

# GILLS CREEK MIDDLE WATERSHED MASTER PLAN



## GILLS CREEK WATERSHED ASSOCIATION

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October 18, 2013



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## BACKGROUND:

Formed in the 1990s by a group of concerned citizens, the Gills Creek Watershed Association's (GCWA) main focus is on comprehensive watershed management. The group relies on a strong and dedicated membership base that works to affect stream and lake restoration projects as well as advocating policy changes that can improve water quality. The group works in concert with various jurisdictions such as the Richland County Conservation Commission; Richland County; Fort Jackson; City of Columbia; Forest Acres; Arcadia Lakes and the City of Cayce as well as other non-profit organizations and concerned citizens. They partner with these organizations to protect and restore the watershed through implementation of management plans, cooperative restoration projects and coordinated stormwater regulations. This master plan is an important part of that strategy.



In April, 2013 the Gills Creek Watershed Association selected the planning team of Wood+Partners Inc. and McCormick Taylor to assist with the creation of a master plan for the middle portion of the Gills Creek Watershed. The study was funded through a grant from the Richland County Conservation Commission with matching funds provided by Edens. The study focuses primarily on the Kilbourne Road to Fort Jackson Boulevard section; the Fort Jackson Boulevard to Devine Street corridor; and the Devine Street to Rosewood Drive portion of Gills Creek flowing from Lake Katharine to the north, to Shop Road (east of the Intertape Polymer Group property) to the south.



This Master Plan represents one of the Watershed Associations completed or ongoing efforts. Additional information is available through the following links:

[http://www.gillscreekwatershed.org/documents/GCWA\\_Strategic\\_Plan\\_FINAL.pdf](http://www.gillscreekwatershed.org/documents/GCWA_Strategic_Plan_FINAL.pdf)

[http://www.gillscreekwatershed.org/documents/Gills\\_Creek\\_WMP\\_Final\\_05-28-09.pdf](http://www.gillscreekwatershed.org/documents/Gills_Creek_WMP_Final_05-28-09.pdf)



*“The mission of the Gills Creek Watershed Association is to restore and protect the Gills Creek Watershed by uniting citizens, government, organization and businesses.”*



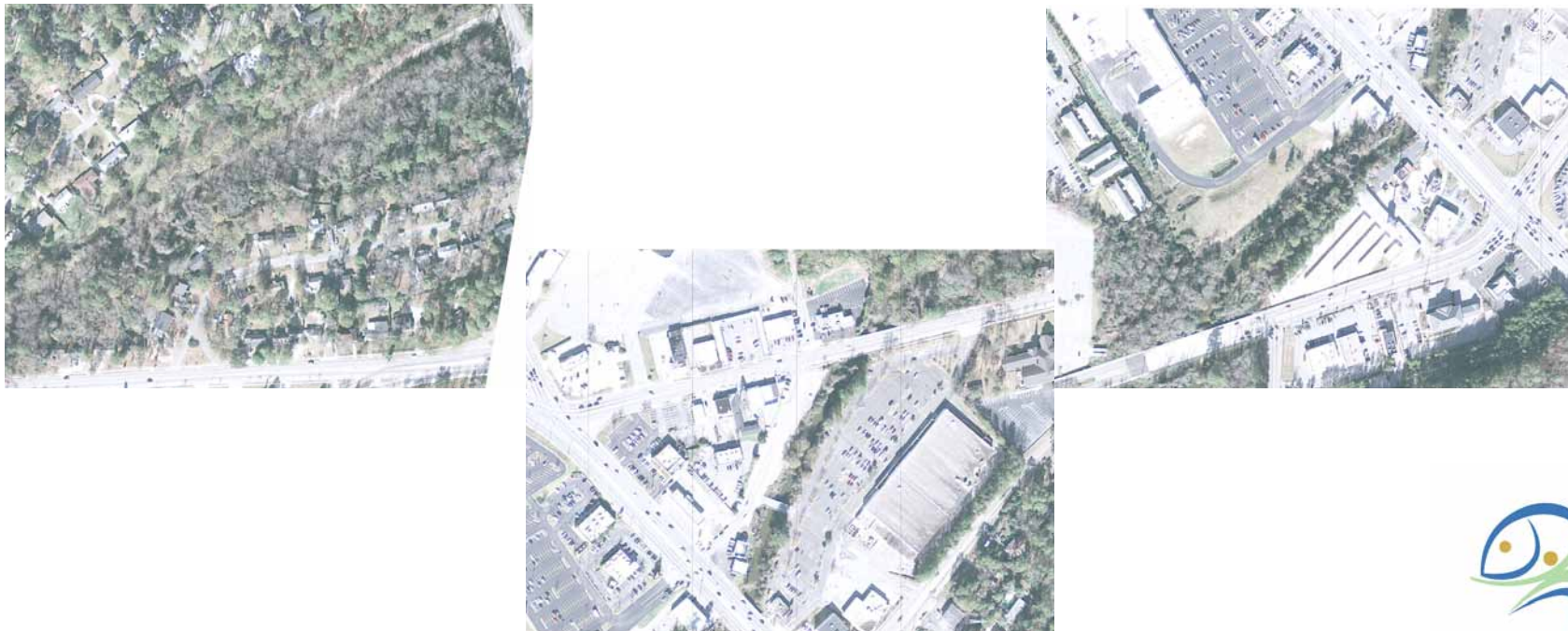
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## MAPPING & PROJECT BOUNDARIES:

With the assistance of the GCWA, the planning team obtained mapping information from a number of public domains. Aerial photography was obtained through the US Geological Survey (USGS); lidar topography, property parcel lines and rights of ways and easements were obtained from Richland County's ArcGIS system. This information was then combined to create mapping used as a basis for the plan.

Three areas within the middle watershed were identified as main areas of focus for the study. Those areas are referred to as the area bounded by Kilbourne Road (just south of Lake Katharine) on the north and Fort Jackson Boulevard to the south; the corridor stretching from Fort Jackson Boulevard on the north to Devine Street on the south; and the corridor running from Devine Street on the north to Rosewood Drive on the south. This master plan examined the potential for stream restoration, reducing the impacts of stormwater runoff and opportunities for recreation and pedestrian access in each area. Each corridor has its own distinct character requiring different recommendations.

On April 30, and May 1, 2013 the project team and representatives of the GCWA conducted a site visit to gain familiarity with the property. At this time the team observed the middle watershed area in total, documenting observations through photographs and mapping. Written observations from Lewis Kirk have been included in Appendix A of this report. A sampling of the photo inventory taken has also been included throughout this report. In concert with the site visit, the team conducted a public open house to discuss the project and obtain additional input from the public. Approximately 30 people attended the meeting to express their opinions regarding the middle watershed study area. Minutes documenting that meeting are included in Appendix B in the back of this report. Further public input was obtained through a non-scientific survey conducted by GCWA and posted on SurveyMonkey.



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## KILBOURNE RD. TO FORT JACKSON BOULEVARD CORRIDOR:

The portion of the study area running from Kilbourne Road to Fort Jackson Boulevard offers opportunity for development of a new project trail head and interpretive trail system. Beginning at the Kilbourne Road end of the property, a street level overlook with ramp access and steps to the creek level is proposed. This trail head provides an overview of the floodplain with opportunities for interpretation and signage on the upper level overlook. The Captiol City Passage of the Palmetto Conservation Foundation's Palmetto Trail passes through the area on Kilbourne Road allowing the Gills Creek trail to be a spur off this statewide trail system. The trail then splits to create a lower level "creek trail" paralleling the creek and an "upland trail" running along the eastern property boundary. Each trail would contain sections of elevated boardwalk through areas prone to flooding as well as interpretive signs highlighting the flora, fauna and unique attributes of the trail environment. A midpoint connector links the two trails and provides an intermediate loop option with focus on a small pier or creek overlook serving as a resting point. Where possible, these trails should follow and utilize upland utility corridors. This will require coordination with and approval from the local sanitary sewer authority.

The southern end of the property includes development of boardwalks in flood prone areas for both the creek trail and the upland trail. Here, the trails converge as they approach the Fort Jackson Boulevard bridge, providing a single trail under the bridge and linking the trails with proposed improvements in the Fort Jackson Boulevard/Devine Street Corridor. The channel along this corridor is very stable having ready access to a floodplain and wetland system, therefore channel restoration is not required.



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# KILBOURNE RD. TO FORT JACKSON BOULEVARD PLAN:



KILBOURNE RD. TO FORT JACKSON BLVD. PLAN



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## FORT JACKSON BLVD. DEVINE STREET CORRIDOR (General Recommendations):

A key component of the Greenway development effort for the Middle Section of Gills Creek is the rehabilitation of the reach along Crowson Road by the old Kmart property which is currently being redeveloped. This section of Gills Creek between Fort Jackson Blvd. and Devine Street has been highly impacted by the adjacent roadway, business development and associated infrastructure. The broad expanse of natural and readily accessible floodplain, which approaches 300 feet in less disturbed reaches upstream and downstream, has been greatly reduced at the study reach by buildings, roads and parking lots. Although replacement of the original floodplain morphology is not possible with the current development, there are many things that can be done to improve the stability and natural character of the stream.

Due to the severity of the floodplain loss, existing steep slopes and lack of riparian vegetation, the primary goals for rehabilitation along this reach include maximizing flood relief where possible and providing for geomorphically stable slopes. Maximizing flood relief along this reach simply means widening the cross-section as much as possible to allow for the reduction of flow velocity to both reduce erosion potential and allow for some assimilation of pollutants (e.g. sediment, nutrients). This could be accomplished through two means: reducing the paved portion of Crowson Road including the shoulder parking on the west side of the creek; and on the east side of the creek, removing creek-side parking and reducing the drive aisle width in the old Kmart parking lot. Currently the Crowson Road area west of Gills Creek is paved beyond that of a typical two-lane road section, containing an average of 85 feet of asphalt pavement. This greatly exceeds the typical width of a paved two-lane street and could be reduced to provide additional green space on the Gills Creek side. On the opposite side of the creek, the old Kmart parking lot contains a large amount of asphalt paving directing stormwater runoff directly into Gills Creek. This area is tightly confined with asphalt parking spaces adjacent to the Creek and is absent any curbs or gutters. This condition greatly contributes to bank erosion and adversely affects water quality. Through pavement reduction in these areas additional green space could be created, widening the creek cross section. Additional open space then allows for the provision of geomorphic stability and the re-establishment of appropriate bank slopes (e.g. 2:1 or greater) which can be readily vegetated.

A secondary goal for the rehabilitation of this reach includes improvements to the quality of the reach aquatic habitat. The primary goals of increasing flood relief and providing stable, vegetated slopes will improve in-stream aquatic habitat by reducing the impacts of high erosive forces and excessive sedimentation from erosion. However, just providing stable slopes and a larger section does not translate to habitat improvement. Habitat improvement establishment requires heterogeneity in the fluvial and sediment environment. To accommodate this condition for low flows and moderate storm events, the proposed channel section incorporates a more sinuous pattern induced by the



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## FORT JACKSON BLVD. DEVINE STREET CORRIDOR (General Recommendations - Continued):

occasional low floodplain bench. The sinuosity will allow for the development of sections with deeper pools and varied depths of runs and riffles. The floodplain benches will provide opportunities for sediment and pollutant deposition and assimilation as well as areas of refuge for semi-aquatic species.

It should be noted the intent of the natural channel stabilization is to stabilize the channel using natural and native materials with limited engineered hardening through the use of rock. Given the confined nature of this reach of channel and presence of multiple bridges, however, some hardening may be necessary when analyzed during final design. Selection of appropriate re-vegetative and bioengineering techniques will be refined during final design when more information on site topography, utilities, and hydrology and hydraulics is available. In general, channel banks will be graded to less severe slopes such as 2:1 or 3:1 and protected using natural fiber matting; bank toes in high velocity areas will be stabilized with large rock or boulders. Potential bioengineering applications may include: live stakes, live fascines and soil lifts (see example details). Note that the details include the incorporation of underground utilities (if found) which is typical for streamwork in these types of urban settings. It will be important that the selection of plant materials considers local endemic species, aesthetics, and growth habitat to work well with the proposed greenway landscaping. It should be noted that these proposed improvements will require the cooperation of adjacent land owners.

Along with the reduction of the Crowson Road section, improvements to the aquatic habitat and channel stabilization; there are also opportunities for improvement of the pedestrian experience along the Crowson Road corridor. This can be accomplished through the introduction of organized parallel parking along with new sidewalks on both sides of Crowson Road. Here, the creek-side walk is punctuated at Fort Jackson Boulevard by a corner park with rain garden, boardwalk overlook and interpretive areas. This corner park aligns with new pedestrian crossings at Fort Jackson Boulevard and at Crowson Road. Mid-block on Crowson Road is a creek overlook and expanded plaza space providing additional opportunities for seating and environmental interpretation. In this location, steps provide direct access to the water for fishermen and others.

For continued trail access along this corridor, new turndown walks and pedestrian crosswalks are recommended at the Crowson Road/Devine Street intersection. These improvements will assist in defining safe routes for pedestrian traffic linking to the Delta Devine/Midlands Tech corridor to the south. The improvements will require cooperation from the existing property owners affected by the changes.



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## FORT JACKSON BLVD. TO DEVINE STREET CORRIDOR (Technical Recommendations):

On the east side of Gills Creek additional open space, more gently sloped creek banks and new creek-side vegetation is allowed by the reduction of pavement at the old Kmart parking lot. An adjacent sidewalk is added along the extent of the creek, with steps connecting the north end trail to the street level at Fort Jackson Boulevard and ultimately to a new pedestrian crosswalk on Fort Jackson Boulevard. In the vicinity of those steps, additional steps lead down to a creek-side overlook and boardwalk crossing under the bridge. At the opposite end of the corridor, another overlook with boardwalk connects to street elevation sidewalks. These proposed improvements will require the cooperation of the adjacent land owners.



Micro-bioretenion swales are proposed along the parking lot parallel to Crowson Road. These would consist of an 8' wide (at the bottom) ditch with planted organic filter media and an under drain. This will allow the swales to store the first flush of runoff (0.5" +) from the adjacent parking lot and filter the runoff for pollutant removal prior to entering the stream via the under drains and improving water quality. Any runoff above the first flush, which typically has a significantly lower pollutant concentration, will pass through the bioretention swales once full, via stabilized stone/riprap weirs and channels into the stream. The native plantings utilized in the filter bed will also make this water quality feature a visual asset.

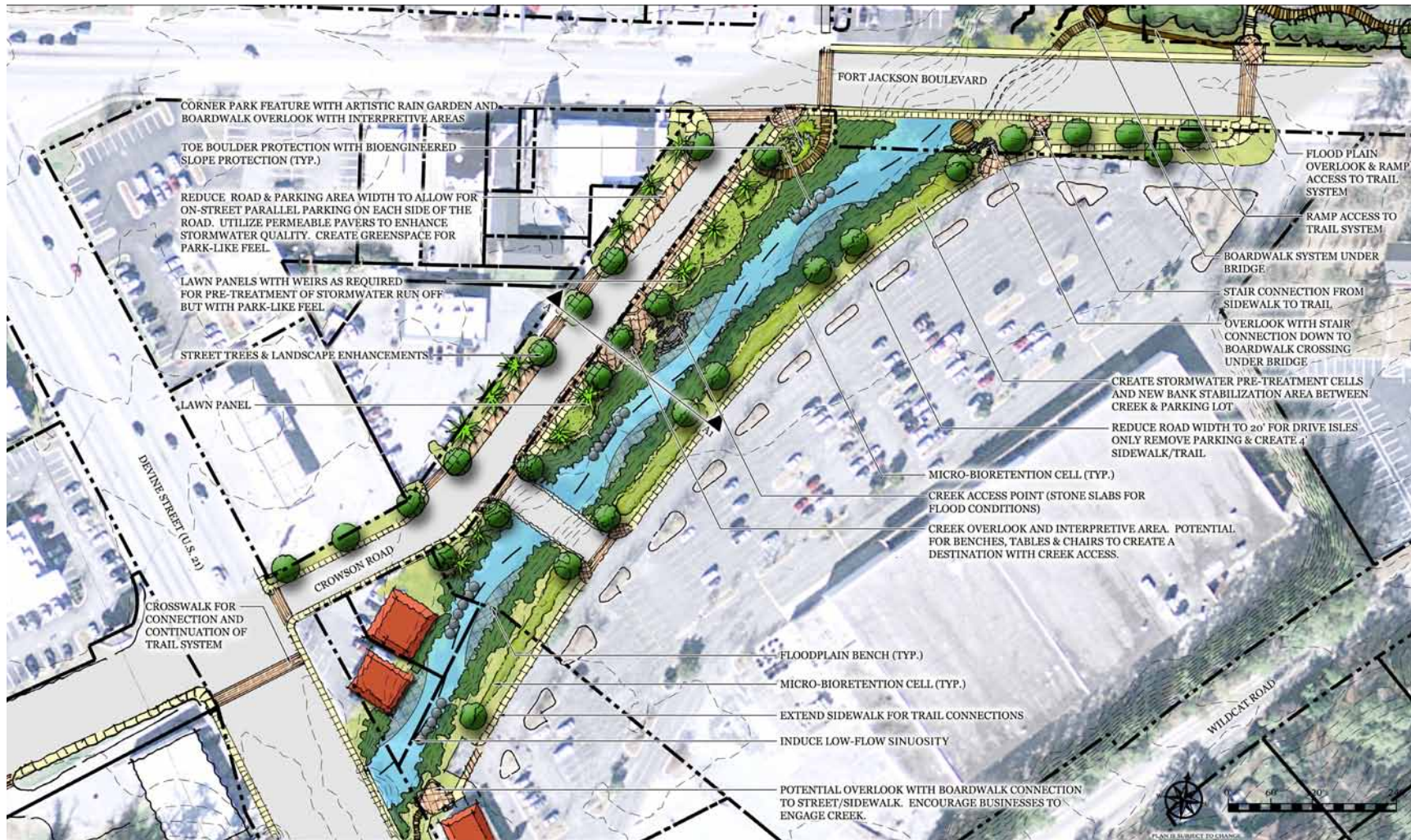


However, in addition to the improvements, treating runoff efforts should also focus on general source reduction. The drainage areas that run along the swales, may be broken out into multiple segments to achieve the level grade for even filtering. They would run along the east bank of the stream channel both south (DA1) and north (DA2) of the bridge into the parking lot. The 180' of proposed swales capturing runoff from the adjacent parking lot from DA1 (~1.8 acres) can store approximately 3400 cubic feet (cf) which will store and filter the runoff from over 0.5" of rainfall (3,100 cf). For DA2 (~3.5 acres) north of the bridge, the 480' of proposed swales can store 9,000 cf of parking lot runoff which is nearly enough to capture 0.75" of rainfall runoff (9,052 cf). If this runoff also includes 80% of the rooftop runoff from the old Kmart building (2.12 acres of total rooftop), then the swales are still large enough to treat the first 0.5" of rainfall runoff from the lot and roof combined. Overall, this quantity of storage will provide full water quality treatment for all typical rainfall events, and first flush treatment for more intense, less frequent events.

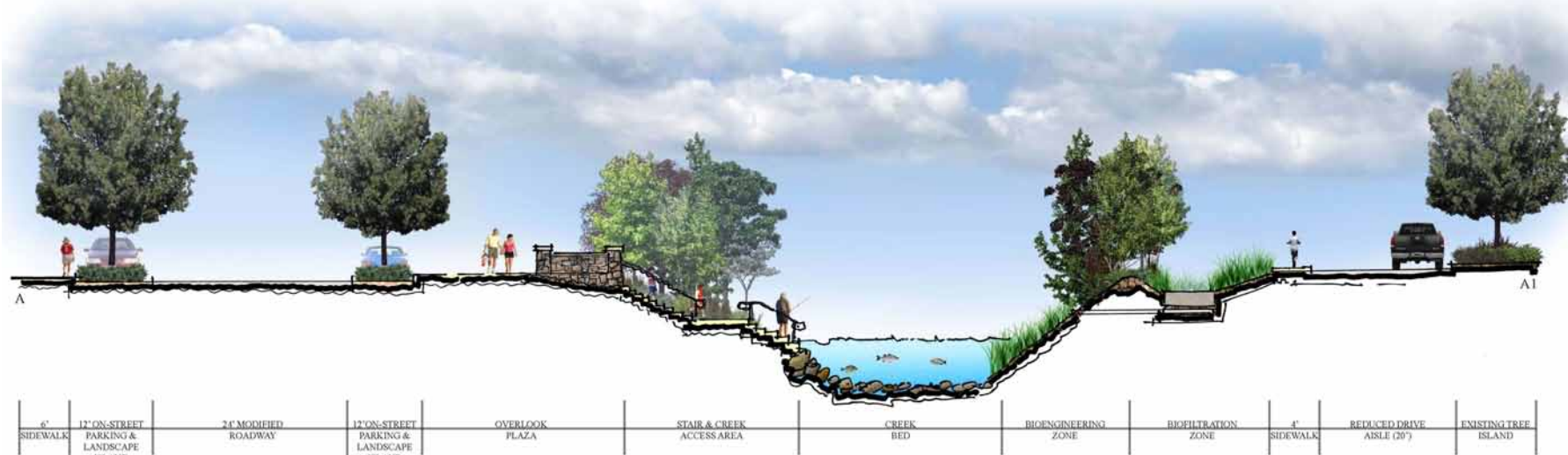


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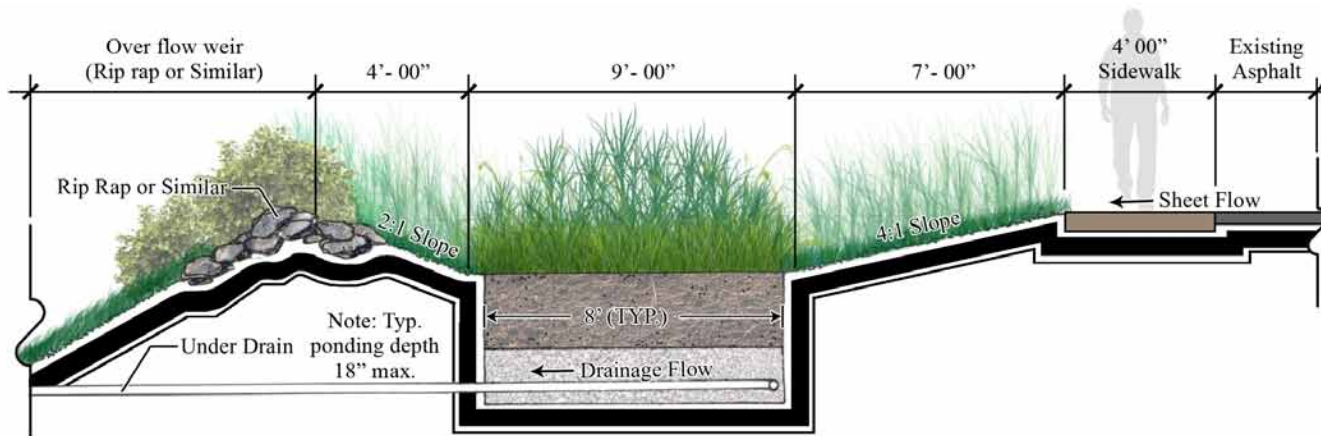
# FORT JACKSON BLVD. TO DEVINE STREET PLAN:



# FORT JACKSON TO DEVINE STREET TYPICAL SECTIONS:



**CROWSON ROAD SECTION**  
N.T.S.



**BIOFILTRATION DETAIL: TYPICAL SECTION**  
N.T.S.



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## DEVINE STREET TO ROSEWOOD DRIVE CORRIDOR (General Recommendations):

The Delta Devine/Midlands Tech corridor begins at Devine Street with the south end of the corridor bounded by Rosewood Drive. The northeastern end of this corridor's floodplain has been significantly reduced by adjacent commercial development, with the most constricted portion being adjacent to Devine Street. As the creek flows south, away from Devine Street, the floodplain broadens, and at the southwest end a large wetland separates Midlands Tech's parking lot from the creek. With this being said, the corridor overall would benefit from the upstream source reduction.

On the northwest side of the creek, the adjacent Delta Devine property owner has been amenable to partnering with the GCWA to provide access to Gills Creek, while maintaining the option to develop additional commercial/retail space and required parking. As proposed, a new shared parking area could support supplemental parking that may be required for expanded commercial space as well as a trail head/creek access point for canoes and kayaks. The northeastern corner of the parking lot contains a small creek overlook with shade trellis. Punctuating the southwest corner of the new parking area, the trail head would serve as an overlook with picnic pavilion with steps providing direct pedestrian access to the creek. An alternate ramped walk provides handicap access to the creek as well as access for canoes and kayaks. A boardwalk through the wetland then links the creek access to a ramp providing access to street level and the parking lot at Midlands Tech. Both overlook areas, the connecting trails and proposed boardwalks have the potential for interpretive signs spotlighting the unique aspects of this corridor.

On the northeastern side of the creek, a trail is proposed paralleling the creek bank and linking Devine Street and Rosewood Drive for pedestrians as the trail routes south, the area flattens out into a more natural flood plain. Access to Rosewood Drive will require cooperation from adjacent property owners to remove existing barriers and allow ramp access that links to street level.



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## DEVINE STREET TO ROSEWOOD DRIVE CORRIDOR (Technical Recommendations):

The current detention pond in the southern corner of the Delta Devine property can be modified to make it a more effective and attractive water quality asset. As proposed, the footprint of the pond would be widened and regraded to include alternating deeper, wet pools and benched areas that are frequently submerged. This concept, while still achieving the quantity of attenuation for which it was originally intended, will allow for better settlement of sediment and attached pollutants in the deeper permanent wet pools. At the same time, the benched grading will allow for the establishment of native vegetation that will provide additional filtering; a varied habitat for wildlife; and a more natural look. Consideration for the existing sanitary sewer line running between separate cells of the current detention pond will need to be made during the design phase.



In the Midlands Tech area, runoff from the east side of the parking lot drains to a wetland area prior to reaching the Creek. This provides a natural vegetative filtering superior to most engineered stormwater practices. However, given the quantity of runoff from the lot, it is advised that a “pretreatment” mechanism be installed for this runoff, enhancing and prolonging the effectiveness of the wetland in providing enhanced water quality. By providing linear forebays, or depressed areas, along the edge of the lot, the runoff will be slowed down, depositing some of the larger sediments from the first flush. This will also allow for the more intense runoff flows to be distributed by level spreaders on the downstream side that will prevent formation of eroded channels through the wetland.



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# DEVINE STREET TO ROSEWOOD DRIVE PLAN:



## OTHER OBSERVATIONS:

While this Master Plan specifically focuses on the study areas of Kilbourne Road to Fort Jackson Boulevard; Fort Jackson Boulevard to Devine Street; and Devine Street to Rosewood Drive; the remaining portions of the watershed should not be overlooked. These areas offer enormous opportunities for development of upland interpretive and leisure trails, and blueway trails for paddlers. Through the continued efforts of the Gills Creek Watershed Association and its partner organizations these areas can also be advanced as significant destinations and contributors to the quality of life in Greater Columbia. One example is the opportunity currently provided by the Intertape Polymer Group property at the southern end of the watershed. The GCWA should continue discussions with the current property owner to pursue both a greenway trail head and a canoe/kayak (blueway) access point. As the current property owner is amenable to public use and it is anticipated that the ownership may change in the future, these discussions should be prioritized.



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## NEXT STEPS:

The Gills Creek Middle Watershed Master Plan has been prepared to focus attention on possible improvements to the study area. Proposed improvements will occur over time and will require the continued energies of the GCWA membership acting as project advocates. This plan can effect change through coordinated efforts with the City of Columbia, Richland County, the Richland County Conservation Commission and others.

This plan can be used as a catalyst to:

- Effect changes in stormwater management policies and practices;
- Effect changes in water quality policies and practices;
- Effect changes in future development buffers and setbacks;
- Leverage discussions with targeted property owners, leaseholders and utility providers;
- Develop shared use agreements with and/or request easements to improve, maintain and access/use properties held by others;
- Seek/obtain funding for recommended master plan improvements; and
- Direct preparation of detailed design/engineering documents suitable for permitting and construction contracting.

For planning purposes, Statements of Probable Costs have been included in Appendix D. These costs are preliminary in nature and should be refined as further study is completed. Soft costs such as surveying, engineering and permitting have not been included, and costs are reflected in 2013 dollars.



## APPENDIX A - OBSERVATIONS BY LEWIS KIRK:

Kyle Theodore and Mark Baker from Wood+Partners, and Dave Griffin and Chris Brooks from McCormick Taylor, Erich Miarka and Lewis Kirk spent most of Tuesday, April 30 and the morning of Wednesday, May 1 visiting areas of the middle watershed to determine conditions on the ground and to work on ideas for implementing a greenway and a blueway. Nancy Stone-Collum joined us on Tuesday. Tuesday's tour went far better and faster than I imagined it might. We covered a lot of territory and saw a lot of good and bad aspects. The McCormick Taylor engineers did not join us until lunch. We visited the end of Chimney Hill Rd in the Hampton Crest neighborhood. That is pretty much the most southwestern neighborhood in the Hampton Hills area before the CSX tracks and Gills Creek. We did not get to the creek but did wander back into a swampy common area. Nice stands of mountain laurel back there.

We visited Intertape Polymer Group with Rick Carnell and viewed the causeway which we want to convert to a bottomless culvert. We also walked up to the Child's Cemetery and discussed IPG's landfill and the adjacent City of Columbia landfill, both of which are closed. We also looked at the Norfolk Southern Railway trestle which is a quite handsome stone structure built with large blocks of what's most likely local granite. There is room to put the greenway beneath the trestle. Visited Gills Creek Parkway and discussed the planned repaving and where the greenway might go. The McCormick Taylor folks joined us for lunch at The Diner on Fort Jackson Blvd. We visited Lake Katharine and the dam, and took a look at Wildcat Creek. We walked the Kilbourne to Ft. Jackson Blvd segment from Kilbourne Rd (which is the Palmetto Trail City Passage), but stopped part way when it got too wet.

Then we toured the Crowson Rd and former KMart section and made what turned out to be preliminary observations regarding the excess pavement, stream bank conditions, the proximity of structures to the creek, passage around or beneath the bridges, etc. Our Wednesday morning tour today was good, too. We walked the Kilbourne to Ft. Jackson Blvd segment from the Ft. Jackson Blvd bridge and we think that's ready to go. The combined group walked Crowson Rd again. Mark had a lot of creative ideas for the area including restaurants with decks overlooking the creek. We all agreed that this area is a focal point that needs intensive work.

The group visited several sites on the sewer easement on the west of Beltline Blvd, and sites where roads run down towards the creek. We visited the CSX railroad trestle which does not allow easy access for a trail underneath. The group pretty much decided that the Midlands Tech situation might be the best it can be as it has a natural buffer. Invasive plants and dense underbrush could be removed, plus Midlands Tech should stop dumping landscape materials such as mulch and removed plants in the area.

The section from Devine/Garners Ferry to Shop Rd still needs more direct observation to determine the route for trails and the feasibility of a blueway. There was a single tent in a camp on the flood ramp behind the storage units and we did not feel it was a good idea to find out if it was occupied or not. The engineers were going to look at the BiLo site before they left to see what could be more effective. We got permission from Hammond School to visit their south campus and walk the boardwalk between the CSX and Norfolk Southern tracks and it was really beautiful but ends in pretty impassable wetlands.



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### MEETING MINUTES - PUBLIC OPEN HOUSE APRIL 30, 2013



- Trails:
  - Should they be destination or for neighborhood use?
  - Will parking be provided or is it accommodated through cooperative use?
- Paddlers:
  - Parking will be needed to support their activity.
- Identify blueway channels and corridor(s):
  - Palmetto Paddlers could assist with long term maintenance
  - Funding through hospitality tax, but requires parking and must be a destination
  - How will neighbors react?
- Greenway Money:
  - Gills Creek is right behind the Saluda River Greenway
  - Requires easements to be identified
  - There is \$22 million in County-wide 1 cent sales tax for:
    - Capital improvements
    - Property/easement acquisition
    - Engineering
    - Not for stream restoration
- Property use: (all methods)
  - Purchase outright (City)
  - Land trusts/non-profits, land trusts want large parcels
  - Access easements
  - City policy regarding acquisitions/purchase and easements
- Sanitary sewers as opportunity corridors:
  - E. Richland County Sewer District
  - They may be abandoning some existing easements?
- Richland County Conservation Commission currently holds small easements
- Partnering is critical to success (City of Columbia, Richland County, Richland County Conservation Commission, etc. and GCWA)



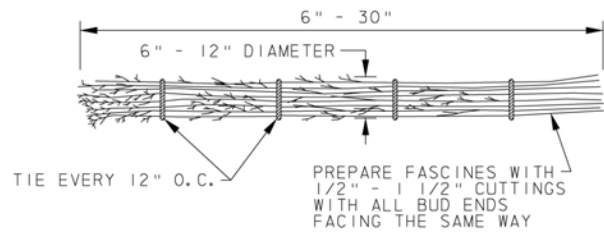
## APPENDIX B - MEETING NOTES (Continued):

- Crowson Road Area:
  - Flooding in this area
  - Owned by City (Crowson Right of Way)
- City Projects:
  - A node plan that effects this area (commercial zone) is being conducted
  - A pedestrian/bike plan is being prepared for the entire city
  - In two years: there will be an update of land use and city codes
- Fishing: (there are water quality concerns, but currently people are fishing at):
  - Crowson
  - Intertape Polymer
  - Rosewood
  - Sewer easement above Ft. Jackson Boulevard
  - Occurs because there is access, not because there is good fishing
- Intertape Polymer Region:
  - Opportunities in future
  - Existing road access to old dump site (\$250,000 replacement cost) is of concern
- Greenways in Floodplain:
  - There is interest in this
  - There are trade-offs in maintenance
  - Consider ADA compliance
  - East to west connection?
  - Crowson Road area up to Target- needs pedestrian connection
  - Pelham Drive/Gills Creek Parkway connection?
  - Bike/pedestrian conflicts are an issue
  - "Wilderness (soft)" trail vs. paved paths in more concentrated use zones
  - Links to communities
  - Restrooms? No- except at trailheads?
- Midland Tech education opportunities?
- Flooding in select areas (i.e. Timberlane Drive)
- City of Columbia is updating stormwater guidelines. Are there incentives?
- Priorities as discussed by group:
  - Crowson
  - Kilbourne to Ft. Jackson
  - Economic incentives to encourage redevelopment
  - Improve water quality
  - Clean up "big trash"

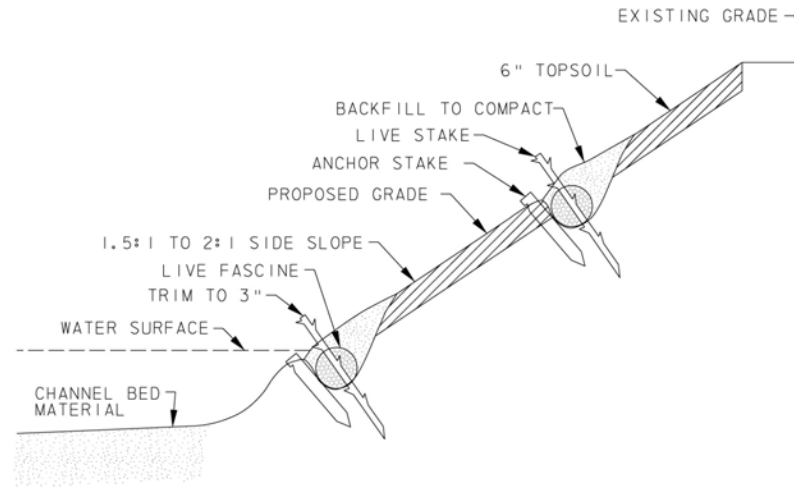


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# APPENDIX C - TYPICAL BIOFILTRATION SECTIONS:



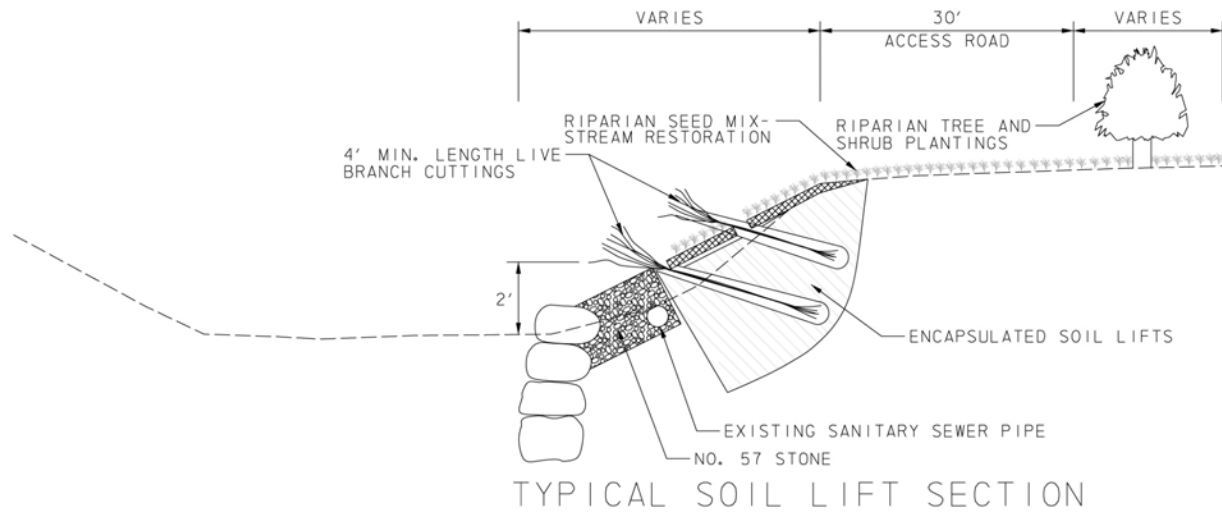
LIVE FASCINE - DETAIL



LIVE FASCINES - CROSS SECTION

NOTES:

1. SPACE LIVE FASCINES ROWS 2.5' TO 3.0' APART.
2. SPACE LIVE STAKES 2.0' APART (ON CENTER).

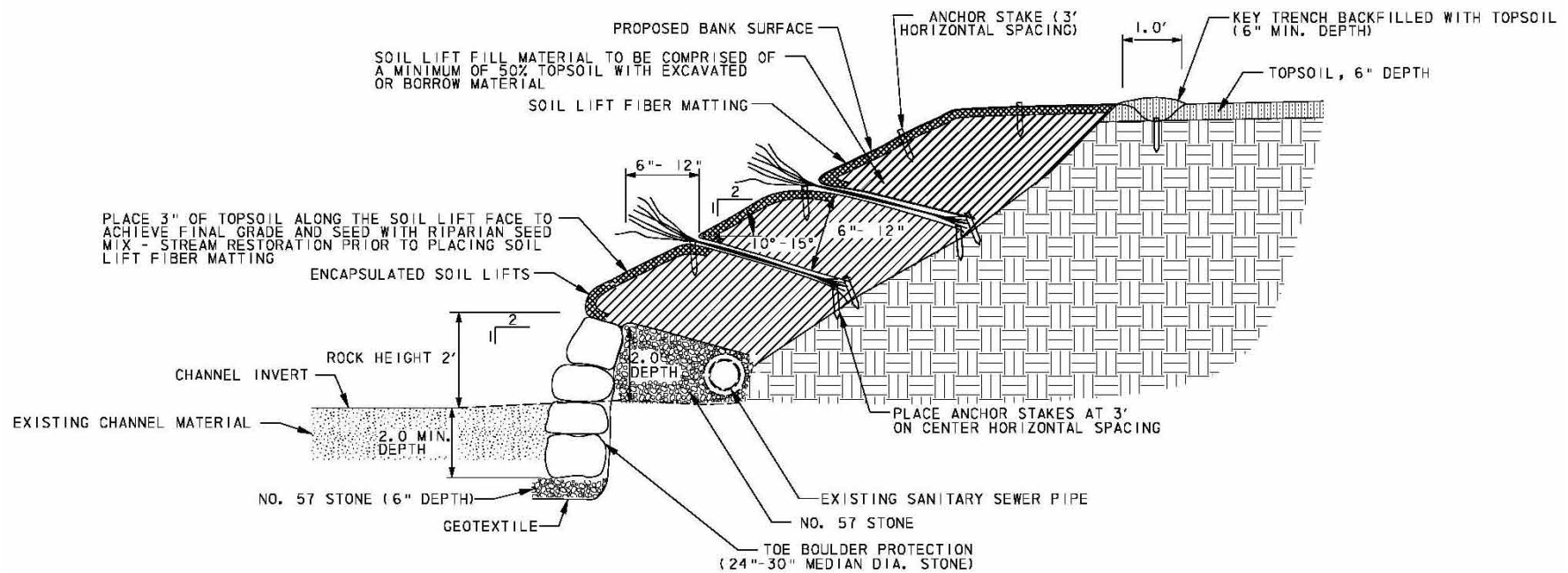


TYPICAL SOIL LIFT SECTION



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## APPENDIX C - TYPICAL BIOFILTRATION SECTIONS:



### FABRIC ENCAPSULATED SOIL LIFT WITH TOE BOULDER PROTECTION

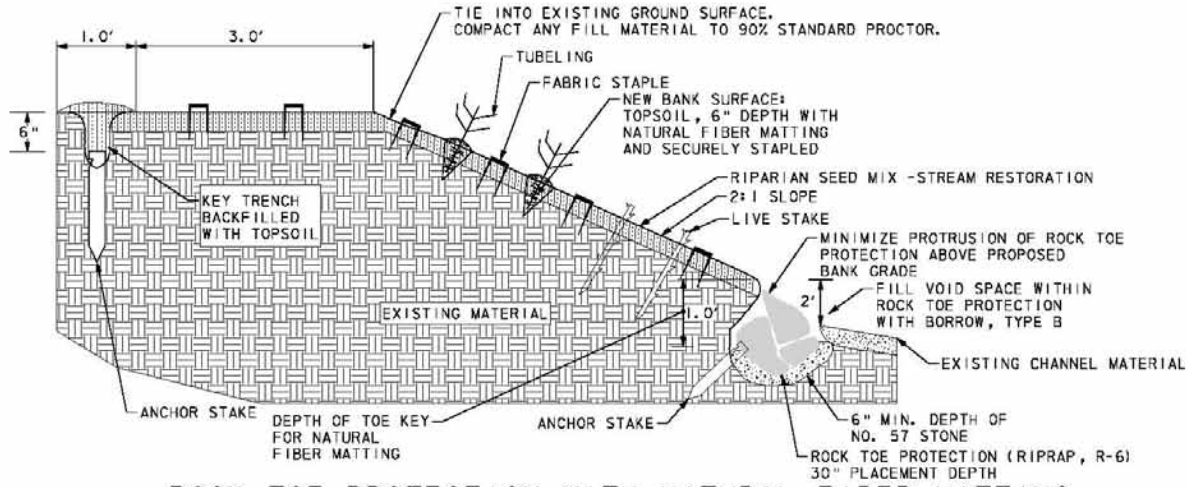
NOTES:

1. VERIFY THE ELEVATION OF THE SANITARY SEWER LINE ALONG THE LEFT BANK (FACING UPSTREAM) ALONG THE FABRIC ENCAPSULATED SOIL LIFT AND COORDINATE THE FINDINGS WITH THE ENGINEER A MINIMUM OF TWO WEEKS PRIOR TO BEGINNING WORK
2. PLACE NO. 57 STONE (6" MIN.) AROUND EXISTING SANITARY SEWER PIPE

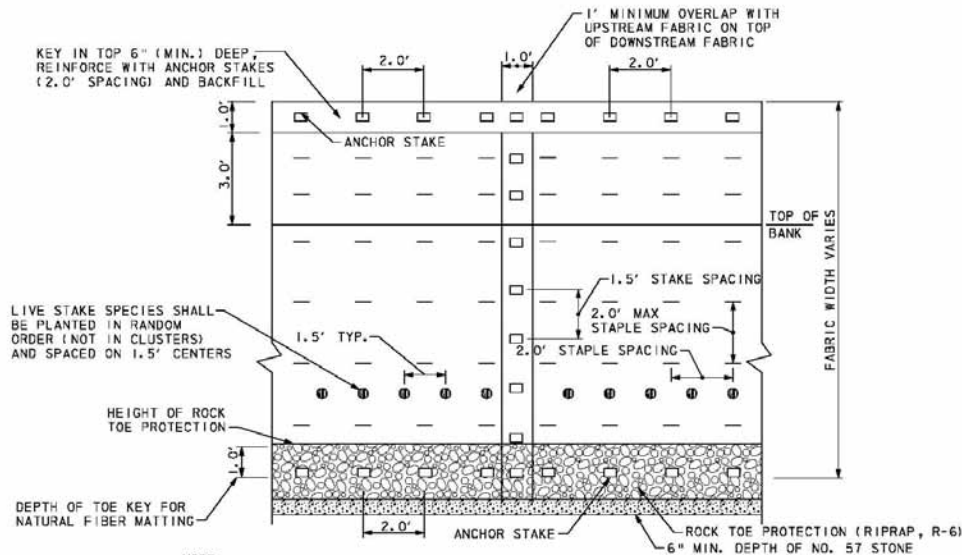


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# APPENDIX C - TYPICAL BIOFILTRATION SECTIONS:



**ROCK TOE PROTECTION WITH NATURAL FIBER MATTING  
AND BIOENGINEERING STABILIZATION**



NOTE:  
NATURAL FIBER MATTING TO BE ROLLED LENGTHWISE ALONG STREAMBANK EXTENDING BELOW THE TOE ANCHOR TRENCH AND A MINIMUM OF 1.0' OVER TOP OF BANK. IF MORE THAN ONE ROLL IS REQUIRED, MID-BANK OVERLAP SHOULD BE A MINIMUM OF 1.0' AND SECURELY FASTENED WITH ANCHOR STAKES. TOP EDGE OF NATURAL FIBER MATTING SHALL BE KEYED INTO EXISTING GROUND SURFACE AT A MINIMUM DEPTH OF 6" AND FASTENED W/ANCHOR STAKES SPACED EVERY 2.0'.



# APPENDIX D - STATEMENTS OF PROBABLE COST :

**Gills Creek Middle Watershed**  
**Kilbourne Rd. to Fort Jackson Blvd.**  
 Columbia, SC



**Statement of Probable Costs**  
 October 18, 2013

DESCRIPTION	QUANT.	UNIT	UNIT COST	TOTAL
<b>Kilbourne Rd. to Fort Jackson Blvd.</b>				
<b>Hardscape and Landscaping:</b>				
1. Site Preparation, Clearing, Grubbing & Erosion Control for Trail Areas	2	AC	\$5,000.00	\$10,000.00
2. Boardwalks	9147	SF	\$20.00	\$182,940.00
3. Stairs (Connections at Ft. Jackson and Kilbourne Rd.)	250	LFR	\$70.00	\$17,500.00
4. Overlook Deck at Gills Creek (Deck, Signage, Benches, etc.)	1	Allow	\$15,000.00	\$15,000.00
5. Wilderness Trail (Mulch)	10036	SF	\$1.00	\$10,036.00
6. River Trail (Asphalt)	26833	SF	\$1.50	\$40,249.50
7. Pedestrian Overlook @ Ft. Jackson (Walls, Pavers, Railings, etc.)	1	Allow	\$30,000.00	\$30,000.00
8. Pedestrian Overlook @ Kilbourne Rd. (Walls, Pavers, Railings, etc.)	1	Allow	\$30,000.00	\$30,000.00
9. Landscaping (Minor revegetation at disturbed areas)	1	Allow	\$15,000.00	\$15,000.00
			<b>Subtotal:</b>	<b>\$350,725.50</b>
			<b>15% Contingency:</b>	<b>\$52,608.83</b>
			<b>Kilbourne Rd. to Ft. Jackson Blvd. Total:</b>	<b>\$403,334.33</b>
10. Alternate Meadow Enhancements (Clearing, Light Grading, Meadow Seed, etc.)	1	Allow	\$55,000.00	\$55,000.00
			<b>15% Contingency:</b>	<b>\$8,250.00</b>
			<b>Kilbourne Rd. to Ft. Jackson Blvd. Alternate Total:</b>	<b>\$63,250.00</b>

**NOTES:**

1. The above estimate was prepared as part of conceptual design and is based on the 1"=60' Gills Creek Middle Watershed Master Plan, Kilbourne Rd. to Fort Jackson Blvd. Study Area prepared by Wood+Partners, Inc., dated October 18, 2013.
2. Materials identified in estimate are intended for pricing purposes only and represent current market conditions/rates.
3. Line item costs could change significantly, depending on final design and engineering documents, phasing priorities, permitting approvals, desired level of finishes



GILLS CREEK WATERSHED ASSOCIATION



# APPENDIX D - STATEMENTS OF PROBABLE COST :

**Gills Creek Middle Watershed**  
**Fort Jackson Blvd. to Devine Street**  
 Columbia, SC



## Statement of Probable Costs

October 18, 2013

DESCRIPTION	QUANT.	UNIT	UNIT COST	TOTAL
<b>Fort Jackson Blvd. to Devine Street</b>				
<b>Hardscape and Landscape:</b>				
1. Sawcut, demo & remove asphalt paving, etc. (K-Mart Parking Area)	22704	SF	\$2.00	\$45,408.00
2. Sawcut, demo & remove asphalt paving, etc. (Areas along Crowson Rd.)	40928	SF	\$2.00	\$81,856.00
3. Site Preparation, Clearing, Grubbing & Erosion Control (Along existing K-mart Parking lot)	3	AC	\$5,000.00	\$15,000.00
4. Site Preparation, Clearing, Grubbing & Erosion Control (Along Crowson Rd.)	0.5	AC	\$5,000.00	\$2,500.00
5. Landscaping (Streetscape along Crowson Rd.)	13366	SF	\$3.50	\$46,781.00
6. Concrete sidewalks (Along Crowson Rd.)	8608	SF	\$4.50	\$38,736.00
7. Concrete sidewalks (Along Ft. Jackson Blvd. and existing K-Mart parking lot)	8257	SF	\$4.50	\$37,156.50
8. Crosswalks (Stamped asphalt overlay- total of 8 Crosswalks)	4155	SF	\$3.50	\$14,542.50
9. Boardwalk with overlook (Under Ft. Jackson Blvd. Bridge)	1295	SF	\$20.00	\$25,900.00
10. Permeable Pavers (Parallel Parking along both sides of Crowson Rd.)	4601	SF	\$12.00	\$55,212.00
11. Specialty Paving (Pedestrian - 6 Nodes)	1542	SF	\$10.00	\$15,420.00
12. Stairs (Connections at Ft. Jackson Blvd. from ped paving to walkway & ped paving to B.W.)	496	LFR	\$70.00	\$34,720.00
13. Creek overlook plaza with interpretive area	1	Allow	\$50,000.00	\$50,000.00
14. Creek access point with stone slabs	1	Allow	\$30,000.00	\$30,000.00
15. Corner Park Feature (@ Ft. Jackson Blvd.- Rain Garden, Boardwalk, Specialty Pacers, etc.)	1	Allow	\$40,000.00	\$40,000.00
16. Devine St. overlook w/ boardwalk connection to street	1	Allow	\$30,000.00	\$30,000.00
17. Street / Area Lighthing (Along Crowson Rd.)	1	Allow	\$25,000.00	\$25,000.00
<b>Engineering Improvements:</b>				
18. Bio-swales / B.M.P. areas (Located along the Creek at existing K-Mart parking lot.)	1	Allow	\$165,000.00	\$165,000.00
19. Stream Improvements	1	Allow	\$230,000.00	\$230,000.00
			<b>Subtotal:</b>	<b>\$983,232.00</b>
			<b>15% Contingency:</b>	<b>\$147,484.80</b>
			<b>Ft. Jackson Blvd. to Devine St. Total:</b>	<b>\$1,130,716.80</b>

**NOTES:**

- The above estimate was prepared as part of conceptual design and is based on the 1"=60' Gills Creek Middle Watershed Master Plan, Fort Jackson Blvd. to Devine St. Study Area prepared by Wood+Partners, Inc., dated October 18, 2013.
- Materials identified in estimate are intended for pricing purposes only and represent current market conditions/rates.
- Line item costs could change significantly, depending on final design and engineering documents, phasing priorities, permitting approvals, desired level of finishes



GILLS CREEK WATERSHED ASSOCIATION

# APPENDIX D - STATEMENTS OF PROBABLE COST :

**Gills Creek Middle Watershed**  
**Devine Street to Rosewood Drive**  
 Columbia, SC



## Statement of Probable Costs

October 18, 2013

DESCRIPTION	QUANT.	UNIT	UNIT COST	TOTAL
<b>Devine Street to Rosewood Drive</b>				
<b>Hardscape and Landscape:</b>				
1. Site Preparation, Clearing, Grubbing & Erosion Control	9	AC	\$5,000.00	\$45,000.00
2. Concrete sidewalks	15635	SF	\$4.50	\$70,357.50
3. River Trail System (Asphalt trail paralleling Gills Creek to the SE)	4500	SF	\$1.50	\$6,750.00
4. Crosswalks (Stamped asphalt overlay)	1701	SF	\$3.50	\$5,953.50
5. Boardwalks	5143	SF	\$20.00	\$102,860.00
6. New asphalt parking lot (Adjacent to proposed commercial building)	14012	SF	\$2.00	\$28,024.00
7. New asphalt parking lot (Shared use parking and trail head area)	30403	SF	\$2.00	\$60,806.00
8. Stairs (Connections at Rosewood Dr. to concrete sidewalk)	672	LFR	\$70.00	\$47,040.00
9. Ramp (at Rosewood Drive and Midland Tech)	104	LF	\$20.00	\$2,080.00
10. Landscaping at new commercial/ retail building	8469	SF	\$2.00	\$16,938.00
11. Landscaping at shared use and trail head parking	20544	SF	\$1.50	\$30,816.00
12. Improved Railings and sidewalks along Devine St.	239	LF	\$75.00	\$17,925.00
13. Specialty Pavers (Pedestrian - 2 Nodes)	943	SF	\$10.00	\$9,430.00
14. Permeable Pavers (Vehicular parking stalls for shared use and trail head)	13650	SF	\$12.00	\$163,800.00
15. Creek overlook with shade trellis	1	Allow	\$65,000.00	\$65,000.00
16. Creek gateway overlook with pavilion (Includes Pavilion, Paving, Signage, Furnishings, etc.)	1	Allow	\$140,000.00	\$140,000.00
17. Corner gateway feature at Rosewood Dr.	1	Allow	\$40,000.00	\$40,000.00
18. Kayak/Canoe Launch Area (Includes Stone Stairs, Stone Landing, Signage, etc.)	1	Allow	\$56,000.00	\$56,000.00
<b>Engineering Improvements:</b>				
19. Bio-swales / B.M.P. (Bi-Lo Retrofit Segment)	1	Allow	\$30,000.00	\$30,000.00
20. Bio-swales / B.M.P. (Midlands Tech Segment)	1	Allow	\$13,500.00	\$13,500.00
			<b>Subtotal:</b>	<b>\$952,280.00</b>
			<b>15% Contingency:</b>	<b>\$142,842.00</b>
			<b>Devine St. to Rosewood Dr. Total:</b>	<b>\$1,095,122.00</b>

**NOTES:**

- The above estimate was prepared as part of conceptual design and is based on the 1"=60' Gills Creek Middle Watershed Master Plan, Devine St. to Rosewood Dr. Study Area prepared by Wood+Partners, Inc., dated October 18, 2013.
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- Line item costs could change significantly, depending on final design and engineering documents, phasing priorities, permitting approvals, desired level of finishes



GILLS CREEK WATERSHED ASSOCIATION

