 3  Concrete Boardwalk and Observation Deck

*Photo courtesy of PermaTrak

Figure 4  Concrete Decking Boardwalk White Oak Greenway, Cary, NC

*Photo Courtesy of PermaTrak
**Structural plastic lumber** is a material made from recycled HDPE plastic. Unlike treated timber, it contains no chemicals that could leach into the surrounding soil. Another advantage is that this material allows for flexibility in the field since it can be cut or modified during installation. The product is similar to traditional timber which makes it more comfortable for contractors that have experience with traditional timber. The product is available in a variety of colors. On average, upfront costs are higher than those associated with traditional timber installation. Although maintenance costs are lower than that of traditional timber, they are more when compared to maintenance costs for concrete decking. The lifespan is estimated at 50 years and the cost is estimated at $350 per linear foot. Figure 5 shows an example of a boardwalk constructed with structural plastic lumber.

![Figure 5 Structural plastic lumber boardwalk in Tallahassee, Florida](image)

*Photo Courtesy of Nature Bridges*

In addition to material type, there are also varying types of construction that can be employed to install boardwalk structures. One specific type of construction is beneficial when installing boardwalks in environmentally sensitive areas. This type of construction is referred to as top down construction and can be performed using all three materials described above. With top down construction the boardwalk is built incrementally with equipment moving along the top of the boardwalk. The equipment drives piles and then moves boardwalk materials into place. Top down construction impacts the surrounding area less than other types of construction.
<table>
<thead>
<tr>
<th>Material Type</th>
<th>Description</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Cost</th>
<th>Lifespan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional Timber</td>
<td>Traditional timber is a natural product and popular building material.</td>
<td>Timber is low cost and is readily available. Contractors are more familiar with this material.</td>
<td>More maintenance is required due to the growth of algae and moss which can make the surface slippery. Rot and splintering are also maintenance concerns. The chemicals used to treat pressure-treated timber can also maneuver into soils.</td>
<td>$40/SF</td>
<td>12 years</td>
</tr>
<tr>
<td>Concrete Decking</td>
<td>Pre-cast concrete boardwalk system.</td>
<td>Will not rot or decay so little to no maintenance costs are associated with concrete decking boardwalks. Different colors and textures can be selected. Uses no chemical sealants and experiences long-term durability.</td>
<td>Front end costs are more expensive than the traditional timber installation costs. Due to the nature of the product, changes to width or alignment during construction are challenging.</td>
<td>$65/SF</td>
<td>50-75 years</td>
</tr>
<tr>
<td>Structural Plastic Lumber</td>
<td>A material made from recycled HDPE plastic.</td>
<td>There are no chemicals that will leach into the soil. This material allows for flexibility in the field since it can be cut or modified during installation. It’s more similar to traditional timber which makes it more comfortable for contractors that have experience with traditional timber. The product is available in a variety of colors.</td>
<td>Upfront costs are more than those associated with traditional timber installation. Although maintenance costs are lower than those associated with traditional timber, they are more when compared to maintenance costs for concrete decking.</td>
<td>$350/LF</td>
<td>50 years</td>
</tr>
</tbody>
</table>
Appendix N
Build Option 5 Typical Sections
And
Build Option 6 Typical Sections
TRAVEL LANES

Not To Scale

CAHABA RIVER

BUILD 5

Bike Lanes and Sidewalk along Overton Road

2'
3.5'
2'
5'
2'
6'
3.5'

BIKE LANE
SIDEWALK

DITCH
SIDEWALK
TRAVEL LANE
SIDEWALK

CAHABA RIVER

* A handrail would be required in areas where a 2' offset behind the sidewalk could not be installed due to topography restrictions.
RETAINING WALL

CAHABA RIVER

BUILD 5

TRAVEL LANES

BIKE LANE

DITCH

SIDEWALK

TRAVEL LANE

BIKE LANE

SIDEWALK

DITCH

HANDRAIL

RETAINING WALL

CAMABA RIVER

Bike Lane and Sidewalk along Old Overton Road

Build Option 5

Not To Scale
A handrail would be required in areas where a 2' offset behind the multi-use path could not be installed due to topography restrictions.
Not To Scale

Build Option 6

10' Multi-Use Path along Old Overton Road

2' 10' MULTI-USE PATH
(RECREATION ACCOMMODATIONS)

RETAINING WALL

HANDRAIL

TRAVEL LANE

CAHABA RIVER

(BIKE/PED ACCOMMODATIONS)
Appendix O

Stakeholder Involvement
### Stakeholder Feedback from In-Field Meeting Held October 24, 2013

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Build Option 1</th>
<th>Build Option 2</th>
<th>Build Option 3</th>
<th>Additional Options to Consider</th>
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<td>Nimrod Long</td>
<td>Nimrod Long Associates, Designer for Mountain Brook Park</td>
<td>Too much impact</td>
<td>Too wide of a trail</td>
<td>6-7' wide sidewalk along edge of road on the Cahaba River Side. Build loop trails 6' wide using limestone fines in more gentle areas to get closer to Cahaba.</td>
<td>Improve drainage so erosion from storm pipes is reduced</td>
<td>Another advantage of the traditional sidewalk and nature trail concept is that these types of systems are not comfortable for high speed road bikes. I see conflicts in heavily used situations like this between road bikes and pedestrians.</td>
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<td>Duane Pritchett</td>
<td>Environmental Design Studio</td>
<td>Consider an asymmetrical cross section with sidewalk only on one side (Cahaba River Side)</td>
<td>A section should be included in the assessment to address the cost of replanting or stabilizing the banks of the river. It would also be useful if the matrix addressed the impacts of each option on user issues and more qualitative measurements such as safety and usability.</td>
<td>...simple paths through the trees. These “nature trails” may need to be limited to latter areas adjacent to the parks. At the pinch points, the parks could be connected with a more traditional sidewalk adjacent to the road.</td>
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<td>Matt Leavell</td>
<td>Alabama Innovation Engine (The University of Alabama)</td>
<td>A more natural option would be a good inclusion for the assessment. In addition, it seems that there should be a series of options for those pinch points along the trail that include elevated boardwalks, sidewalks and dirt paths.</td>
<td>Along Overton Road, I think a multi-use path, with natural paths closer to the Cahaba in some places, would be fine.</td>
<td>Something similar to Option 3 is preferred. I think some “Share the Road” signage and pavement markings would be helpful and improve safety, but I’m not sure the traffic on that road warrants a bike lane or even a multi-use path. A sidewalk, even if it’s on the opposite side of the road, would be adequate.</td>
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<td>Freshwater Land Trust</td>
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<td>Beth Stewart &amp; Randall Haddock</td>
<td>Cahaba River Society</td>
<td>A combined multi-use trail is only needed on one side of the roadway.</td>
<td>In favor of the option suggested by Nimrod Long during the meeting which would be on a smaller scale and in a more natural manner. A semi-pervious walking trail with a gravel surface that, to the extent possible, utilizes existing flood terraces, returning to paved and boardwalk sections adjacent to Overton Road and Old Overton Road where no flood terrace exists. Consider shifting the center line of the road away from the river in tight locations, so that the trail could be accommodated in the existing road and shoulder footprint on the river side.</td>
<td>The Cahaba River Society could not support a trail plan that includes anything more than very minor impacts to the existing riparian buffer. Because the Cahaba is undergoing increased bank collapses and widening due to urban impacts, it is unsafe to locate major hard structures closer to the river or further compromise the stability of the riverbank. Significant hard structure alterations could impact the river’s flow and increase damage elsewhere, and the river could undermine and collapse structures, requiring costly repairs.</td>
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**120207 Cahaba/Liberty Feasibility Study**

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Along Overton Road

Build Option 1 – Install bike lanes and sidewalk along both sides of Overton Road. (widen each side 3.5', install 2' curb & gutter, 2' offset, 6 foot sidewalk, new ditch along the left side)

Too much impact.

Build Option 2 – Install a 10' multi-use path along either side of Overton Road.

Too wide of a trail.

Build Option 3 – Install a “best fit” alternative including a multi-use path along Overton Road.

Best fit -

1. 6-7' wide sidewalk along edge of road

2. Build loop trails 6' wide using limestone fines in more gentle areas to get closer to Cahaba.
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Best fit –
1. 6'-7' wide sidewalk along edge of Road on Cahaba River side
2. Build loop trails 6' wide using limestone fines in more gentle areas to get closer to Cahaba
November 7, 2013

Jennifer Brown
Sain Associates
Submitted via email: jbrown@sain.com

Regarding: The Cahaba / Liberty Trail Concept

Ms. Brown,

We are very grateful to have been included in your effort to assess the feasibility of a trail connecting property owned by the Freshwater Land Trust to the Cahaba River Park near the River Run Shopping Center.

Our organization’s perspective is focused primarily on protection and restoration of the Cahaba River. At the same time, we appreciate the importance of making the Cahaba River more visible and accessible to the general public. There are currently few places along the Cahaba River or its tributaries where one can walk and enjoy a view. So, we see the great value of having public walking trails along the river.

Your staff are already aware of the Cahaba River Sediment TMDL and the Critical Habitat designation that applies to the section of the Cahaba River being explored here. The following comments are related to the findings and goals of the TMDL study and the goals of the Critical Habitat designation.

The Cahaba Sediment TMDL uses the Shades Creek TMDL as a reference when considering the ‘source’ of the sediment currently causing stream impairment. The Shades Creek Sediment TMDL notes that the greatest source of sediment for Shades Creek is from stream bed scouring and stream bank erosion; referred to as ‘in-stream processes’. For Shades Creek, over 60% of the total sediment loading is from those processes. It’s likely that a similar and increasing proportion of the Cahaba’s sediment loading is from these stream bed and stream bank erosion processes.

For that reason, integrity of the vegetation on the stream banks is particularly important for the Cahaba River. Walking Trail proposals that would require anything more than very minimal removal or alteration of stream bank vegetation would be inconsistent with the goals of the Cahaba Sediment TMDL as well as habitat conservation. The Cahaba River Society could not support a trail plan that includes anything more than very minor impacts to the existing riparian buffer.

The Cahaba Sediment TMDL calls for MS4 permittees, like the City of Vestavia Hills, to work toward reducing sediment loading to the Cahaba...
by 48%. While achieving reductions in sediment loading from Vestavia’s MS4 system would not likely be affected by this project, protecting the integrity of riparian areas is very important to the goals of the TMDL. Maintaining the integrity of riparian buffers is critical to avoid increased sediment loading. Moreover, increased sediment loading from a project like the alternatives with greater construction requirements would have the pragmatic result of necessitating even greater sediment reductions in other parts of Vestavia’s MS4 program.

At this time, it is unlikely that an endangered species survey would locate any T&E species in the Cahaba River adjacent to the proposed project. However, due to the Critical Habitat designation that does apply to this segment of the Cahaba River, the potential to directly harm individuals of T&E species is not the basis for decision-making. Rather, Critical Habitat designation requires the following qualities of the stream be protected with projects with a significant Federal nexus (Federal funding qualifies as a significant “nexus”):

- habitats that are representative of the historical geographical and ecological distributions of the species,
- sites for breeding and rearing offspring, germination, or seed dispersal,
- food, water, air, light, minerals, or other nutritional or physiological requirements,
- cover or shelter, and
- space for individual and population growth and for normal behavior.

This is a higher standard of protection than avoiding a direct “takings”. However, it does not apply to projects where no federal funding is used. Whether or not federal funding is used, the USF&W Service staff are willing and interested in consulting with the project developers if they are interested in minimizing the impacts to Critical Habitat.

We discussed during the field trip that removing riparian forest also degrades streamside habitat and aquatic habitat as well, because stream temperatures increase when shade is reduced. For human users also, the forest is important for a shady, comfortable, natural and beautiful experience. In addition, we expressed concern that, because the Cahaba is undergoing increased bank collapses and widening due to urban impacts, it is unwise to locate major hard structures closer to the river or to further compromise the stability of the riverbank. Significant hardscape alterations could impact the river’s flow and increase damage elsewhere, and the river could undermine and collapse structures, requiring costly repairs.

Finally, we expressed great concern about solutions that would require channelizing or piping stormwater and any concentrated stormwater discharges near the riverbank. We agree with Nimrod Long’s suggestion to consider using oversized pipes beneath new sidewalk or boardwalk areas as detention. We also suggest finding locations to promote stormwater infiltration during and after construction.

Early in the conversation on October 24th, Nimrod Long suggested this trail be conceived on a smaller scale and in a more natural manner than is described for the alternatives found in the October 14, 2013 Technical Memo. Mr. Long described a semi-pervious walking trail with a gravel surface that, to the extent possible, utilizes existing flood terraces, returning to paved and boardwalk sections adjacent to Overton Road and Old Overton Road where no flood terrace exits. The groups also discussed that a combined multiuse trail is only needed on one side of the road. We recognize that this narrower trail would serve recreational rather than transportation purposes for bikes and pedestrians. The cost of a less developed trail would certainly be significantly less.
We agree that a lower impact alternative similar to that suggested by Mr. Long should be evaluated as an alternative. From river conservation and user enjoyment perspectives, an alternative that requires a very minimal removal of native riparian vegetation is the most desirable.

We also requested that the study consider, in tight locations, the alternative of boardwalks built of long-lasting recycled materials, that can be supported by pilings without requiring fill and hard structures that might damage trees and tree roots and cause long-term loss of trees and bank destabilization. We requested considering shifting the center line of the road away from the river in tight locations, so that the trail could be accommodated in the existing road and shoulder footprint on the river side.

Thank you for your thoughtful consideration of these comments. We look forward to future conversation about the Cahaba / Liberty Trail, and to the day when there will be a beautiful and low impact addition to the region’s trail network along the Cahaba here.

Sincerely,

Beth K. Stewart
Executive Director

Randall C. Haddock, PhD
Field Director
Thank you so much for allowing me to tag along this morning. I have noted a few of my thoughts:

You may want to consider an asymmetrical cross-section with sidewalk on only one side. In my opinion, a vast majority of people would favor the side of the road adjacent to the Cahaba River.

Nimrod had a good suggestion regarding simple paths through the trees. These "nature trails" may need to be limited to flatter areas adjacent to the parks. At the pinch-points, the parks could be connected with a more traditional sidewalk adjacent to the road.

Another advantage of the traditional sidewalk and nature trail concept is that these types of systems are not comfortable for high-speed road bikes. I see conflicts in heavily used situations like this between road bikes and pedestrians.

Duane Pritchett, RLA
Environmental Design Studio, Inc.
duane@edsincweb.com
www.edsincweb.com
Direct: 205-585-8414

On Oct 24, 2013, at 1:28 PM, "Brown, Jennifer" <jbrown@sain.com> wrote:

All,

Thank you again for your attendance and participation in today’s meeting. Attached is the sign-in sheet. Your input is greatly appreciated. If you have additional comments please e-mail them to me so that we can include them in the study document. My contact information is listed below.

Thanks,
Jennifer

Jennifer G. Brown, PE
Project Engineer
Two Perimeter Park South
Suite 500 East
Birmingham, Alabama  35243
Direct  (205) 263-2159
Main    (205) 940-6420

Email:   jbrown@sain.com
Website: www.sain.com

<CahabaLibertyTrail_In-Field Stakeholder SignIn Sheet.pdf>
Hi Jennifer,

From the perspective of the Land Trust, we will be supportive of any feasible connection between our property and the new Mountain Brook park. My preference along both Overton and Old Overton would be a something similar to Option 3. Along Old Overton, I think some “Share the Road” signage and pavement markings would be helpful and improve safety, but I’m not sure the traffic on that road warrants a bike lane or even a multi-use path. A sidewalk, even if it’s on the opposite side of the road, would be adequate in my opinion.

Along Overton, I think a multi-use path, with natural paths closer to the Cahaba in some places, would be fine.

I would love to see bike lanes and sidewalks along both sides of the road to help in building out a network of walking and biking, but I’m not sure these locations are really built for a broad, multi-modal approach.

Thanks for the tour and for your work on this!

-Ryan

Ryan Parker
Red Rock Trail Coordinator

Freshwater Land Trust
2308 1st Avenue North
Birmingham, Alabama 35203
Telephone: (205) 417-2776
www.freshwaterlandtrust.org

Good Morning All,

If you have not provided any comments and would like to, please do so by Friday, November 8th. After this date we will move forward with compiling and summarizing your comments and investigating the additional alternatives discussed at the meeting.
Thanks,
Jennifer

Jennifer G. Brown, PE  
Sain Associates  
205.263.2159  
jbrown@sain.com

From: Brown, Jennifer  
Sent: Thursday, October 24, 2013 1:29 PM  
To: RandyH@cahabariversociety.org; duane@edsincweb.com; hcaster@stewartperry.com; beths@cahabariversociety.org; matt.leavell@ua.edu; nimrod@nimrodlong.com; dkirkland@libertypark.org; williamssh@mtnbrook.org; gastons@mtnbrook.org; ryan.parker@fwlt.org  
Cc: Bailey, Alicia; White, Becky; kaz@rpcgb.org; ftaylor@rpcgb.org; cgarrison@ci.vestaviahills.al.us  
Subject: Cahaba/Liberty Trail

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Website: www.sain.com
hi jennifer

Thanks for including me in the group today.

I’m in agreement that the more natural option would be a good inclusion for the assessment. In addition, it seems that there should be a series of options for those pinch points along the trail that include elevated boardwalks, sidewalks, and dirt paths.

Will a section be included in the assessment to address the cost of replanting or stabilizing the banks of the river?

It would also be useful if the assessment matrix addressed the impacts of each option on user issues and more qualitative measurements such as safety and usability.

thanks again
-matt

--------------------------------------
Matt Leavell
Project Director

Alabama Innovation Engine
e. matt.leavell@ua.edu<mailto:matt.leavell@ua.edu>
o. (205) 307-6519
w. alabamaengine.org<http://alabamaengine.org>

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