



**Gresham Smith**

## **MEMORANDUM**

TO: Cobb County Dept. of Transportation - Laura Beall, AICP (Planning Division Manager) and Karyn Matthews, P.E. (Project Manager)

FROM: Gresham Smith - Erin Thoresen, AICP (Project Manager) and Sarah Blackburn, P.E. (Roadway Department Leader)

DATE: June 19, 2024

SUBJECT: REVISED FEASIBILITY ASSESSMENT  
NOONDAY CREEK TRAIL EXTENSION – SUPPLEMENTAL STUDY  
(X2549)

### **FEASIBILITY ASSESSMENT**

Gresham Smith is tasked with assessing the feasibility of using an elevated structure or boardwalk for a constrained portion of the proposed Noonday Creek Trail Extension between Bells Ferry Road and New Chastain Road. The assessment is part of a task order assigned to Gresham Smith through a Master Task Order Contract for Transportation Planning and Environmental Services (Category A). It is considered a supplemental study to Cobb County DOT Project Number X2544 – Noonday Creek Trail Extension Scoping Study.

### **Project Background**

This project is a supplemental study to the Noonday Creek Trail Extension Scoping Study (X2544) completed in the fall of 2023. That study proposed a trail that would extend the existing Noonday Creek Trail from its current terminus at the Bells Ferry Trailhead (on the west side of Bells Ferry Road) to Shallowford Road at the north end of Noonday Creek Park. The trail extension is part of a larger regional vision identified by the Atlanta Regional Commission as a Trail of Regional Significance.

Project X2544 selected two options for inclusion in the concept report: Option 1 – the Proposed Trail Preferred Alignment would follow Noonday Creek from the existing trailhead west of Bells Ferry Road, pass beneath the bridge over the creek through the publicly-owned conservation area northeast of where the creek meets the road, then cross over to the east side of Noonday Creek, traversing a residential area before crossing back to the west side of the creek, just south of New Chastain Road (see Figure 1).

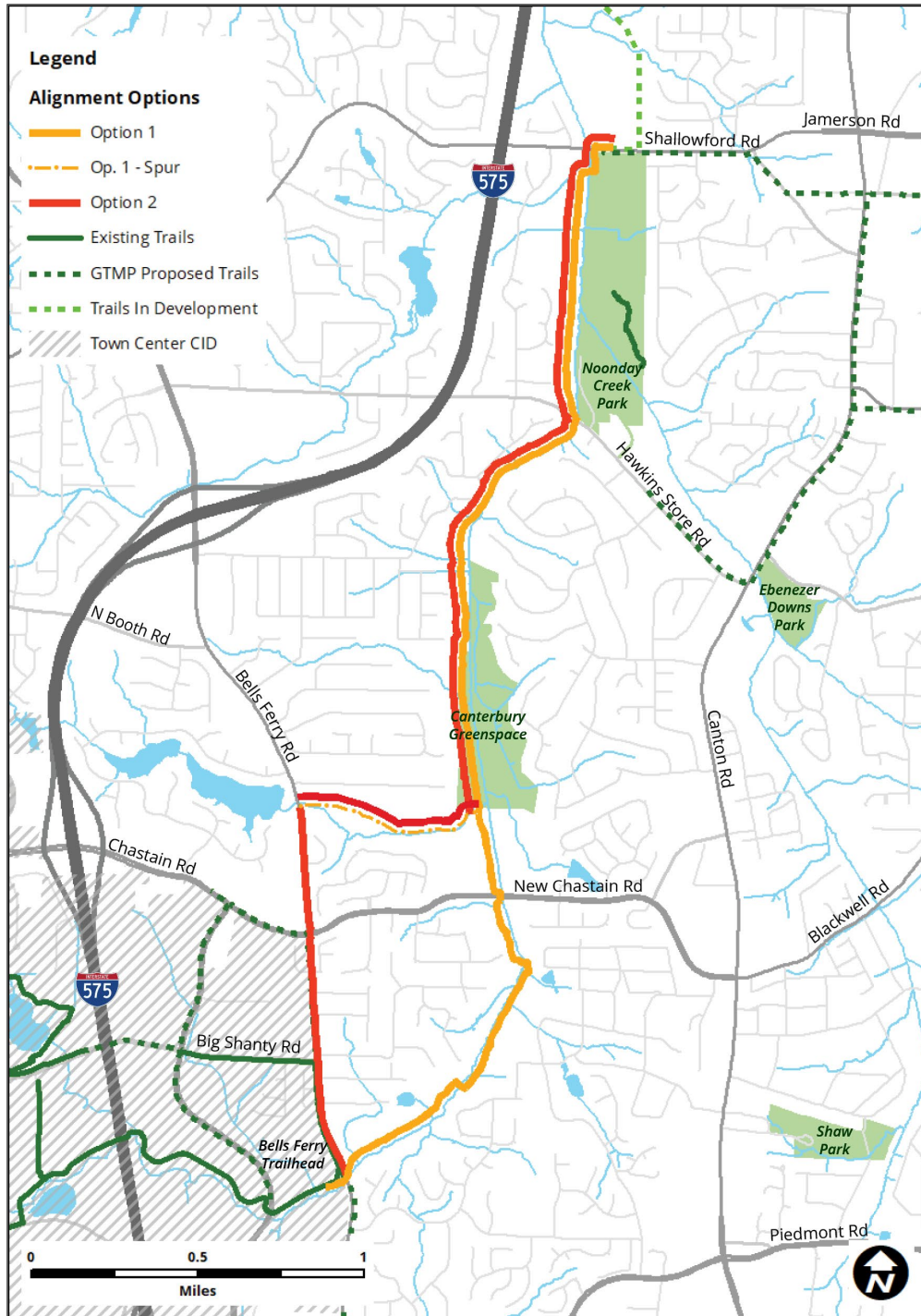


Figure 1. Trail Alignment Options Evaluated as part of X2544



The proposed typical section for Option 1 is a 10-foot-wide trail with 2-foot-wide shoulders on each side. The concept in the scoping study noted that the trail could be narrowed in constrained areas as needed. The proposed typical section for boardwalk segments of the trail is 14-feet wide (out-to-out) to match the proposed trail section. The scoping study identified locations of potential crossings of the creek (pedestrian bridges) at the southern end of the project, just east of Bells Ferry Road, and also just south of New Chastain Road.

Given the constraints in the southernmost portion of the trail extension, Cobb County requested a feasibility study (this project) to assess the feasibility of using an elevated structure or boardwalk along the bank of the creek (or in the creek) to reduce potential impacts to adjacent property owners and keep a trail along/near the creek, which was the preferred option among the scoping study Stakeholder Steering Committee and recommended in the scoping study as the preferred alignment option.

While the feasibility study is being funded with local dollars by Cobb County, the county intends to apply for federal funding to advance design and construction of the trail extension in the future.

## **EXISTING CONDITIONS**

The study area defined for the feasibility study includes the southern portion of the proposed Noonday Creek Trail Extension, roughly from the Cobb County owned property just east of Bells Ferry Road (parcel identification number [PIN] 16049700440) to the county-owned property south of New Chastain Road (PINs 16042400210 and 16042400120) on both sides of the creek. The project study area is shown in Figure 5.

The area is residential in nature and both sides of the creek are lined with single family homes, vacant parcels, and property owned by Cobb County. On the east side of the creek Wilson Show Stables operates an equestrian business on several parcels of land, equivalent to roughly 18 acres in total according to Cobb County parcel data. The stables and pasture land only cover a portion of the total property. Figure 2 and Figure 3 show photos of the property from the field visit conducted by the project team.

- 16044100030 – 11.5 acres
- 16049600220 – 3.3 acres
- 16049600010 – 2 acres

On the west side of the creek, the home at 2972 Lowe Trail (PIN 16044100020) is situated roughly 85 feet from the western bank of Noonday Creek, as shown in Figure 4.



*Figure 2. View of Wilson Show Stables Main Entrance.*



*Figure 3. View of Fence between Wilson Show Stables and Noonday Creek*



*Figure 4. View of Home at 2972 Lowe Trail*

A significant portion of the study area, encompassing 100 feet or more on either side of the creek is within floodplain and Noonday Creek in this area is a Zone AE FEMA-regulated stream (see Figure 5). Likewise, in addition to the 25-foot state stream buffer requirements, this portion of Noonday Creek is subject to a 100-foot county stream buffer classification. The area is located within the Southern Piedmont (Major Land Resource Region [MLRA 136]), according to the Georgia Soil Survey. Additionally, sewer lines run along the west side of the creek through this area.

As noted in the Noonday Creek Trail Extension Scoping Study, the study area for this Supplemental Study is adjacent to two historic districts: Piedmont Hills District and Addison Heights District, and the home at 387 Shannon Drive NE (PIN 16044100030) associated with the Wilson Show Stables is of historic age (pre-1974) and therefore potentially eligible as an historic resource. An evaluation of eligibility was not completed at this stage. A more thorough evaluation would be conducted under Section 106 of the Historic Preservation Act if Federal funding is utilized for the trail extension project.



Figure 5. Noonday Creek Extension Supplemental Study - Study Area Map



To supplement existing available geospatial and other data, the project team conducted a site visit on March 19<sup>th</sup>, 2024. Observations made during the field visit include:

- Evidence is present of drainage from rain events – channelization in some places, scour to the top of the banks in some places.
- Runoff appears to drain from adjacent property into main channel of the creek; however, a berm-like condition (elevated portion along the bank of the creek) also means that there is a slope away from the creek and it appears that water also drains toward the homes/structures.
- Property owners have installed riprap to reduce further erosion.
- Owner of Wilson Show Stables reports five or six rain events per year that result in flooding of the creek, and reported widening of the creek over the past 50 years.
- The fence along the Wilson Show Stables (Figure 3) runs right to the bank of the creek; in some areas, the ground has begun to erode out from beneath the bottom of the fence.
- Portions of the sewer main can be seen where the banks of the creek have eroded over time, exposing the pipe.

Notes and observations along with photos from the site visit are provided in Attachment A.

### **Geotechnical Assessment**

To better understand soil conditions within the study area, the project team performed two soil borings on March 19<sup>th</sup>, 2024. The first boring (S-1) was drilled on the south end of the study area and encountered partially weathered rock (PWR) at depths of approximately 28.5 feet, and then augur refusal (AR) on rock at 34 feet. The boring was offset approximately 40 feet to the south for a second test (S1-A), and encountered AR at 33 feet of depth. A second boring (S-2) was drilled at the north end of the study area, near the proposed structure shown at the top of Figure 5 (and in Attachment D), at the end of Sumter Drive and encountered PWR at 18.5 feet of depth and AR at 66 feet.

After processing the data, the geotechnical team estimates pile lengths of 30-40 feet may be needed in order to accommodate the elevation over the top of the bank and ensure that the piles can be embedded in rock. At the southern end of the study area, there is likely sufficient soil to provide adequate embedment. At the northern end, the design may need to include pilot holes due to the relative lack of soil (shallower rock). Ultimately, the type of support and foundation needed depends on the span of the structure, the load, and other factors. Additional assessment is provided in later sections of this memo.

Consultation with GDOT OMAT indicated that the project can use any foundation that is deemed suitable for boardwalk and that a structure is typically considered a “boardwalk” if it has 20 feet or less spans, is less than 15 feet above the groundline, and constructed of non-



traditional materials (wood/composite). GDOT considers a facility to be a “pedestrian structure” (bridge) if it has spans longer than 20 feet, is more than 15 feet above the groundline, or is comprised of steel or concrete construction material.

In the Piedmont Geologic Region, H-pile bents/footings are typically used for the support of pedestrian structures/bridges. Timber piles and helical piers are not allowed for pedestrian structures/bridges. In specific situations, like due to overhead power line constraints, low-overhead techniques utilizing micro piles have been approved by GDOT for previous projects. A copy of the Limited Geotechnical Data Report (GDR) is provided in Attachment D.

### **Hydraulic Assessment**

The study area is along a Zone AE FEMA-regulated stream, which restricts adding fill for any project as it is entirely within floodplain. A no-rise study and analysis will be needed at the preliminary design stage of the project to demonstrate the project is not increasing water surface elevations or floodplain widths along the creek. A hydraulic model would be needed to do the no-rise analysis. If a no-rise is achieved, then no further communication with FEMA would be needed; however, if a no-rise cannot be achieved, that would normally trigger coordination with FEMA to prepare a Conditional Letter of Map Revision (CLOMR), which can take six to nine months. However, Cobb County’s Floodplain Management Ordinances (especially Chapter 58) do not allow any rise in Base Flood Elevation (BFE), unless that rise is contained entirely on property owned by a developer. Since the property being considered as part of this feasibility study is not owned by a developer, Cobb County will not allow any rise in BFE, therefore if the project cannot achieve No-Rise certification, it cannot advance. It should also be noted that Cobb County’s Floodplain Management Ordinances do not allow any loss of base flood or future condition flood storage capacity (e.g., no fill is allowed within the floodplain).

As part of the eventual design of the project, consideration should be given to Cobb County requirements regarding freeboard and the design elevation to withstand flood events. Typically, most boardwalk/trail projects are set to design freeboard requirements of 1-2 feet above the 2-year or 10-year storm; however, some are designed to overtop at less frequent storm events. It will be important to determine the likelihood of overtopping storms, Cobb County’s requirements, and to design accordingly.

GDOT’s Drainage Manual provides some guidance for pedestrian structures and boardwalks, stipulating that “pedestrian trails located entirely on boardwalks and having no fill within the limits of the floodplain are not considered bridges. A hydraulic study will not be required for these situations” (Sec. 12.1.11). However, a definition is not provided for what constitutes a boardwalk. Based on guidance from GDOT’s Bridge Office and GDOT OMAT, generally speaking, if a structure is 15-feet or more above the ground and has spans of 20 feet or more,



it will be evaluated as a pedestrian bridge, whereas lower structures with spans of less than 20 feet constructed of non-traditional materials (wood or composite) will be evaluated as boardwalk.

### **Environmental Assessment**

Consultation with the U.S. Army Corps of Engineers (USACE) indicated that Section 404 permitting for a potential project such as this, with a structure on the bank of or potentially in the creek, may be required, but will ultimately depend on the findings of the hydraulic analysis and how much water would be displaced. Pile supported structures in Section 404 waters are not considered fill, unless close enough together to affect hydrology.

Other details on the presence of wetlands, tributary streams, potential historic resources, and archaeological resource are provided in the existing conditions and environmental screening portions of the Noonday Creek Trail Extension Scoping Study. For the purposes of this assessment, it is assumed that crossing of tributary streams would be culverted. Likewise, based on the initial screening, it is assumed that mitigation credits would be needed for impacts to wetlands and the tributary streams.

## **POTENTIAL OPTIONS**

### **Alignment Considerations**

The Noonday Creek Trail Extension Scoping Study ultimately recommended an alignment along the east side of the creek in this area. Placing the trail along the west side of the creek would impact several parcels and there is a home close to the creek on PIN 16044100020, which constrains the alignment options in this area. However, the project also considered options on the west side of the creek to reduce impacts to the business operating on the east side of the creek (Wilson Show Stables).

While it is possible to place a trail between the bank of the creek and the home on parcel 16044100020 (west side), there is limited space between the edge of the creek and the sewer lines, as well, as between the sewer lines and the home. Figure 6 shows cross sections cut from the vicinity of the home with the approximate location of the existing utility easement and lines. Placing a trail between the edge of the creek bank and the home would require the trail to be positioned either between the two sewer lines or partially on top of one of the sewer lines. This would pose potential challenges for maintenance of the sewer system. A trail will not consistently fit between the edge of the creek bank and the outermost sewer line, due to the meandering nature of the creek bank. Therefore, the project team primarily focused on an alignment along the east side of the creek. However, an alignment on the east side of the creek would impact an operating business (horse farm) as well as three other parcels (six total).

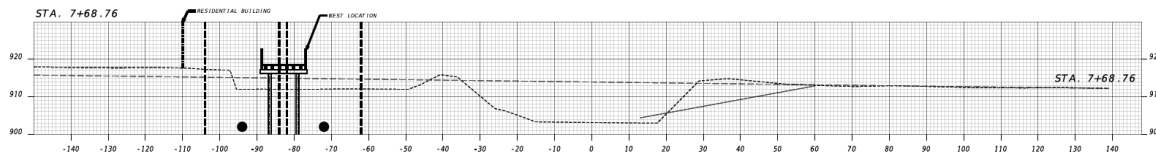


Figure 6. Section Diagram Shows Constraints on West Side of Noonday Creek

The horse farm currently has fenced and in-use approximately 6.39 acres of pasturable land, which equates to the ability to maintain six or seven horses (it requires approximately one acre of land per horse). Assuming a trail width of 14 feet (10 feet of main trail with two-foot-wide shoulders on each side), plus an additional two feet of buffer on either side for conservative right-of-way estimate purposes (18 feet of trail right-of-way width) at a linear distance of 930 feet to pass through the fenced portion of the property would remove approximately 0.39 acres of land from pasturable use. This could increase based on additional width needed as design is further explored. This reduction of pasturable land area could potentially reduce the number of horses allowed on the current/remaining pasture land.

In order to minimize or reduce potential impacts to the horse stable business (PINs 16044100030 and 16049600220), an option is being considered that would cross the creek north of the sewer line that runs perpendicular to the creek on the west side, through PIN 16044100020. That alternative alignment option (1a) would continue parallel to the sewer easement along the west side of the creek, and as noted above, would most likely have to be outside of the sewer easement due to the space constraints between the sewer line and the bank of the creek. An alignment partially on the west side of the creek in this area would impact a total of eight parcels, but would reduce impacts to the business on the east side.

Based on the input and guidance from Cobb County, the findings from initial data assessment, and the field visit, the team initially explored four potential options with varying placement of the trail and different configurations of the boardwalk or elevated structure(s). Among the considerations is coordination needed with GDOT for review and approval – how the proposed project would be evaluated: either as a boardwalk or as a pedestrian structure. There are implications in terms of the level of review and approval that would be needed, depending on the form, height, and placement of the structure. As noted previously, while there is no exact definition of a boardwalk, generally speaking, if a structure is 15 feet or more above the groundline or has spans greater than 20 feet between bents, it will be evaluated as a pedestrian bridge. An option was considered to cantilever a structure off of the creek bank, with the supports placed on land and the trail over the edge of the creek; however, such a structure would require even more substantial supports that would likely result in greater property impacts, higher costs, and greater risk of erosion. Likewise, the structure needed to support such a design would not likely be able to achieve No-Rise certification. Due to these concerns, a cantilevered option was not advanced for further consideration.



The four initial options considered are as follows:

- **Option 1:** a combined at-grade trail and boardwalk on land adjacent to the creek on the east side of the creek
- **Alternative 1a:** a combined at-grade trail and boardwalk on land adjacent to the creek partly on the east side of the creek and also on the west side of the creek to minimize impacts to the Wilson Show Stables
- **Option 2:** a boardwalk-like structure with piles in the creek, at the edge of the top of the bank
- **Option 3:** a boardwalk-like structure with piles in the middle of the creek at the bottom of the creek-bank slope

The following sections summarize each of the proposed options, their drawbacks and advantages, as well as the project team’s overall assessment of feasibility.

### **Option 1: Assessment**

Option 1 would utilize a pedestrian bridge to cross over Noonday Creek at the northern end of the Cobb County-owned property (PIN 16049700440). It would place a combination of boardwalk and at-grade paved trail surface on land on the east side of the creek, near the edge of the creek bank, with boardwalk piles a minimum of five feet from the top of the bank based on GDOT guidance for pile bents to prevent disturbance of banks during construction. It would continue with an elevated boardwalk along the east side of the creek through three privately-owned parcels until it reaches county-owned parcel 16042400120, at which point a small segment of at-grade trail would be placed to connect to a second pedestrian bridge that would cross back over to the west side of the creek, in county-owned property. A proposed typical section for the boardwalk portion of Option 1 is shown on the right-hand side of Figure 7. Additional typical section diagrams for Option 1 at other locations along the proposed alignment are included in Attachment C.

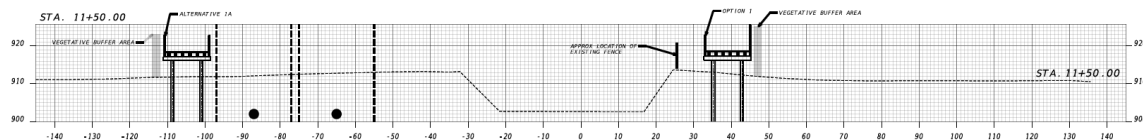


Figure 7. Typical Section for Option 1

- The design may need to include riprap to reduce lateral migration or widening of the creek, or the substructure may need to be designed to assume lateral migration or natural widening of the creek.
- Per consultation with GDOT bridge office, for structures designated as boardwalks, there is not a structural or geotechnical review of the plans.



- A structure is typically considered a boardwalk if it has spans of less than 20 feet and is less than 15 feet above the groundline and constructed of non-traditional materials (wood/composite).
- From a geotechnical perspective, based on borings drilled, helical piers may be used for the support of the boardwalk. However, if the elevated walkway (boardwalk) is defined as pedestrian structure (e.g., with spans greater than 20 feet), timber piles and helical piers are not allowed: H-piles would be required.
- In specific situations, like due to overhead power line constraints, low-overhead techniques utilizing helical piers or micro piles have been approved by GDOT. Encroachment of usable adjacent property owner land may be an issue.
- Based on the team's initial assessment and review of a coarse 2D hydraulic model, Option 1 may result in a No-Rise certification, but it is not guaranteed as the whole study area is within floodway and it is not clear at this time what other impacts have previously been allowed in the area. The pedestrian bridges crossing the creek and boardwalk portions will need to be designed so that they do not displace water in the creek or increase BFE.
- To meet Cobb County floodplain requirements, this option would have to demonstrate there is no rise in BFE.
- Placement of the boardwalk along the top of the bank would require removal of trees along the edge of the creek. It is recommended that trees or other vegetation be provided as screening between the boardwalk and the homes/business. Removal of trees and re-stabilization of banks should not be a contributor to the no-rise status.
- Per Cobb County floodplain manager, the No-Rise certification study should also document that no adverse flow velocities are created resulting in erosion or deposition of sediment.
- Option 1 would impact a total of six parcels, potentially requiring an estimated area of 3.7 acres, and could potentially reduce the pasturable land currently used by the horse stable business.
- *Based on this initial assessment, Option 1 is potentially feasible, so long as it is designed to achieve a No-Rise certification.*

### **Alternative 1a: Assessment**

Alternative 1a would be very similar to Option 1, except that north of the perpendicular sewer line on the west side of the creek in parcel 16044100020, the trail would cross back over to the west side of the creek utilizing a pedestrian bridge. From there, it would continue northward on the west side of the creek, using a boardwalk placed on the inside edge of the sewer line (or potentially with approval from Cobb County Water System between the two sewer lines) through three parcels until it reached county-owned parcel 16042400210, at the end of Sumter Drive. A proposed typical section for the boardwalk portion of Alternative 1a is shown on the left-hand side of Figure 8. As shown, the boardwalk would need to be placed



inside the sewer easement, away from the creek, as there is not sufficient room between the berm at the bank of the creek and the outside sewer easement to accommodate the boardwalk. Additional typical section diagrams for Alternative 1a at other locations along the proposed alignment are included in Attachment C.

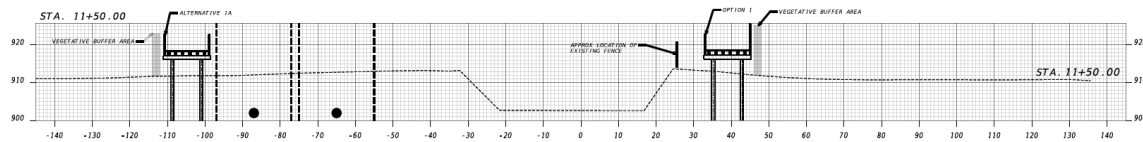


Figure 8. Typical Section for Alternative 1a

- The above-noted bullet points would also apply to Alternative 1a as the design would be similar.
- Because of the meandering nature of the creek bank and concerns about erosion, it is recommended to place the boardwalk inside the innermost sewer line, away from the creek; however, as an option, the boardwalk structure could be placed between the sewer lines, if allowed by the utility.
- From a geotechnical perspective, based on borings drilled, helical piers may be used for the support of the boardwalk. However, if the structure is defined as pedestrian structure (e.g., with spans greater than 20 feet), timber piles and helical piers are not allowed: H-piles would be required.
- Alternative 1a would entail a longer span structure over the creek (to cross from east to west), which would be considered a pedestrian structure. Foundations for a pedestrian structure would consist of H-piles based on the limited soil boring data. The structure would need to be designed so as not to increase BFE.
- Based on the team's initial assessment and review of a coarse 2D hydraulic model, Alternative 1a may result in a no-rise certification, but it is not guaranteed as the whole study area is within floodway and it is not clear at this time what other impacts have previously been allowed in the area. The pedestrian bridges crossing the creek and boardwalk portions will need to be designed so that they do not displace water in the creek or increase BFE.
- Alternative 1a would impact a total of 8 parcels, potentially requiring an estimated area of 5.2 acres, but would reduce potential impacts to the horse stable business.
- Construction of the boardwalk along the inside edge of the sewer easement may require removal of trees and vegetation along the edge of the creek. It is recommended that trees or other vegetation be provided as screening between the boardwalk and the homes/business.
- ***Based on this initial assessment, Alternative 1a is potentially feasible, so long as it is designed to achieve a No-Rise certification.***



## **Option 2: Assessment**

Option 2 would place a pedestrian structure with piles in the creek, at the edge of the top of the bank, along the east side of the creek, to avoid placing a structure or trail on the land, as shown in Figure 9.

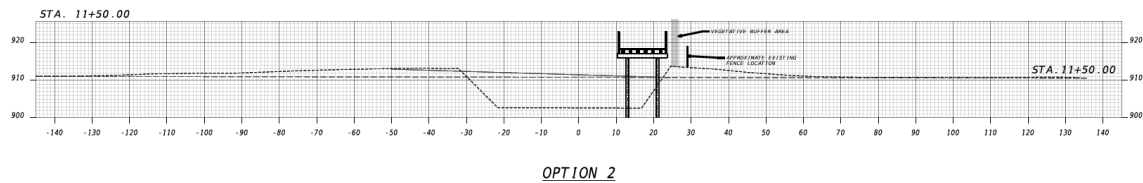


Figure 9. Typical Section for Option 2

- Longer spans would be considered for this option to reduce the hydraulic impact. Therefore, more substantial supports appropriate for pedestrian structures would be needed (such as H-piles).
- Because of the longer spans and height of the structure above the groundline (at the bottom of the creek), this option would be considered a pedestrian structure (bridge), rather than a boardwalk. As a pedestrian structure, Option 2 would be subject to review by GDOT bridge office.
- Option 2 would reduce the impact to adjacent property owners compared to an at-grade trail or boardwalk at the top of the bank, but would be more expensive to construct, would need a bridge hydraulic report, and would need to consider environmental impacts.
- This option is likely to disturb the slopes at the creek-bank during construction and would need riprap to stabilize the slopes.
- There is potential for debris getting caught on piles and an increased risk of scour issues.
- Cobb County Floodplain Management Ordinances do not permit any rise in BFE unless it is on developer-owned property. The study area and adjacent land is not developer-owned property.
- Placement of piles in the creek would displace water, and is therefore likely to increase the BFE. From review of a coarse 2D model, the hydraulic assessment indicates that Option 2 is unlikely to achieve a No-Rise certification. If a No-Rise could not be achieved, typically a CLOMR would be prepared; however, no CLOMR would be necessary, because the County would not permit a rise in BFE.
- ***Option 2 is NOT likely feasible*** due to concerns about erosion of the bank and the need for substantial riprap as a result, and because Cobb County does not allow a rise in BFE unless it is on developer-owned property.



### **Option 3: Assessment**

Option 3 would be similar to Option 2, but with the pedestrian structure placed in the middle of the creek, with piles at the bottom of the creek-bank slope, as shown in Figure 10.

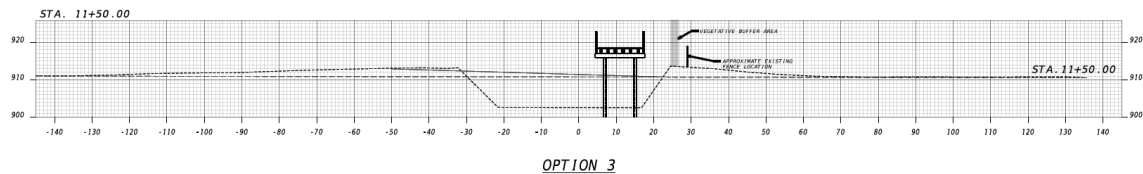


Figure 10. Typical Section for Option 3

- Longer spans would be considered for this option to reduce the hydraulic impact. Therefore, more substantial supports appropriate for pedestrian structures would be needed (such as H-piles).
- Because of the longer spans and height of the structure above the groundline (at the bottom of the creek), this option would be considered a pedestrian structure (bridge), rather than a boardwalk. As a pedestrian structure, Option 3 would be subject to review by GDOT bridge office.
- There is potential for debris getting caught on piles and an increased risk of scour issues.
- Cobb County Floodplain Management Ordinances do not permit any rise in BFE unless it is on developer-owned property. The study area and adjacent land is not developer-owned property.
- Option 3 would move the trail farther from adjacent property owners, thereby reducing impact to them, but would be more expensive to construct, would need a bridge hydraulic report, and would need to consider environmental impacts.
- Placement of piles in the creek would displace water, and is therefore likely to increase the BFE. From review of a coarse 2D model, the hydraulic assessment indicates that Option 3 is unlikely to achieve a No-Rise certification. If a No-Rise could not be achieved, typically a CLOMR would be prepared; however, no CLOMR would be necessary, because the County would not permit a rise in BFE.
- ***Option 3 is NOT likely feasible*** because Cobb County does not allow a rise in BFE unless it is on developer-owned property.

### **RECOMMENDATIONS**

Based on findings from the assessment by the project team, it was determined that Option 2 and Option 3 are not feasible, and that Option 1 and Alternative 1a are potentially feasible, as long as they can be designed to achieve No-Rise certification. Therefore, it is recommended to pursue either Option 1 or Alternative 1a, should Cobb County decide to advance this project. Both options are shown in Figure 11 below (see also Attachment B).



The estimated cost for each potentially feasible option is provided below, and included in Attachment B. The cost estimates for each option were developed as if it is a standalone project, from the County-owned parcel at the southern end of the study area to the County-owned parcel at the northern end of the study area. A diagram is provided in Attachment B to illustrate the estimated length of segments used as inputs for the cost estimates.

### **Estimated Cost: Option 1**

The estimated construction-only cost for Option 1 is \$7 million. This amount reflects major components such as concrete, boardwalk, pedestrian bridges, fencing and screening vegetation, utilities, and drainage for the length of the study area (including the southernmost bridge crossing from west to east, the at-grade segment, boardwalk, another at-grade segment, and the northernmost bridge crossing the creek from east to west). Right-of-way cost for Option 1 is estimated at \$551,000, with environmental mitigation estimated at an additional \$324,000. Since this project would be advanced as part of the design of a full trail extension in this area, the preliminary engineering (PE) costs would likely be incorporated into the overall project design costs.

Rounded components of this estimate include:

- Construction: \$7.0 million
- Right-of-Way: \$551,000
- Environmental mitigation: \$324,000

### **Estimated Cost: Alternative 1a**

The estimated construction-only cost for Alternative 1a is \$6.9 million. This amount reflects major components such as concrete, boardwalk, pedestrian bridge, fencing and screening vegetation, utilities, and drainage, also for the length of the study area (including the southernmost bridge from west to east, the at-grade section, and a portion of boardwalk on the east side, shown as part of Option 1, plus the bridge and boardwalk segments shown in blue as part of Alternative 1a). Right-of-way cost for Alternative 1a is estimated at \$1.12 million and environmental mitigation is estimated to be an additional \$292,000. Since this project would be advanced as part of the design of a full trail extension in this area, the preliminary engineering (PE) costs would likely be incorporated into the overall project design costs.

Rounded components of this estimate include:

- Construction: \$6.9 million
- Right-of-Way: \$1.12 million
- Environmental mitigation: \$292,000

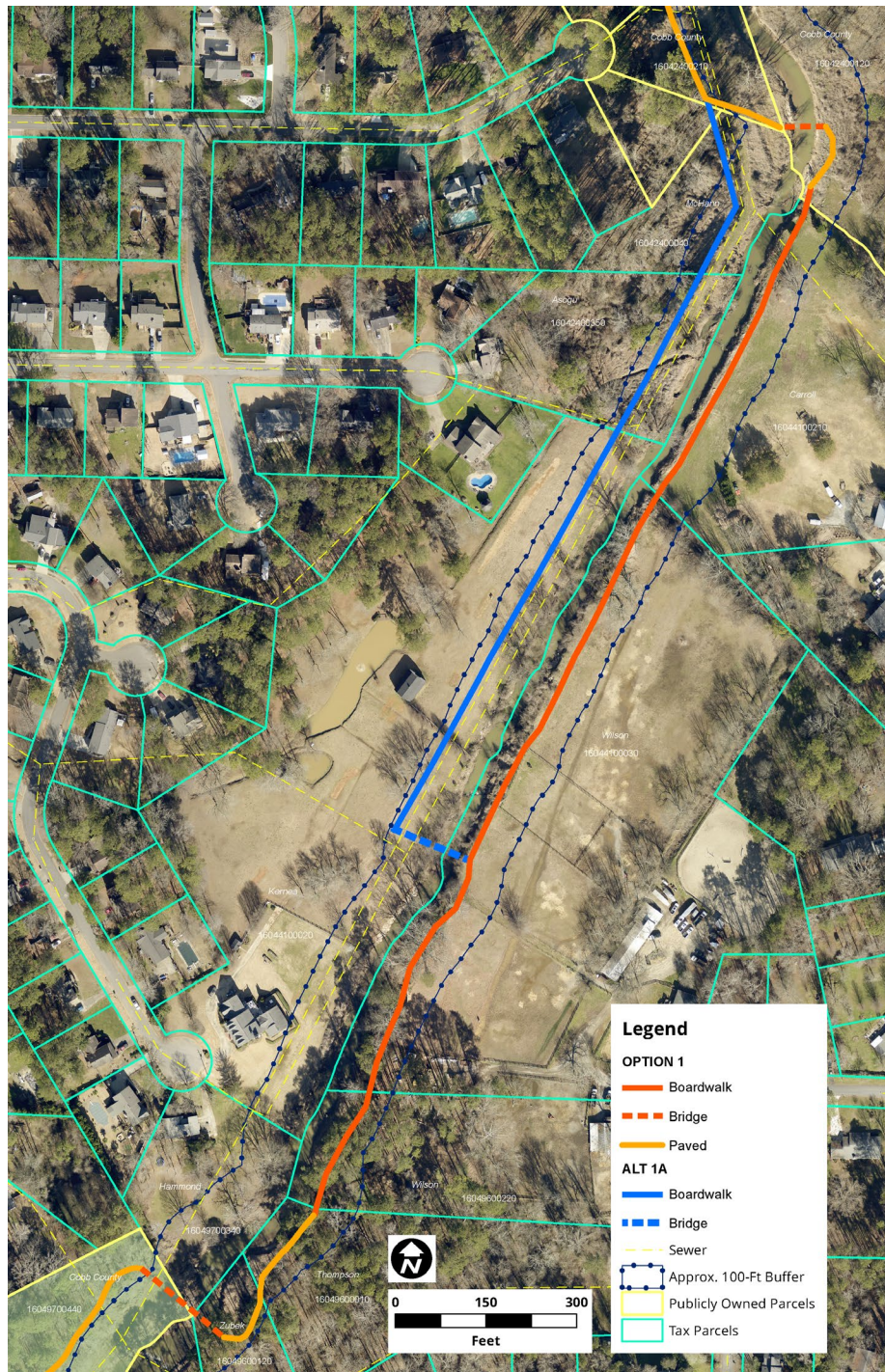


Figure 11. Potentially Feasible Trail Options (1 and 1a)



MEMORANDUM – FEASIBILITY ASSESSMENT  
NOONDAY CREEK TRAIL EXTENSION – SUPPLEMENTAL STUDY (X2549)  
Gresham Smith Project No. 45823.02  
June 19, 2024

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## **ATTACHMENTS**

- A. Site Visit Observations and Photos
- B. Cost Estimates for Option 1 and Alternative 1a
- C. Typical Section Diagrams
- D. Limited Geotechnical Data Report

# **ATTACHMENT A**

## **Site Visit Observations and Photos**



## **ATTACHMENT B**

**Cost Estimates: Option 1 and Alternative 1a**



# **ATTACHMENT C**

## **Typical Section Diagrams**



# **ATTACHMENT D**

## **Limited Geotechnical Data Report**

