



Riverside Park Improvements & Expansion

Master Plan 2020



Prepared By



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EXECUTIVE SUMMARY

The expansion and improvement of Woodfin Riverside Park is a project resulting from the Woodfin Greenway and Blueway Initiative, a multi-million-dollar re-visioning of the French Broad River as a regional recreational focal point. The expansion of Riverside Park includes the addition of a Whitewater Wave, which will become a world-class destination for kayakers, canoeists, surfers, tubers, and more. The Woodfin Greenway and Blueway Initiative envisions revitalizing the town’s interface with the French Broad River by connecting people to each other, to public space, and to the river. There are several existing recreational facilities in the Town of Woodfin, but this project and the plans for a Greenway and Blueway will significantly increase recreational opportunities along the French Broad River and will be a key asset to the town’s recreational vision.

This master plan was developed for the Town of Woodfin, on their direction, to help guide a unified vision for Riverside Park as the Whitewater Wave was being planned to be located in the river off of the property adjacent to the park. As access, facilities, and associated amenities for The Wave were needed and Riverside Park improvements and connection to The Wave were desired, the concept of one unified Riverside Park was born. This master plan document views The Wave and associated park and Riverside Park improvements as one cohesive Riverside Park, with its key feature, The Woodfin Wave at Riverside Park.

With its scale, unique amenities, and location and accessibility along the Woodfin Greenway and Blueway, the expanded Riverside Park is expected to be a local and regional draw for recreational users. Keeping this in mind, the design allows for a variety of accessible options, from expanded parking, a greenway running through it, several river access points for motorized and non-motorized craft, and a train platform. The park will be open and visible, with visitors being able to move freely from one side to the other, while its linear nature allows guests to experience a variety of activities and active and passive spaces as they move through the park. The park is designed for everyone and to serve all residents by providing a welcoming and safe space to a diversity of users and by providing for active and passive recreation, programming, and access that can be used by a diversity of ages, interest, and abilities. Some key features of the park are a grand entry plaza with a grand pavilion overlooking The Wave, a viewing amphitheater, a play slope, beach access near The Wave, creek access and play, a stage, an ADA fishing dock, and a pump track. The park also boasts several ecological improvements including wetland enhancements, increased riparian buffers, and habitat creation.

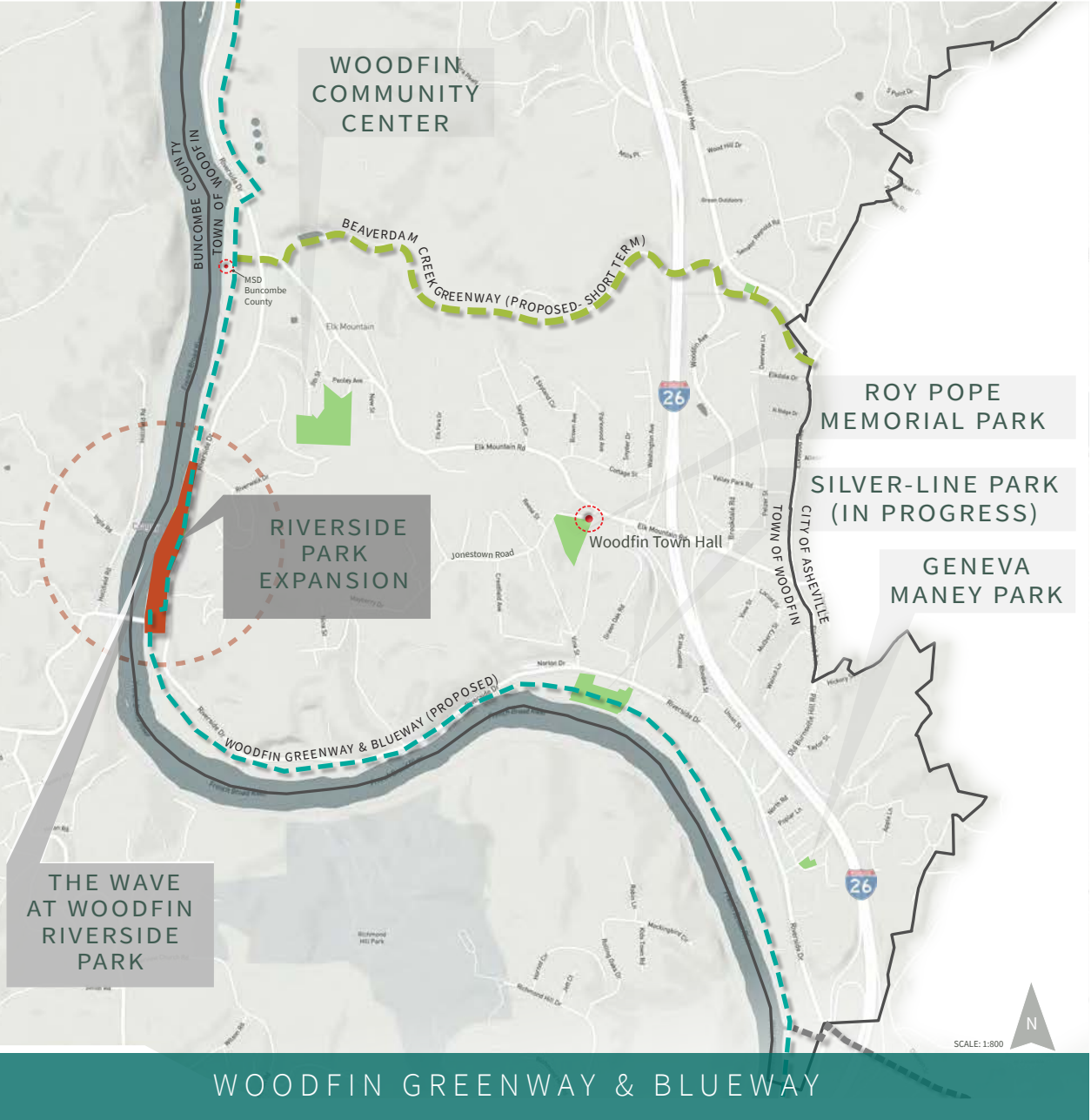
The new and expanded Riverside Park is a place that will connect the public to a story. While the Woodfin Greenway and Blueway Initiative is a vision of connecting people back to the river, the park will tell the story of the history of the French Broad River and the mountains we call home through its design. Site elements, design and interpretive elements will allow people to walk the path of the French Broad River through time. Educating people about where the river has been and what it has created will inevitably shed more light on the importance of protecting our rivers today. It will be a space that brings the community together to learn about the forces of nature that have influenced and inspired us to call this place our home.



CHAPTER

1 Introduction

CONTEXT & RELEVANT PROJECTS



Recreation Needs

There are several existing recreational facilities in the Town of Woodfin but this project and the plans for a Greenway and Blueway will significantly increase recreational opportunities along the French Broad River. There has been a growing demand in the region (with a population growing by around 25% every 10 years for the last 20 years) for water recreation facilities. Additionally, the public has expressed, through feedback, that they desire more trails, more river access, and more public restrooms in outdoor recreation spaces. Finally, the Riverside Park improvements and expansion helps meet several of the goals in the Town of Woodfin Parks and Recreation Master Plan, including to provide more public land and provide safe and accessible connectivity.

Existing Recreational Facilities

Riverside Park was Woodfin’s first park and greenway on the French Broad River and contains a picnic shelter, several picnic tables, grills, benches, a kayak/canoe launch, paved walking trails, benches, and bathrooms. Activities at the park include fishing, kayaking, and grilling. Silver-Line Park, also on the river, is a new park in progress which will connect to Riverside Park and provide additional river access and activities as well as a playground and greenway. Other parks in Woodfin include Geneva Maney Park in South Woodfin, which has a small pocket park that contains picnic tables, benches and play equipment. The last park is the Roy Pope Memorial Park that has a play area with swings and a climbing web.

Relevant Planning Initiatives & Key Actions

A recent bond referendum in the Town of Woodfin, which was approved by voters by a margin of 71% to 29%, will help fund an integrated park and greenway system. There is tremendous public support for parks and greenways and a true sense of urgency by the Town of Woodfin to act and provide the demand for recreational experiences. The Town is looking to leverage the 4.5 million dollar bond with other funding opportunities including potential funding from Buncombe County, Buncombe County Tourism Development Authority (TDA), Surface Transportation Program-Directly Attributable & Transportation Alternatives program (STP_DA & TA), private foundations, individual, and corporate foundations, for a comprehensive park, greenway, and blueway network. The relevant current and past planning initiatives include greenway studies and a Whitewater Wave Park as listed below as part of a revitalization plan along the French Broad River for recreational and commercial uses in the Town of Woodfin.

Buncombe County Greenway & Trails Master Plan.

A county-wide plan was developed in 2012 which included a greenway section through the Riverside Park site connecting to the City of Asheville limits and the Buncombe County line.

Site Visit And Conceptual Design Study For Woodfin Whitewater Wave.

In 2016 a conceptual design study was developed to identify locations and feasibility for a wave park in the French Broad River in Woodfin. The vision of this study was identified as follows, “with visionary plans to revitalize its riverfront with construction of a greenway, improved access to and utilization of the French Broad River by a broad range of users, and by adding a new park fronting the river near Silver-Line Plastics” (Silver-Line Park). The conceptual study determined the feasibility of installing a safe and enjoyable whitewater feature as a possible enhancement to that revitalization plan.

Highway 251/French Broad River Greenway Design & Engineering.

Final design development and construction documents will be starting in 2020 for a three-mile section of greenway that provides access to the park site and will connect Silver-Line Park with Riverside Park and the proposed Whitewater Wave. A feasibility study and preliminary design for this greenway corridor was completed in 2018.

Woodfin Greenway & Blueway Initiative

This is a visionary endeavor that will result in 5 miles of new greenway trails that will link directly to a network of an additional 20+ miles of planned greenways in Asheville; expansion and improvement of the existing Woodfin Riverside Park; two new major river access facilities that will activate recreational use on the French Broad; and The Woodfin Wave – an in-stream whitewater park feature that relies on the natural gradient and flow of the river. The initiative is well underway, with project elements in various stages of design and construction soon to begin.

French Broad River Access

In addition to the Greenway and Blueway, public survey indicates a great desire for additional river access or connection. Such access and interface with the river may take the form of an overlook, beach area, or river edge seating.

CHAPTER 1: INTRODUCTION

VISION

As the Town of Woodfin continues to grow, the expansion of The Woodfin Wave at Riverside Park will be Western North Carolina's premier urban whitewater destination and riverfront park. The park will be a central node on the Woodfin Greenway and Blueway, that shapes community character and celebrates the community's diverse needs. It will be a safe place to play, to gather, contemplate, and recreate.

GOALS

- 1 To become a premier urban whitewater and blueway destination.** By providing event gathering space that interfaces with the river and amenities that serve whitewater competitions, The Woodfin Wave at Riverside Park will become a premier urban whitewater destination.
- 2 To connect the park as hub for the Woodfin Greenway and to the surrounding community.** The park will connect regional users through the blueway and greenway access as well as connecting community users through reduces barriers to access, including visual and physical connections.
- 3 To provide a welcoming and safe space to a diversity of users.** By providing for active and passive recreation, programming, and access that can be used by a diversity of ages, interest, and abilities, the park will serve as a community park to serve all residents.



*** Note:** The Vision, goals and program needs were developed through a facilitated process with the Town of Woodfin and a Steering Committee (Doug Hataway and Garrett Artz representing RiverLink, Buncombe County Recreation Services, and Linda Giltz representing the Town of Woodfin).

PROGRAM NEEDS

Existing Riverside Park Improvements

- Greenway Connection that reduces pedestrian conflicts
- Physical and visual connection of Riverside Park expansion site
- Boat ramp with trailer access
- Parking for vehicles with trailers and a turn-around
- Fishing Platform (ADA)

Riverside Park Expansion

- Parking
- Restrooms (Single occupancy, family style)
- Space for additional porta-potties
- Changing area
- Pavilion/picnic area
- Area for kayak storage (racks)
- Maintenance facility
- Pet friendly facilities
- Access to the river with ramp for rafters
- Interface between park and river (ex. overlook, spectator area, beach area, seating)
- Nature playground/Open play
- Open space
- Greenway connections considering pedestrian impacts
- Event space
- Wayfinding
- Interpretive signage
- Park sign



CHAPTER
Site Analysis/Assessment **2**

Site Analysis

Site Description

The Riverside Park site is a 8.5-acre site that includes the existing Woodfin Riverside Park (5.2 acres) and an additional property that will be acquired to expand the park, known as the Waste Pro property (3.3 acres).

The majority of the proposed site is within the French Broad River’s floodplain, though the Waste Pro portion has had a much greater level of alteration. The site was elevated with fill, largely paved with concrete, a bridge was constructed through it, and currently has a quonset hut-style structure on it. The existing Riverside Park portion contains a parking lot, pavilion, picnic tables, walking paths, and a river access timber staircase.

Water Resources

Streams. The site has two unnamed streams. The southern stream travels from the east, crossing underneath Highway 251 via culvert and daylighting west of the railroad tracks. There appears to be some drainage issues, with some water collecting near the tracks and draining towards the existing Riverside Park entrance. The stream is fairly degraded and unstable and needs reestablishment of a healthy riparian buffer. The northern streams borders the property of the existing Riverside Park and the French Broad River Academy. This stream also has minimal riparian buffer. Both of these streams will likely need permitting if any impacts are proposed.

Wetlands. There is potentially a small wetland at the outfall of the stream as it crosses under the railroad. In future phases a jurisdictional wetland determination will be needed.

The French Broad River. The entire site borders the river. It’s original state was likely a floodplain forest, which allowed for regular flooding. The riparian buffer has varied intactness. The floodplain and its restrictions, including floodway and 100-year flood plain, can be viewed on the Areas with Restrictions maps.

Existing Structures and Condition

Riverside Park Structures. The existing Riverside Park has numerous structures, including a pavilion, picnic tables, a restroom, a river access staircase, and a small footbridge that crosses the northern unnamed stream. There is also an exiting asphalt pathway the circumnavigates the park.

The Waste Pro Site. This site is used for storage of industrial recycle bins and has about 70% of the site paved in concrete. The concrete is cracked and deteriorating. Some portion of the concrete pad has been built on beneficial fill material which may be settling, causing the concrete’s deterioration. The Old Leicester Highway bridge runs adjacent to the site, and an old stone bridge abutment and pilings remain at the river’s edge on the northwest corner of the property. It is recommended that these bridge piles be abolished as they are safety hazards for river users because of the sharp protruding metal and potential for entrapment under parts of the structures.

Environmental Assessment

Phase I Environmental Assessment. Based on the Phase I Environmental Site Assessment, Alpha Environmental revealed evidence of a recorded recognized

environmental condition and recommended a Phase II Environmental Site Assessment (Phase II ESA).

Phase II Environmental Assessment. The Phase II ESA performed by Alpha included two soil samples and found VOCs below the set standards for groundwater and soil for the detected contamination. Alpha Environmental concluded that the source of the VOCs is unknown and it did not appear that the site has been heavily impacted by any potential contamination, and therefore removal of contaminated soils and coordination with NC-DENR brownfields program will not be required.

Utilities & Transportation

Utilities. Several utilities are present across the property. A sewer main, as well as connecting lines bisect the site. Duke power distribution lines are shown on the map. A fiber-optic line runs within the electric easement at Riverside Park, but is not shown on the map. All utilities mentioned are shown on the Areas with Restriction maps with further detail about restrictions.

Transportation. Two major transportation facilities have an affect on the site, Highway 251 (Riverside Drive) and the Craggy Railroad (a recreation rail line).

Highway 251 is the main road to access the site. Accurate NC Department of Transportation (NCDOT) right-of-way (ROW) will be determined when the site is surveyed, but ROW will have some level of restrictions, including required driveway and sign permits. There are no future plans to improve Highway 251, but NCDOT does have plans to replace the Old Leicester Highway bridge over the river. Per the published State Transportation Improvement Plan, NCDOT was scheduled to replace the bridge sometime during 2024-2028. NCDOT Division 13 expressed interest in working with the park design and reflecting the design and construction in the final design of the bridge replacement project. Full communications on this matter can be found in Appendix C.

The Craggy Railroad is a recreation rail line. This line is owned outright and restrictions are shown on the Areas with Restrictions maps. Silver-Line Park is planned to have a station stop. Plans for a stop may be considered at this site as well.

The following is a list of utilities/transportation within the site with the point of contact whom has communicated any restrictions. These restrictions are conveyed on the Areas with Restrictions maps.

Metropolitan Sewerage District ROW, Ed Bradford, P.E...- Director of Engineering, MSD of Buncombe County, N.C.
828.225.8261 / www.msdbc.org

Duke Energy – Distribution Line ROW, Sara Lutz – Distribution Line
Sarah.Lutz@duke-energy.com

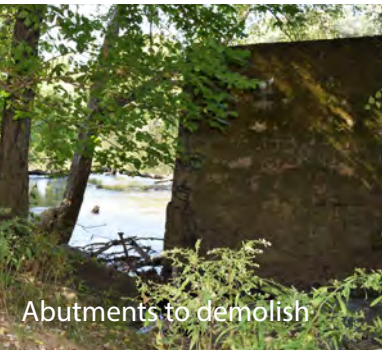
AT&T Telecommunication Lines
Chip Lance-AT&T WNC Plant Contract Supervisor / tl4180@att.com

NC Department of Transportation, Division 13
Brenden Merithew, Division Project Tam Lead
828-250-3000 / bwmerithew@ncdot.gov

Craggy Mountain Railroad, Rocky Hollifield- President
828-808-4877 / rocky@craggymountainline.com



The existing Riverside Park



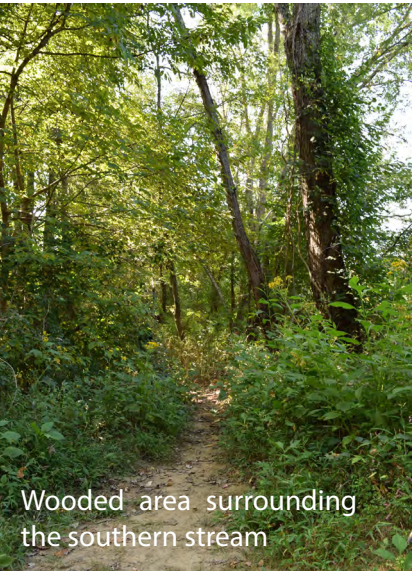
Abutments to demolish



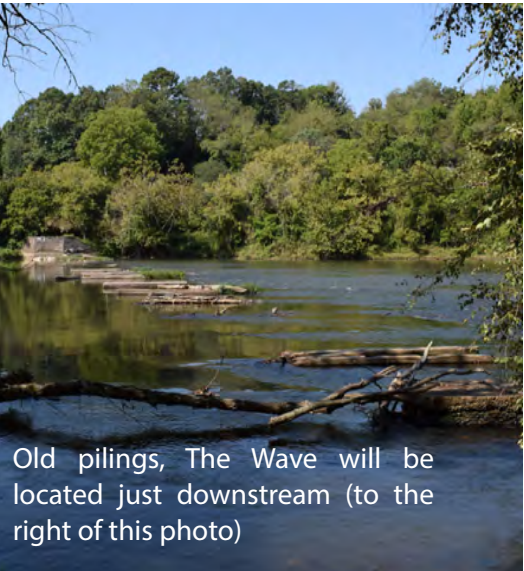
Beneficial fill at Waste Pro site



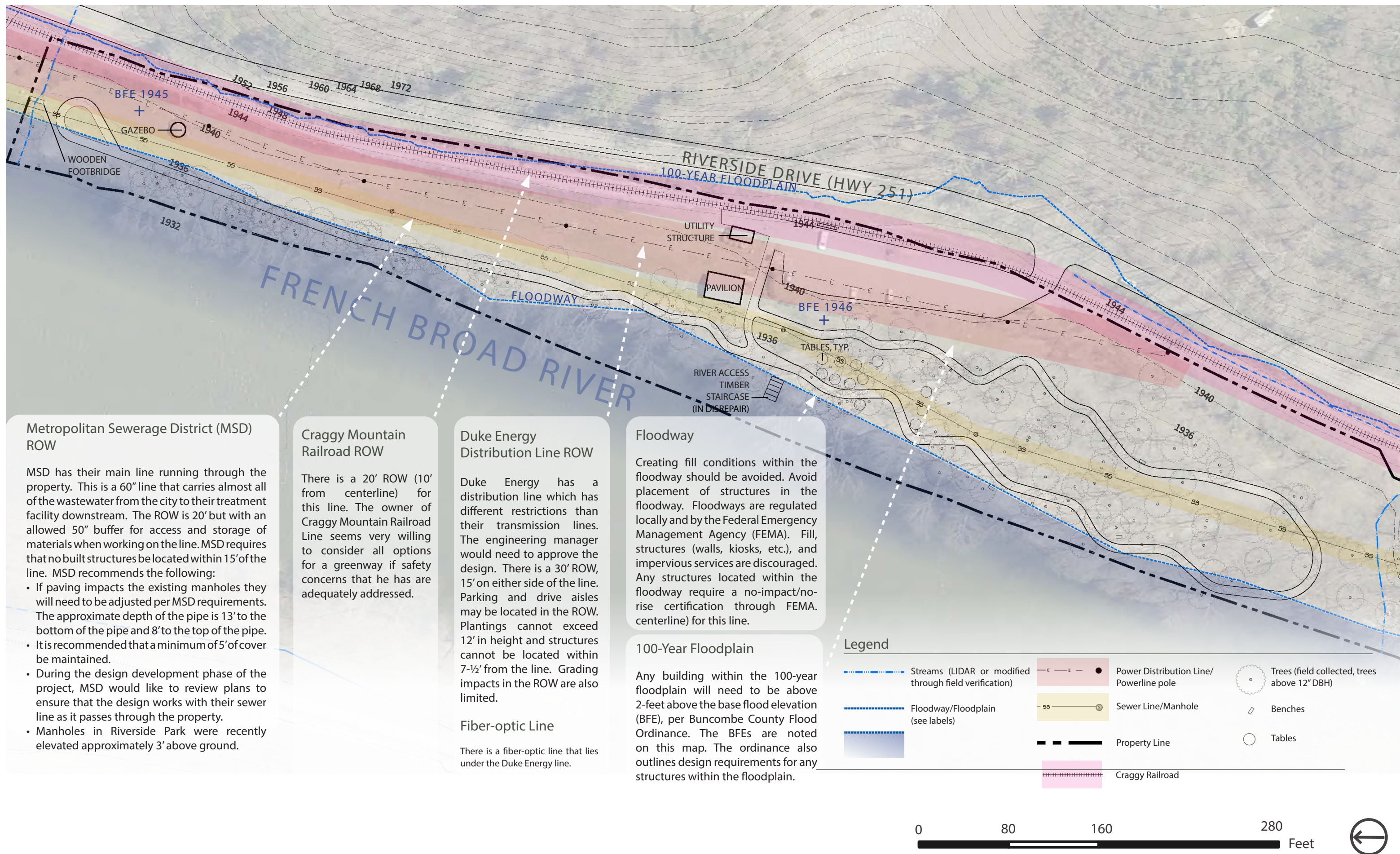
Waste Pro site and Old Leicester highway in the distance

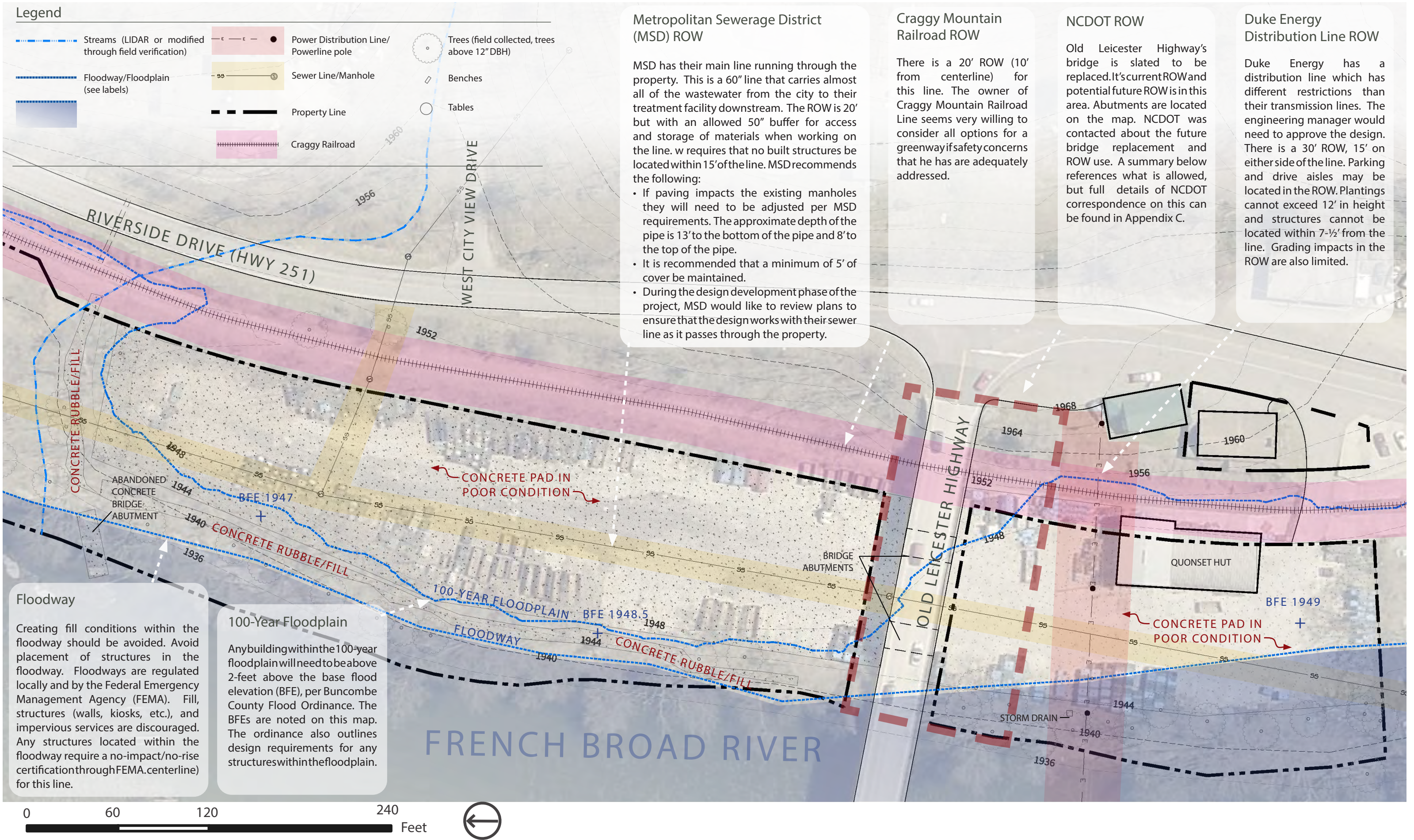


Wooded area surrounding the southern stream

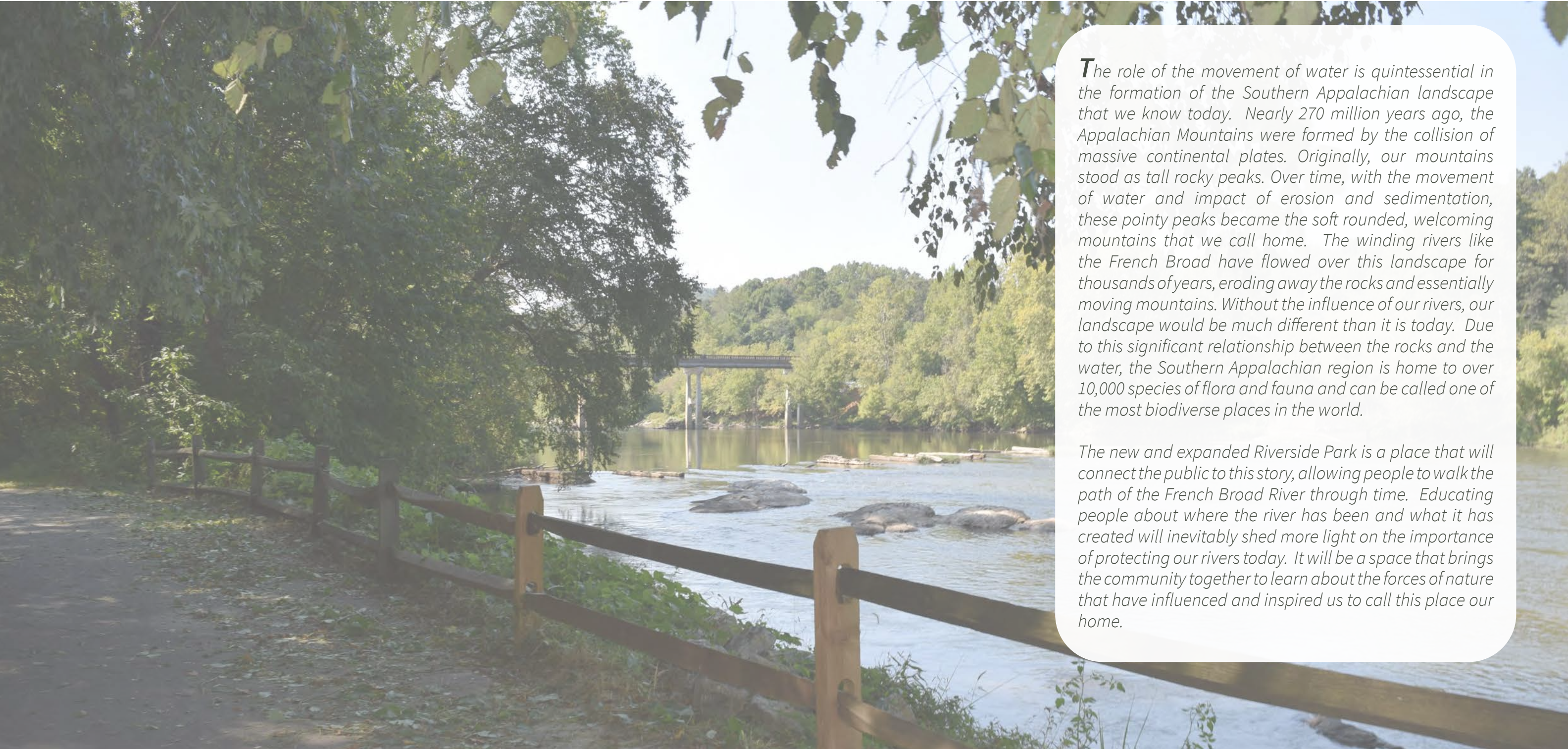


Old pilings, The Wave will be located just downstream (to the right of this photo)





CHAPTER 2: SITE ANALYSIS/ASSESSMENT WASTE PRO SITE

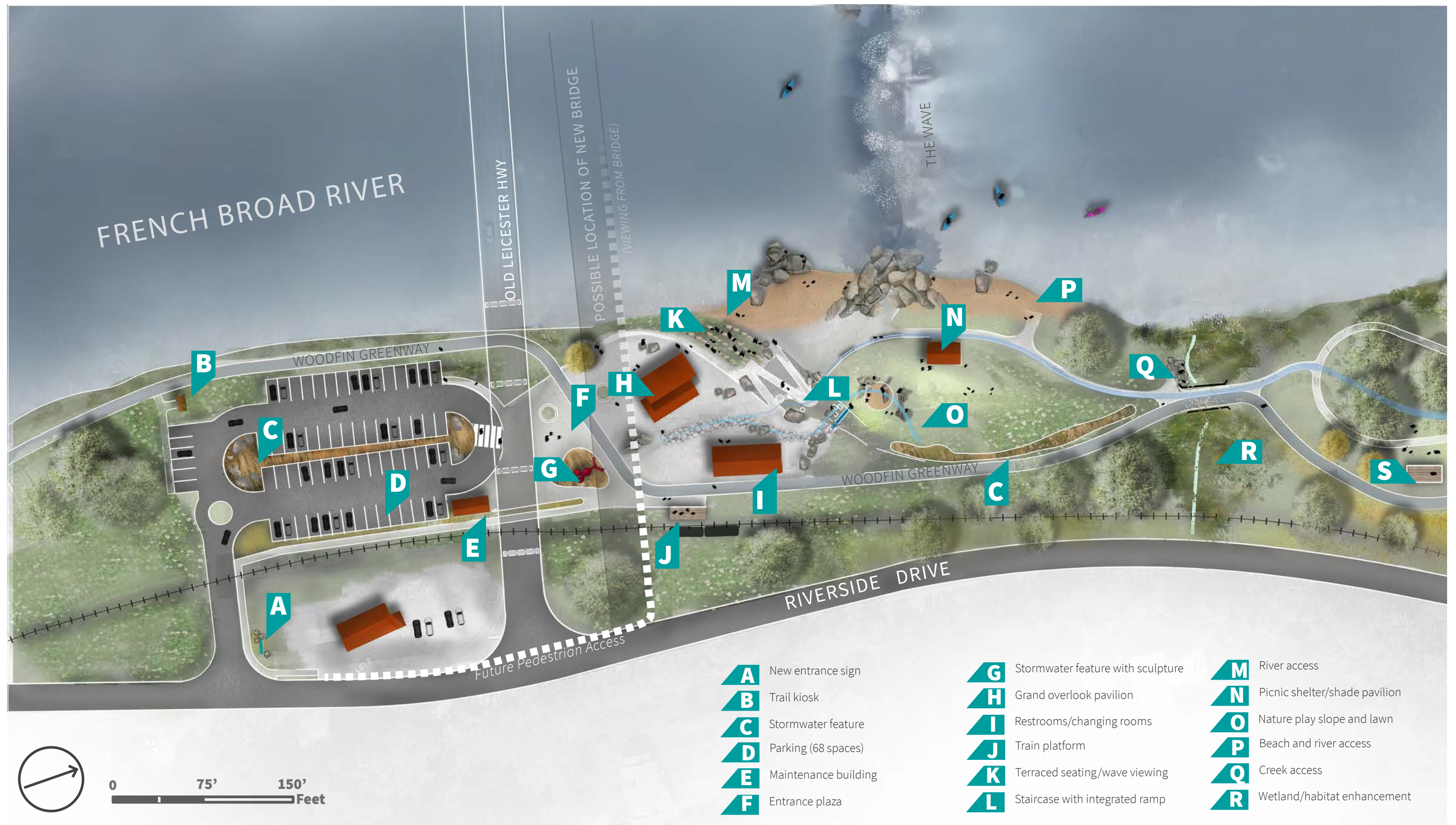


The role of the movement of water is quintessential in the formation of the Southern Appalachian landscape that we know today. Nearly 270 million years ago, the Appalachian Mountains were formed by the collision of massive continental plates. Originally, our mountains stood as tall rocky peaks. Over time, with the movement of water and impact of erosion and sedimentation, these pointy peaks became the soft rounded, welcoming mountains that we call home. The winding rivers like the French Broad have flowed over this landscape for thousands of years, eroding away the rocks and essentially moving mountains. Without the influence of our rivers, our landscape would be much different than it is today. Due to this significant relationship between the rocks and the water, the Southern Appalachian region is home to over 10,000 species of flora and fauna and can be called one of the most biodiverse places in the world.

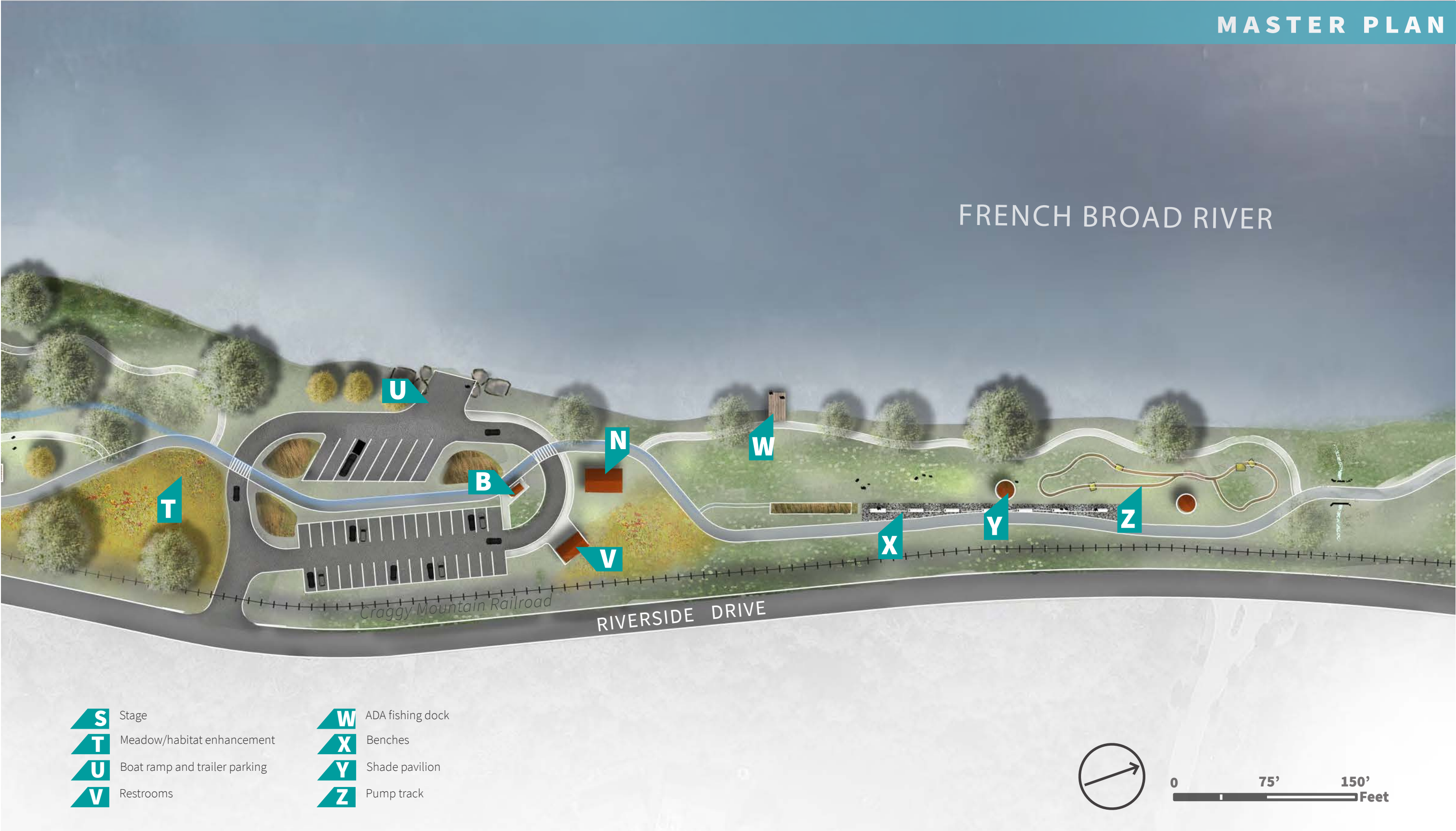
The new and expanded Riverside Park is a place that will connect the public to this story, allowing people to walk the path of the French Broad River through time. Educating people about where the river has been and what it has created will inevitably shed more light on the importance of protecting our rivers today. It will be a space that brings the community together to learn about the forces of nature that have influenced and inspired us to call this place our home.

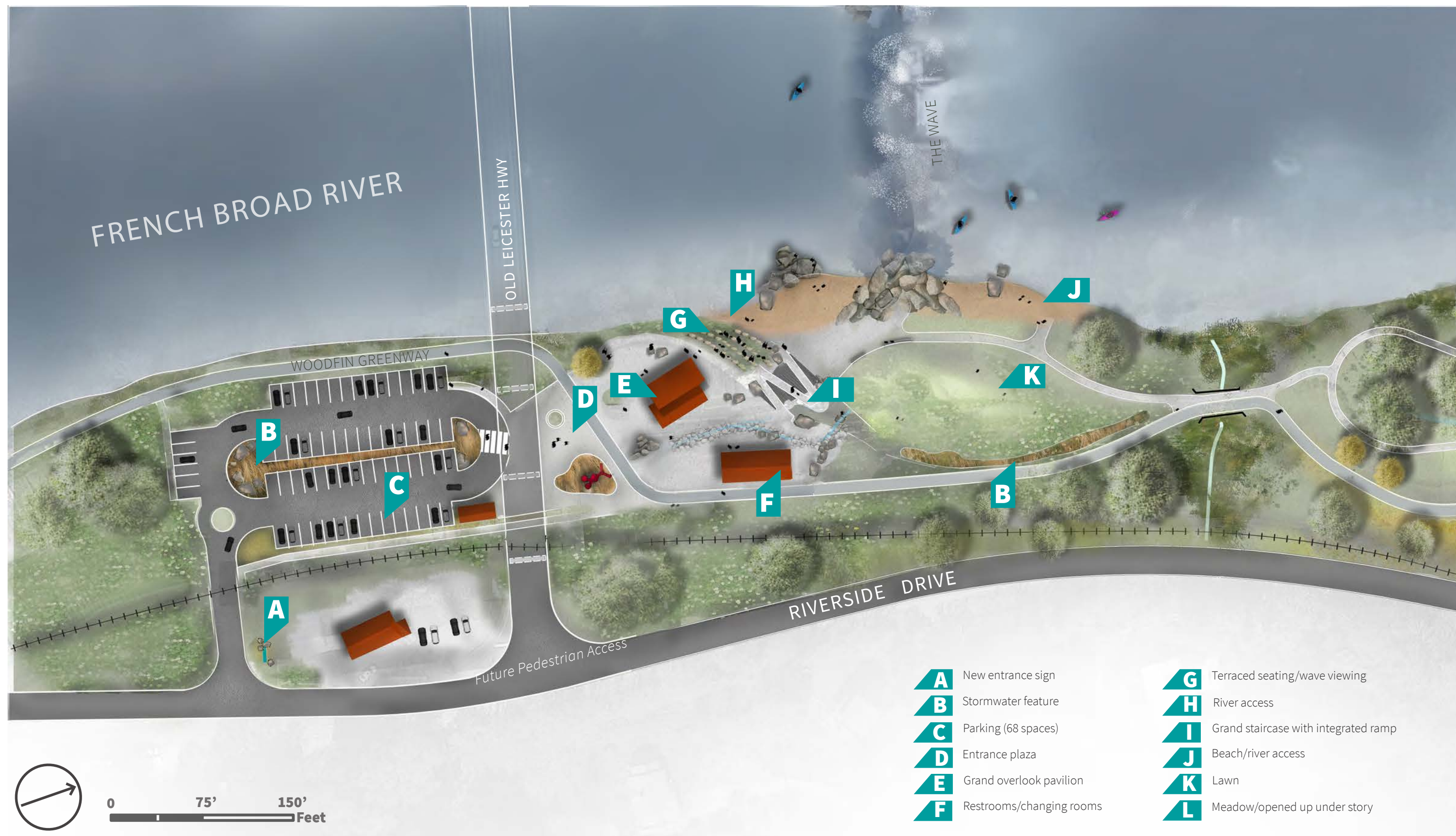
Design & First Phase

CHAPTER 3



CHAPTER 3: DESIGN





CHAPTER 3: DESIGN-FIRST PHASE

FRENCH BROAD RIVER



This first phase design is based on the Town of Woodfin's available funds at the time of the creation of this master plan document. All costing and design is based on estimates and the best available data at the time of creation. Elements reflected in this rendering may need to be removed or other elements may be added based on available funds.



0 75' 150' Feet

CHAPTER 3: DESIGN-FIRST PHASE

WAYFINDING

SCALE

Entrance Monument Sign

Consistent signage across Woodfin's parks will create a cohesive experience. This sign matches the style of the entrance sign at Silver-Line Park. Full construction details have been developed for this sign. Two signs are proposed at each entrance of the Riverside Park. A NCDOT encroachment/sign permit will likely be needed, as it may be best located in DOT ROW.



Kiosk Sign

Consistent signage across Woodfin's parks will create a cohesive experience. This sign matches the style of the kiosk at Silver-Line Park. Full construction details have been developed for this sign. Kiosks serve a the main way for users of the site to understand what is available at the park and how they will get to it. It can also be used to post rules and notices.



Junction Signs

Since this park is a long, narrow space which can't be viewed all at once, and may be used as a space for crowds of people during events, directional junction signs are recommended.



INTERPRETATION

SCALE

Major Interpretive Signs

This design of the park is intended to highlight the geological and natural history of the region, with the French Broad River as its focus. Signs can interpret the subtle design and natural features of the site which reinforce this theme.

This signage can be in a few key places to indicate the overall concept of the park and key elements to interpret.

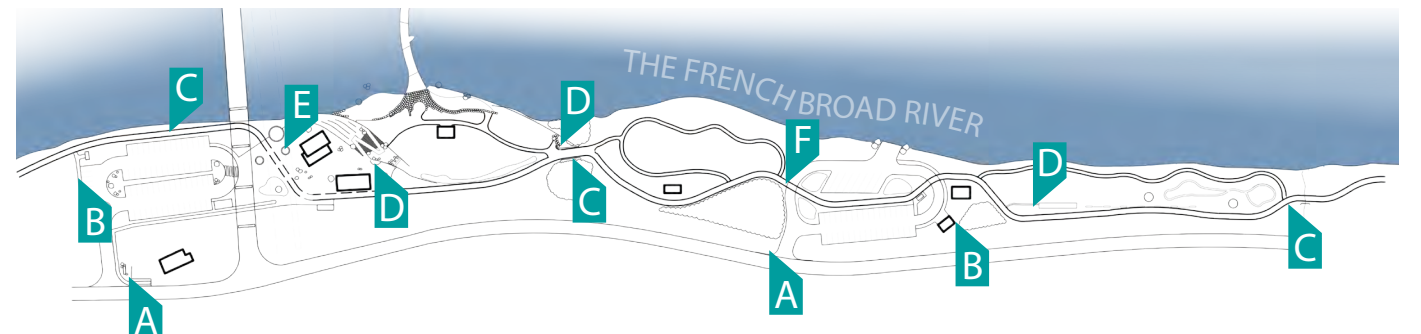


Subtle Interpretation

More subtle elements that artistically express the site concept can be use. This can be done through pavement markings, artful elements in the landscape, and quotes or prose.



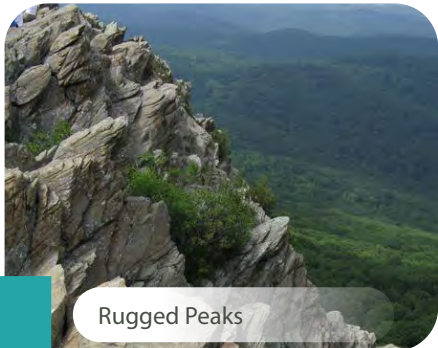
Locations of Signage on-Site



CHAPTER 3: FIRST PHASE/COSTS/DESIGN

Using Amenities to Tell A Story: A River Runs Through It

FORMATION OF THE APPALACHIANS



Rugged Peaks



Erosion



Movement of sediment



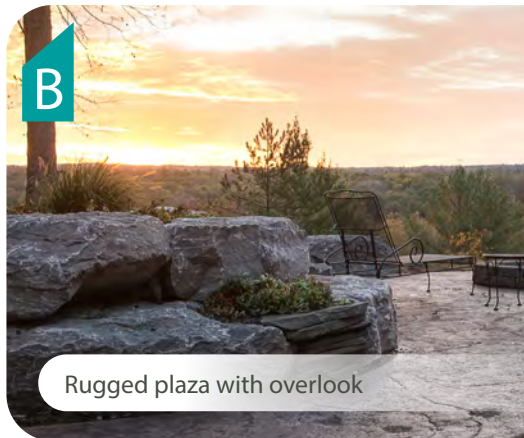
Winding Rivers

Entrance & Plaza & Parking

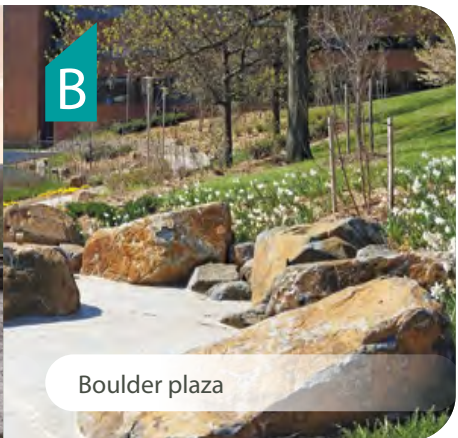
The angular pavilion and accompanying rugged plaza mimic the early formation of the Appalachian Mountains. They would be oriented to overlook the Wave and also be a location for events.



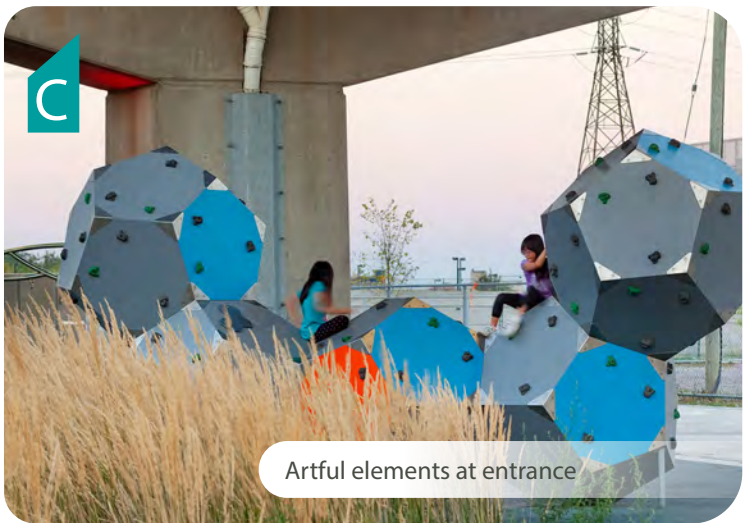
Angular pavilion



Rugged plaza with overlook



Boulder plaza



Artful elements at entrance

Slope

The slope from the plaza down to the river mimics the process of erosion over time which formed the Appalachian Mountains that we know today. The slope would be a place of high energy and movement, with a playground, slides and steps down to access the river.



Steps and ramp to river

Boulders on slope

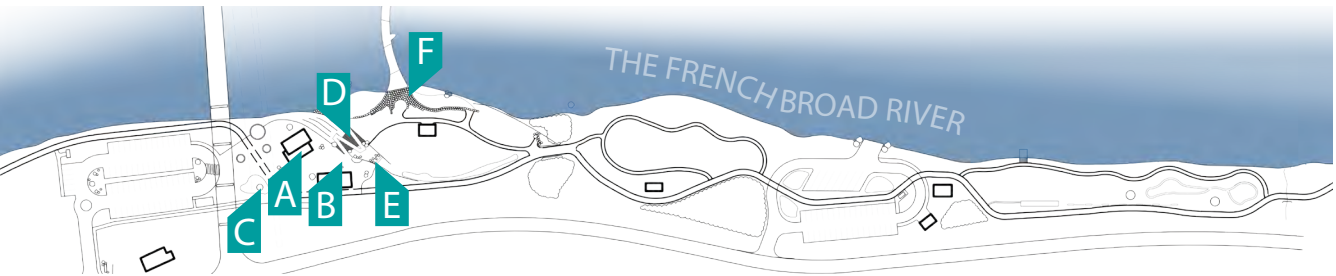


Play slope and slide with boulders



Lawn for viewing

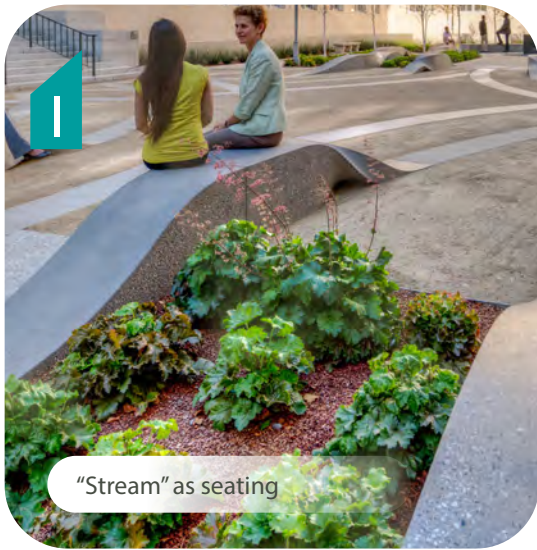
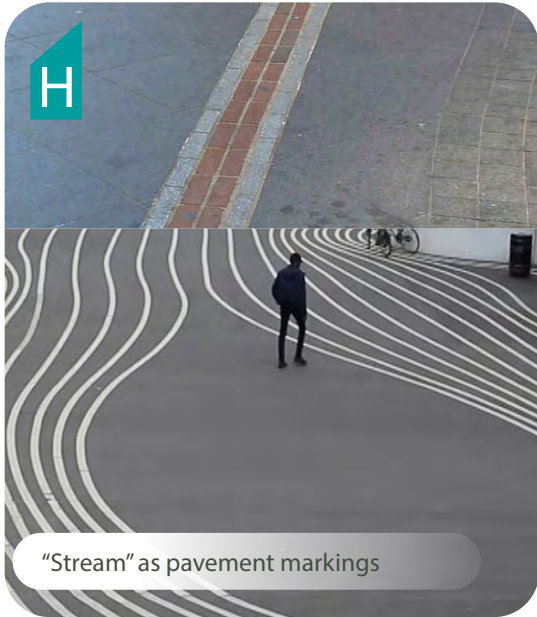
Locations of Amenities on-Site



AMENITIES OF THE PARK

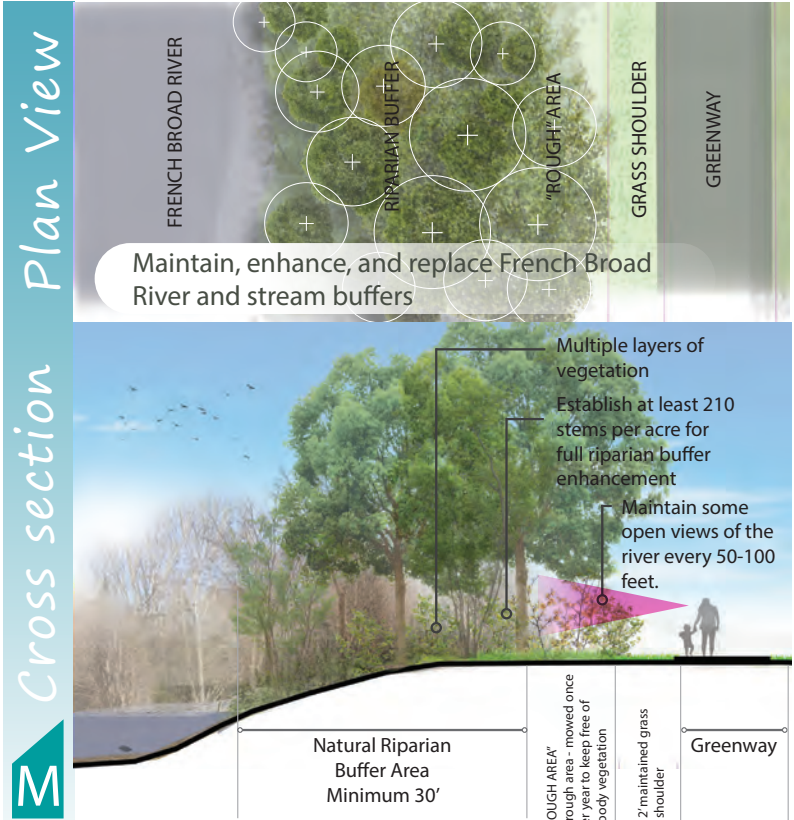
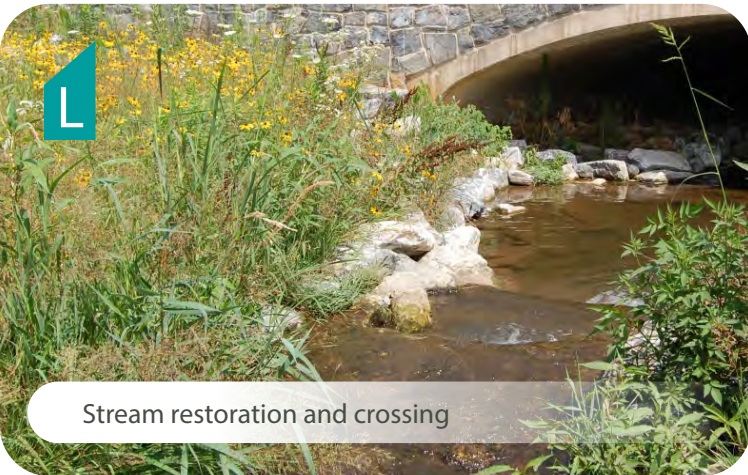
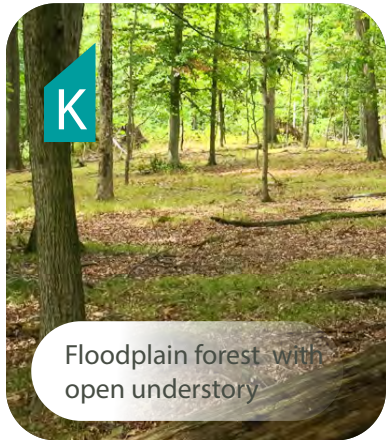
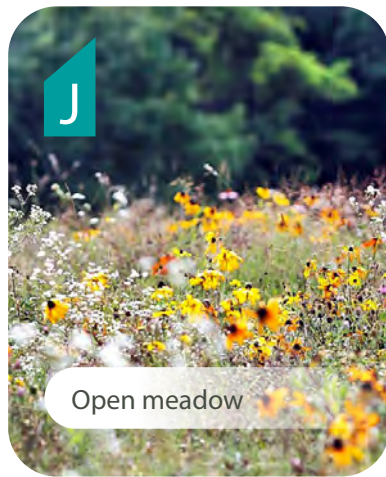
Stream Form

The representation of the movement of water through the landscape will be through implied stream forms, with a simple line of color, shapes along the ground plane, or other structural elements. The stream forms will show how headwaters high in the mountains form and shape our landscape and eventually create rivers like the French Broad.



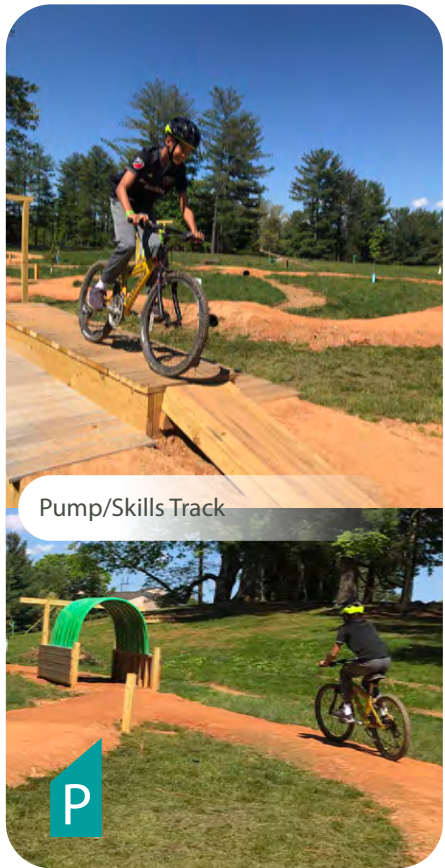
Ecological Improvements

There are ample opportunities to enhance natural areas throughout the park. The park's location within the floodway makes proper care of the natural systems essential. Enhancements can also assist with aesthetic issues currently at hand, such as allowing for visibility and creating a sense of safety.

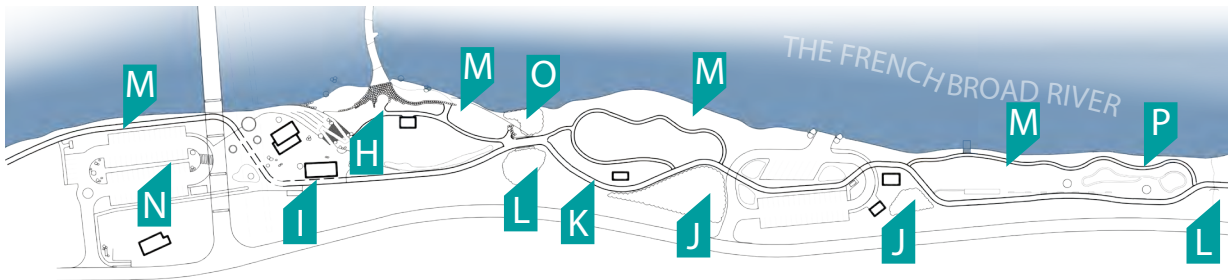


Note that state and federal water resource permitting agencies will ask that buffers be maintained or replaced, to successfully receive permitting for this project

Other Site Amenities



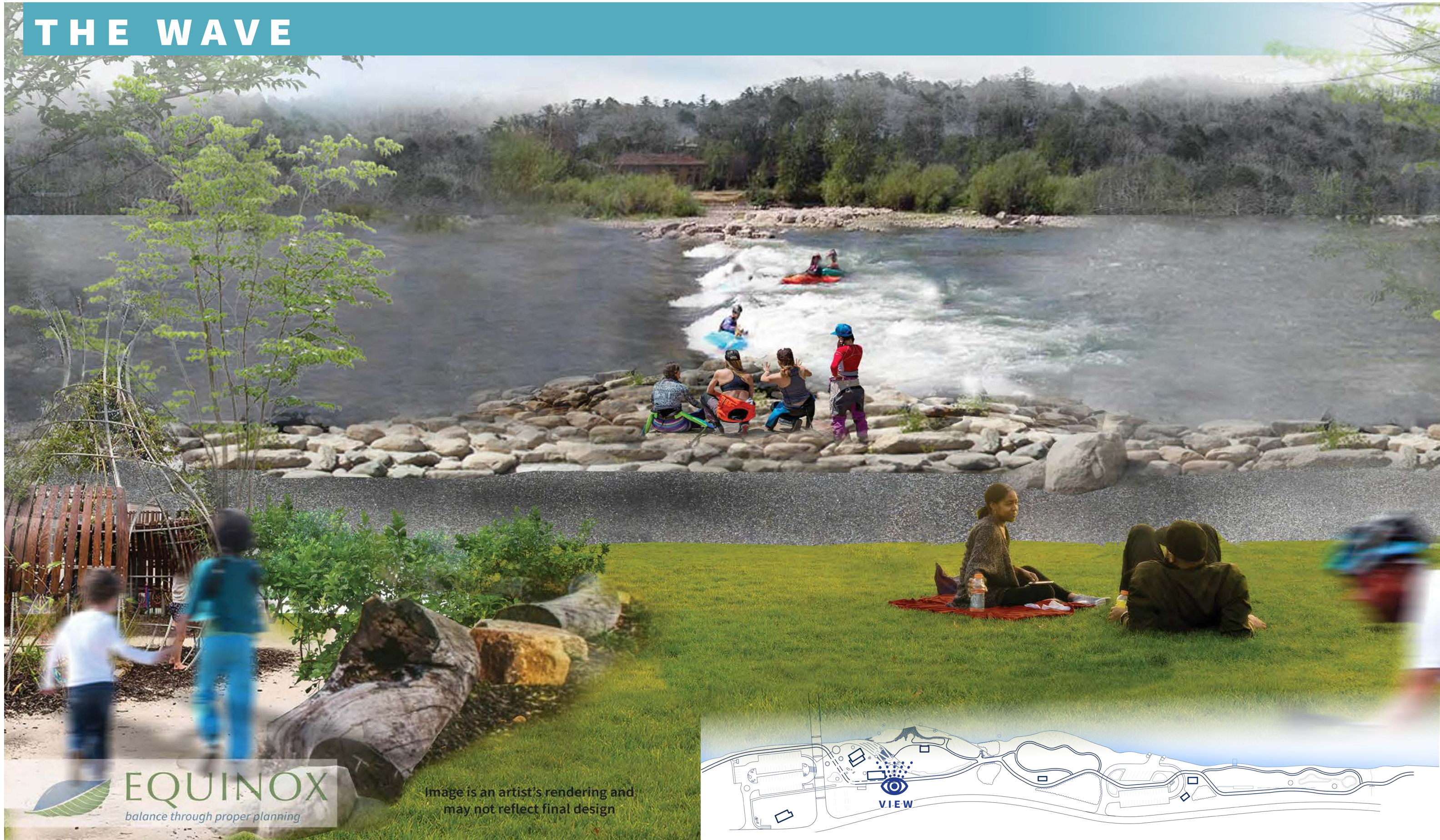
Locations of Amenities on-Site





CHAPTER 3: FIRST PHASE/COSTS/DESIGN

THE WAVE



 **EQUINOX**
balance through proper planning

Image is an artist's rendering and
may not reflect final design

CHAPTER 3: FIRST PHASE/COSTS/DESIGN



CHAPTER
Recommendations & Stakeholder Feedback **4**

RECOMMENDATIONS

Partnerships



Become the physical hub for watersports in western North Carolina. Work with outfitters (like NOC), RiverLink, and others to program and activate the space. Become a place where community around watersports culture is built and new members of the community can be introduced.



Partner on other opportunities with partners to enhance and activate the space, including: Craggy Railroad Partnership: allow for a rail line stop that can be used to shuttle people for big events, and shuttle those on the greenway and blueway.

French Broad River Academy/Pisgah SORBA Partnership: Join these two organizations to partner on a skills bike course on the northern end of the park. Consider collaboration on matching contributions for the course.



Phasing & Funding

Invest in The Wave and associated amenities and the greenway connection first. Begin to pursue other opportunities (ecological improvements, improvements to the existing features of Riverside Park, etc.) as grant opportunities are presented. Strongly consider PARTF funding.



Design & Aesthetics

Develop a consistent aesthetic that ties the entire site together, as well as aesthetics that are used in other Woodfin parks like Silver-Line Park.

The park tells a story, develop Interpretation (overt and subtle) that is consistent with the aesthetic and tells the history of the French Broad River and human uses of it.



Ecological Improvements

Maintain and restore any riparian buffers that are impacted along the French Broad River. This will be important for flood mitigation, wildlife habitat, and to be seen in good favor by state and federal agencies when the park moves forward into environmental permitting.

Enhance the existing tributary stream channel and potential wetland in the middle of the park, by stabilizing the degrading channel banks and improving the riparian buffer. Provide habitat structures like bird houses or pollinator houses as an educational opportunity.

The New Leicester Highway Bridge

NCDOT has plans to replace the existing bridge. The bridge replacement project is currently on-hold however when it begins again the Town of Woodfin should evaluate the benefit of retaining the old bridge. A primary benefit of retaining the old bridge would be for spectator viewing of the Wave. If the new bridge is sited downstream (north) or the old bridge, views would be blocked so if this is the case it does not provide viewing capabilities. The old bridge could still serve as a bike and pedestrian connection separated from the new bridge however NCDOT plans to accommodate bike and pedestrian connections as part of their new complete streets guidelines.

When considering keeping the old bridge the Town of Woodfin needs to consider that they would assume all liability for maintenance and safety of the old bridge. This can very expensive and the old bridge would need work as it is currently considered to be in poor condition by NCDOT based on a previous Structure Safety Report.

Equinox's recommendation at this time is for the Town of Woodfin to work with NCDOT to have the new bridge include a wide bike and pedestrian connection including a spectator deck on the eastern end of the bridge overlooking the Wave separated from the roadway by a safety barrier.

Bridge Piling Remnants at the Wave Site

The remnants of the old bridge pilings in the French Broad River near where the Wave is planned to be constructed, were not evaluated as part of the park project. We anticipate that this would be addressed by the consultant hired to design the Wave. It has been suggested that these pilings could have historic significance and it is recommended that the State Historic Preservation Office (SHPO) be contacted in the next phase of design for the park or the Wave.

Based on public feedback, the old bridge pilings represent a safety hazard to river users based on feedback given the sharp metal fastening rods that protrude from them as well as the gaps between the structural timbers which pose entrapment hazards. It is Equinox's recommendation that the remnants should be removed as part of the construction of the Wave working with SHPO if needed

General stakeholder comments on Riverside Park

- The Asheville community does not have significant stretches of completed greenway yet.
- The Swamp Rabbit Trail in Greenville and the American Tobacco Trail in Durham each see 400,000+ users each year with peak days seeing 4,000 or more users. Similar (or greater) levels of demand can be anticipated for the greenways from Asheville into Woodfin, with The Wave being a strong spectating attraction for greenway users.
- Local outfitter businesses believe that current river use through the River Arts District in Asheville is over 100,000 annually, with peak use on holiday weekends exceeding 10,000 per day. There are about ten commercial river outfitters in Asheville now, and several of them seem interested in expanding services into Woodfin.
- With expansion of facilities into Woodfin, the presence of the greenway, and especially the appeal of The Wave for users and spectators, Woodfin can expect an exploding demand for river usage.
- Future outfitters on private land might absorb much of the parking demand and some of the river access demand, but there will be great pressure on the public facilities to be provided by the Town. That pressure will come from river users, greenway users, routine park visitors, Craggy Line Railway guests, and both direct users and spectators for The Wave.
- Generous capacity in parking facilities and in access ramps should be priorities in design.
- Canoeing, rafting, SUP, and tubing outfitters as well as school and camp groups use trailers that carry their relatively lighter and more compact craft. However, they do not need trailer access at the edge of the water on the ramps. It's easy enough for users to carry their craft up and across a parking area to a parked trailer.
- The users that do need water-edge trailer access are drift boat users and rafters with rowing frames on their rafts. These are not motorized boats; they are powered by oars - motors are not suitable in this shallow river and will probably never be popular. Users of these heavier boats are typically single individuals or two people-per-boat, and fishing is their primary activity.
- There may be several drift boat/oar-rig users in Asheville each week, and there is at least one company offering guided fishing trips in such boats. However, the numbers of users that requires trailer access at water's edge will remain light when compared to other users.

Specific design suggestions received from feedback

- **Reducing Ramp Congestion** – On each of the concrete ramps, demark a single lane one an edge of the ramp of about 11' down to the water with the word "TRAILERS." The balance of the width should be labeled "NO TRAILERS." The markings could be bold and placed right there on the pavement. So, if the ramp is 40' wide, that means at most 11' would be taken up with a single trailer, and would assure that several canoes, rafts, tubes, other craft could simultaneously access on the other 29'.
- **Limiting Turnaround Space** – Given the relatively few trailers that will need to back down the ramps, there is likely no need for a turn donut to be incorporated into the ramp. Trailers can simply back down from the parking area. Signage can encourage trailers to not back onto the ramp unless they are for drift boats or oar-rigged rafts.

- **River Access Steps are not Safe** – Regarding the possibility of using steps instead of a ramp: First, steps and stairways for people carrying rafts, canoes, SUPS, etc. are hazardous. It's difficult to navigate steps while carrying bulky heavy craft and falls and stumbles result on steps. Even if trailers are precluded, I strongly recommend ramps instead of steps in all cases. The steps at Jean Webb, French Broad River Park, and Hominy Creek Park display local examples of where they can be a hazard. At Nantahala, Ocoee, and elsewhere, agencies have replaced stairs with ramps and I almost never see steps being used for access into rivers.
- **Ramps Should Extend into Water** – Please make sure ramps slope and extend well into the water, even during lower flow periods. Ramps that end at the water's edge typically have sharp drop-off usually into irregular rocks and debris in the river. That situation is both hazardous for users and slow/difficult to launch from.
- **Avoid Floating Docks** – The floating docks used at the two Asheville ramps constructed by NCWRC do not appear appropriate for the site. A standard feature for NCWRC access sites, they are functional for larger motor boats to tie to, but have limited benefit for most river craft. They also add to congestion at the ramp. They should be avoided in Woodfin.
- **Additional Parking at Riverside Park** – At the current Riverside Park site, the only place for critical additional parking is northward in the grassy area toward the boundary with FBRA. That is an area which has very low use now. Perhaps the donut can be eliminated and a generous ramp can be provided in that area. This would be the final takeout above the dam, it will be heavily used, so generous parking is a good idea. 50' of ramp-frontage should be encouraged here – again with a single lane 11' lane for trailers and the balance designated as "no trailers."
- **Beaches at Wave Site** – As for the areas adjacent to The Wave – access in and out of the water will be necessary for kayakers /surfers, so we need modest beach-style ramps. There should also be places for people to connect with the water (wading, splashing, etc.) provided. This area will be very popular for spectators. Make sure that The Wave beaches are remote from the parking areas so that "through users" on the river do not mistake them for trip access sites. Signage that direct through-users to the larger ramp downstream would also help. Surfers and wave-kayakers can easily carry their craft from the remote parking areas or paddle up from the lower lot.
- **Bridge Piling Remnants at Wave Site** – The remnants of the old bridge pilings represent a significant safety hazard to river users given the sharp metal fastening rods that protrude from them as well as the gaps between the structural timbers which pose serious entrapment hazards. The remnants are located immediately downstream (within a few yards) of the preferred Wave site, so these safety issues will become paramount. As well, heavy flooding may further degrade the remnants and spread parts of them downstream. Note that the only floods we have had in the past 100-years on this section of river are of the 25-year variety. So, when a 100-year flood (or worse) does arrive, it could sweep the remnants downstream. The remnants should be removed, and the riverbed properly restored during Wave construction.
- **New Parking on WastePro Site** – The new parking to be created on the southern part of what is now Waste Pro – parking spaces should be maximized there beyond what is indicated in preliminary drawings. Again, I think public demand for parking will warrant that, and parking for Wave spectators will be a part of the demand. Because this parking will not be convenient for through-users of the river, signage here should highlight that generous parking and ramp access for general through-use is at the opposite end of the park.

STAKEHOLDER & PUBLIC FEEDBACK

- **Centralizing Restrooms/Changing Rooms** – With two major parking areas at either end of the expanded Riverside Park, and with elimination of the small restrooms at the current Riverside Park, a single central restroom facility mid-way between the parking areas should be considered. Since many river users need space for simply changing clothes, lots of river access parks have a facility with perhaps two separate men’s’ toilets, two separate women’s’ toilets, and then a men’s’ changing room and a women’s’ changing room. That might be a good configuration for a single facility located midway between the two parking areas. Note that through-users of the greenway will need public restrooms as well. The US Forest Service in recent years seems to have developed guidelines for very durable and functional facilities like this, and they can be found at many river access sites. A great example is at the US Hwy. 76 site on the Chattooga River and another is at the main put-in for the Ocoee River.
- **Integration of Greenway into Riverside Park** – I hope that optimizing the design of the expanded Riverside Park will not be constrained by the current alignment chosen in the greenway design process to date. It’s important that all park elements be considered together and optimized as a whole. In case greenway construction will occur before final construction of Riverside Park Expansion, perhaps a temporary greenway across the site could be provided to allow use.
- **Effect of Portage Ramp Around Craggy Dam** – You are probably aware that there is preliminary discussion and planning for a portage ramp to be built around Craggy Dam on the river-left side. That will open up what is a very interesting section of river with a much more remote feel to it. I predict it will become popular, and it will add yet more use demand on the expanded Riverside Park.
- **Name of Riverside Park/WastePro/Wave Project** – Regarding a working name the site, perhaps discourage the use of the term “Wave Park” or “Whitewater Wave Park.” That’s suggestive of an amusement park which is an image which should be avoided. Calling the project “Riverside Park Expansion” is suggested. Note that the former owners of Riverside Business Park donated the land for the current park to the Town, and it is named Riverside Park to honor that donation, which may be a issue if moved away from. Riverside Park Expansion might make sense for the project while underway, and the entire park can remain named Riverside Park once completed. For now, The Wave is best-known as either simply The Wave, or Woodfin Whitewater Wave. A discussion with the Town is that once built, The Wave would be dedicated as “Taylor’s Wave.” Settling on naming strategy between Woodfin, RiverLink, and the design team seems important at this stage.
- **Craggy Bridge Replacement** – Location by NC DOT of the bridge replacement could have significant impact on site design and especially location of the in-stream Wave structure. There is urgency to incorporate this consideration into the preliminary design work now underway. The design team should coordinate directly with NC DOT to assure efficiency and thoroughness. Per the published State Transportation Improvement Plan (STIP), DOT targets the replacement project to occur in the 2024-2028 timeframe, so the park construction will likely not be delayed until after bridge replacement.
- **The Question of Retaining Existing Craggy Bridge After Replacement** – A primary benefit of retaining the old bridge would be for spectator viewing of The Wave. If the new bridge is sited downstream(north) or the old bridge, views would be blocked. When a local government takes on a DOT bridge, it assumes all liability for maintenance and safety, and that can be very expensive. Asheville avoids taking old DOT bridges for this reason. Woodfin should prioritize an effort to ultimately have the new Craggy Bridge include a 12-foot wide bike/pedestrian/spectator deck included on it on the northern edge, separated from the roadway by a fence or barrier.

- **Construction Sequence** – First: provide rough excavation of the WastePro site, second: construction of the Wave structure in-stream, and third: final grading, construction, and landscaping of the WastePro site. Because of the tight timing sequence involved, it is also suggested that a single construction general contractor be engaged for the integrated project, and that the contractor could engage a specialty subcontractor for the in-stream work as needed.
- **Parking Capacity and Array of Amenities** – The combined public parking pressure for accessing just these amenities will be very high and possibly overwhelming, especially at peak times. While the Town’s desire to offer as broad an array of amenities as possible is appreciated, it may unrealistic from the standpoint of parking and user conflicts to include the pump track and a performance stage. As for user-conflicts, this will be a very popular park, and conflicting uses between those with pump-track bikes, performance attendees, walkers, floaters, greenway users, etc. should be a concern. Perhaps the non-core uses can be accommodated at other park sites of the Town.
- **Routing of Creek** – The unnamed perennial creek that flows along City View Drive and under the highway as it approaches the site is artificially diverted and impaired by the railroad tracks for a few hundred feet before turning toward the river between the WastePro site and the current Riverside Park. The stream bed and the railroad bed are one-in-the-same there. It may be considered that a stream restoration would have that stream pass directly through a culvert under the railroad track and follow a more natural course across the planned park.
- **Train Platform** – The train platform idea is a good one as the train can provide a way for users to access the park and its amenities without requiring on-site parking. Perhaps someday the train could allow passengers to bring along tubes, bikes, etc.



CHAPTER 4: RECOMMENDATIONS & STAKEHOLDER FEEDBACK

What does the Public want to see at Riverside Park?

AMENITIES

The top Amenities for the park requested by the public include:



CLEAN RESTROOM FACILITIES



WATER FEATURES FOR KIDS



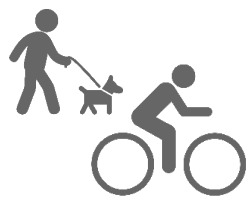
WALKING TRAILS AND PATH CONNECTIVITY

Other requested Amenities include:

- Picnic Areas
- Water Craft Rentals
- Playgrounds for all ages
- Pump Track
- Tailgate Farmers' Market
- Integration with the Craggy Mountain Line

ACTIVITIES

The top Activities for the park requested by the public include:



WALKING & BIKING



RIVER ACCESS



FAMILY ACTIVITIES (EVENTS, PLACES FOR KIDS, ETC.)



WHITEWATER WAVE

Other requested Amenities include:

- Fitness/Exercise
- Outdoor Relaxation
- Grilling out/Picnic
- Live Concerts on the River
- Toddler-friendly Water Play
- Fishing

What is the initial feedback to the Master Plan?

An online survey was made available to the public in late summer 2020, after the public was presented the Master Plan. There were 45 responses, 61% were residents of Buncombe County outside of Woodfin, 31% were residents of Woodfin, and 8% were from outside of Buncombe County. The survey was designed to have the public rank funding priorities, determine which aspects/goals of the park were most popular, determine whether there were needs of the public that weren't addressed in the plan, and provide an opportunity to leave

FUNDING PRIORITIES

- 1 GREENWAY
- 2 HABITAT RESTORATION
- 3 RESTROOMS
- 4 LARGE PAVILION OVERLOOKING THE PARK AND WAVE +

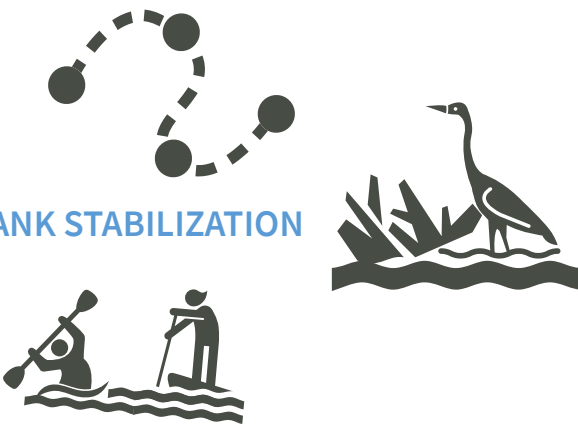
SMALLER PICNIC SHELTERS



Respondents to the survey were asked to rank their funding priorities as viewing the funding/phasing plan presented in this Master Plan. The greenway was overwhelming voted as the #1 funding priority, followed by the priorities listed to the left. Habitat Restoration was also a popular goal in the open responses.

TOP 3 GOALS

- 1 CONNECTIVITY & ACCESSIBILITY
- 2 ECOLOGICAL FOCUS ON HABITAT CREATION & BANK STABILIZATION
- 3 WELCOMING TO A DIVERSITY OF USERS AND USES



COMMENTS

The public left a number of positive comments on the project expressing their excitement for the project. There were some comments raising concerns regarding funding for the project as well as street parking issues which may arise. Water quality in the French Broad River was a concern that was raised in several comments, and it was indicated that the surrounding county governments should be addressing this first. Multiple citizens requested that the project ensures that the Wave is accessible to all user types (kayakers, stand up paddleboarders, etc.) and experience levels. Concessions, gender-neutral restrooms, and a dog park were mentioned as amenities that would compliment the experience proposed in the Master Plan.



CHAPTER

5 Appendices

Master Plan Cost Estimate (includes First Phase)

	Units	Quantity	Cost Per Unit	Costs
Mobilization				
Mobilization (includes mobilization for all work)	LS		2% of Construction Cost	\$70,894
			SUB-TOTAL	\$70,894
Site Preperation				
Clearing and grubbing	AC	1.8	\$8,000.00	\$14,400
Earthwork (excavation/haul off)	CY	16900.0	\$26.00	\$439,400
Earthwork (rough grading)	AC	2.8	\$27,000.00	\$75,600
Repair and prep existing hard srface	SY	9200.0	\$9.00	\$82,800
Fine grading	SY	13700.0	\$18.00	\$246,600
Storm drainage/SCMs	LS	1.0	\$120,000.00	\$120,000
Erosion control	AC	6.5	\$23,000.00	\$149,500
			SUB-TOTAL	\$1,128,300
Hard Surface and Trails				
Asphalt surface	SY	4860.0	\$35.00	\$170,100
Concrete surface	SY	3260.0	\$74.00	\$241,240
Concrete paths	SY	672.0	\$52.00	\$34,944
Crushed stone paths (ADA)	SY	145.0	\$23.00	\$3,335
Greenway	SY	3780.0	\$30.00	\$113,400
Trail kiosk	EA	2.0	\$10,100.00	\$20,200
Natural surfae trail	LF	65.0	\$8.00	\$520
Stairs with integrated ramp	LS	1.0	\$52,000.00	\$52,000
			SUB-TOTAL	\$635,739
Structures				
Overlook Pavilion	LS	1.0	\$340,000.00	\$340,000
Stream crossings	EA	1.0	\$6,600.00	\$6,600
Shower house (restroom/changing)	LS	1.0	\$375,000.00	\$375,000
Picnic shelter (north side)	LS	1.0	\$43,000.00	\$43,000
Stage/platform	LS	1.0	\$20,000.00	\$20,000
Small Pavilion (south side)	LS	1.0	\$75,000.00	\$75,000
Terraced slope	LS	1.0	\$55,000.00	\$55,000
Train platform (basic)	LS	1.0	\$35,000.00	\$35,000
Maintenance building	SF	500.0	\$100.00	\$50,000
Smaller restroom (north side)	LS	1.0	\$200,000.00	\$200,000
Shade structure (by pump track)	LS	1.0	\$15,000.00	\$15,000
ADA fishing dock	LS	1.0	\$36,000.00	\$36,000
Boat Ramp	LS	1.0	\$131,250.00	\$131,250
			SUB-TOTAL	\$1,381,850
Traffic Control				
Crosswalk	EA	3.0	\$2,300.00	\$6,900
Parking striping	LS	1.0	\$11,000.00	\$11,000
Wheel stops	EA	110.0	\$60.00	\$6,600
Bollards	EA	10.0	\$630.00	\$6,300
			SUB-TOTAL	\$30,800
General Site Amenities				
Natural play	LS	1.0	\$34,000.00	\$34,000
Slope slide/climb	LS	1.0	\$22,000.00	\$22,000
Wayfinding signage (on site, off site not included)	LS	1.0	\$5,000.00	\$5,000
Interpretive signage	EA	4.0	\$1,500.00	\$6,000
Park sign (park gateway and plantings)	LS	1.0	\$8,000.00	\$8,000
Picnic tables	EA	12.0	\$1,200.00	\$14,400
Trash & recycle receptacles	EA	6.0	\$2,100.00	\$12,600
Landscape boulders	EA	60.0	\$321.00	\$19,260
General plantings	AC	0.6	\$70,000.00	\$42,000
Meadow	AC	0.4	\$25,000.00	\$8,750
Wetland plantings	LS	1.0	\$15,000.00	\$15,000

Trees	LS	1.0	\$30,000.00	\$30,000
Planters	EA	3.0	\$5,000.00	\$15,000
Lawn	SY	1100.0	\$24.00	\$26,400
Seat walls	LS	1.0	\$13,000.00	\$13,000
Benches	EA	7.0	\$1,200.00	\$8,400
Drinking fountains	EA	2.0	\$3,100.00	\$6,200
Creek bed in hardscape	LS	1.0	\$5,000.00	\$5,000
Pump track	LS	1.0	\$35,000.00	\$35,000
Creek access	LS	1.0	\$15,000.00	\$15,000
Sculpture under bridge	LS	1.0	\$8,000.00	\$8,000
Ribbon feature (markings in pavement)	LS	1.0	\$19,000.00	\$19,000
			SUB-TOTAL	\$368,010

Electrical/Plumbing				
Electrical/plumbing	LS	1.0	\$175,000.00	\$175,000
			SUB-TOTAL	\$175,000

Units:	Sub-Total Cost	\$3,790,593
EA= each	Environmental Contingency	\$150,000
LS= lump sum	25% Contingency	\$947,648
LF= linear foot	10% Design/Engineering/Permitting	\$488,824
TN= ton	Total Cost	\$5,377,065
SY= square yard		

Notes on the Preliminary Cost Estimate (Master Plan)

The Master Plan of the Riverside Expansion and Improvements was designed to reflect the vision and goals established by the Town of Woodfin, Buncombe County, and Riverlink. All cost estimates are based on the best available data at the time of creation. Such data includes similar park bids and construction estimates from contractors.

This is a 30% level cost estimate only provided as part of the Master Planning effort. The cost estimate should be updated and refined as part of the development of the Construction Documents.

These cost estimates do not include removing the remnants of the old bridge pilings as this is anticipated to be part of the Wave project.

While the Phase II ESA did not reveal contamination above acceptable standards, we are including an “Environmental Contingency” as a precaution.

First Phase Cost Estimate

	Units	Quantity	Cost Per Unit	Costs
Mobilization				
Mobilization (includes mobilization for all work)	LS		2% of Construction Cost	\$38,395
			SUB-TOTAL	\$38,395
Site Preperation				
Clearing and grubbing	AC	0.8	\$8,000.00	\$6,400
Earthwork (excavation/haul off)	CY	16900.0	\$26.00	\$439,400
Earthwork (rough grading)	AC	2.8	\$27,000.00	\$75,600
Repair and prep existing hard srface	SY	9200.0	\$9.00	\$82,800
Fine grading	SY	6850.0	\$18.00	\$123,300
Storm drainage/SCMs	LS	1.0	\$65,000.00	\$65,000
Erosion control	AC	3.5	\$23,000.00	\$80,500
			SUB-TOTAL	\$873,000
Hard Surface and Trails				
Asphalt surface	SY	3390.0	\$35.00	\$118,650
Concrete surface	SY	2119.0	\$74.00	\$156,806
Concrete paths	SY	504.0	\$52.00	\$26,208
Greenway	SY	3780.0	\$30.00	\$113,400
Stairs with integrated ramp	LS	1.0	\$52,000.00	\$52,000
			SUB-TOTAL	\$467,064
Structures				
Overlook Pavilion	LS	1.0	\$340,000.00	\$340,000
Stream crossings	EA	1.0	\$6,600.00	\$6,600
Restroom (Pre-Fabricated)	LS	1.0	\$100,000.00	\$100,000
			SUB-TOTAL	\$446,600
Traffic Control				
Crosswalk	EA	1.0	\$2,300.00	\$2,300
Parking striping	LS	1.0	\$8,000.00	\$8,000
Wheel stops	EA	76.0	\$60.00	\$4,560
Bollards	EA	10.0	\$630.00	\$6,300
			SUB-TOTAL	\$21,160
General Site Amenities				
Wayfinding signage (on site, off site not included)	LS	1.0	\$5,000.00	\$5,000
Park sign (park gateway and plantings)	LS	1.0	\$8,000.00	\$8,000
Picnic tables	EA	4.0	\$1,200.00	\$4,800
Trash & recycle receptacles	EA	3.0	\$2,100.00	\$6,300
Landscape boulders	EA	40.0	\$321.00	\$12,840
General plantings	AC	0.3	\$70,000.00	\$17,500
Trees	LS	1.0	\$10,000.00	\$10,000
Lawn	SY	1100.0	\$24.00	\$26,400
Seat walls	LS	1.0	\$13,000.00	\$13,000
Drinking fountains	EA	1.0	\$3,100.00	\$3,100
Creek bed in hardscape	LS	1.0	\$5,000.00	\$5,000
			SUB-TOTAL	\$111,940
Electrical/Plumbing				
Electrical/plumbing	LS	1.0	\$87,500.00	\$87,500
			SUB-TOTAL	\$87,500
Units:				Sub-Total Cost
EA= each				15% Contingency
LS= lump sum				10% Design/Engineering/Permitting
LF= linear foot				Total Cost
TN= ton				\$2,045,659
SY= square yard				\$306,849
				\$235,251
				\$2,587,759

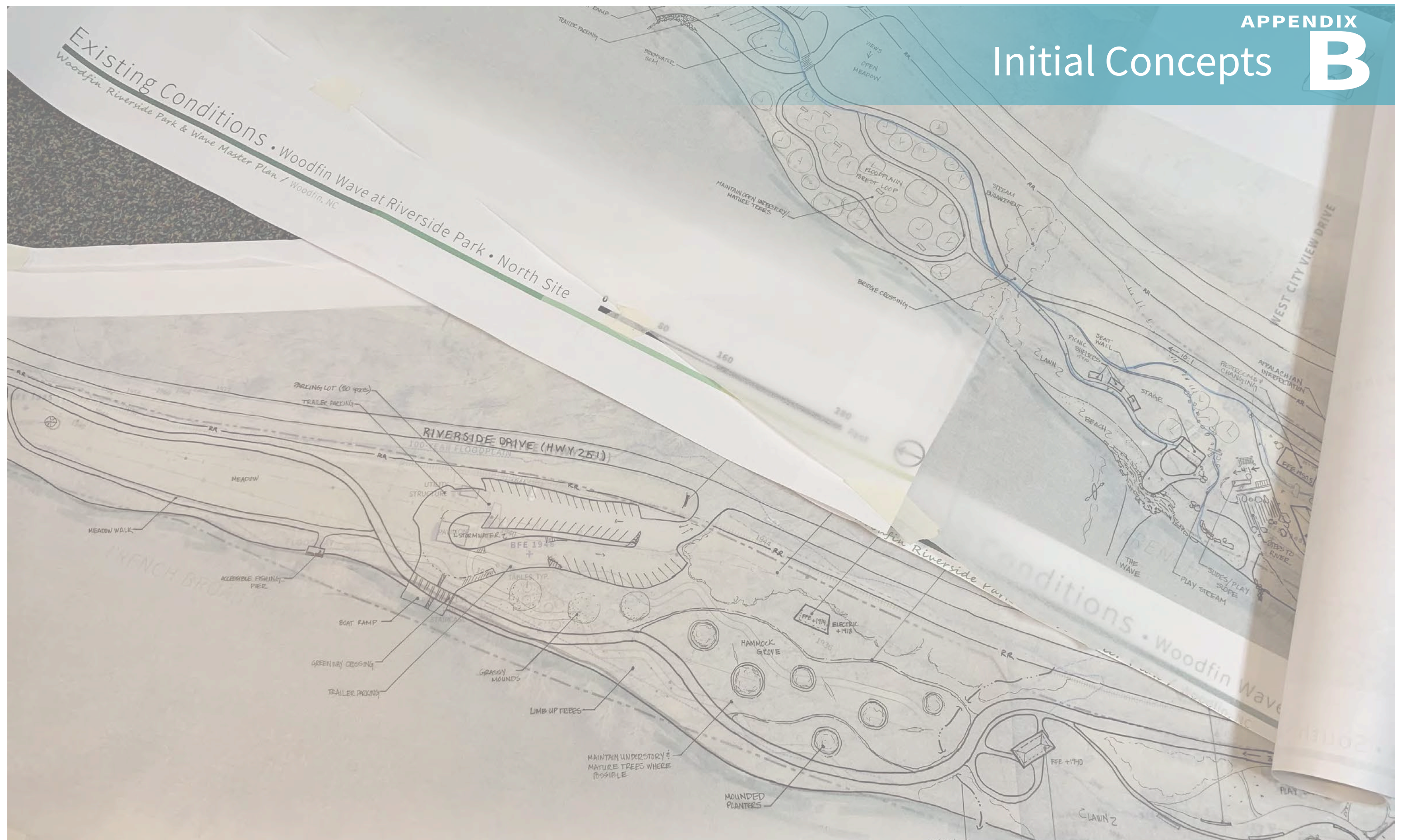
Notes on the Preliminary Cost Estimate (First Phase)

The first phase of the Riverside Expansion was designed to accommodate the Town of Woodfin’s available funds at the time of the creation of this master plan document. All cost estimates are based on the best available data at the time of creation. Such data includes similar park bids and construction estimates from contractors.

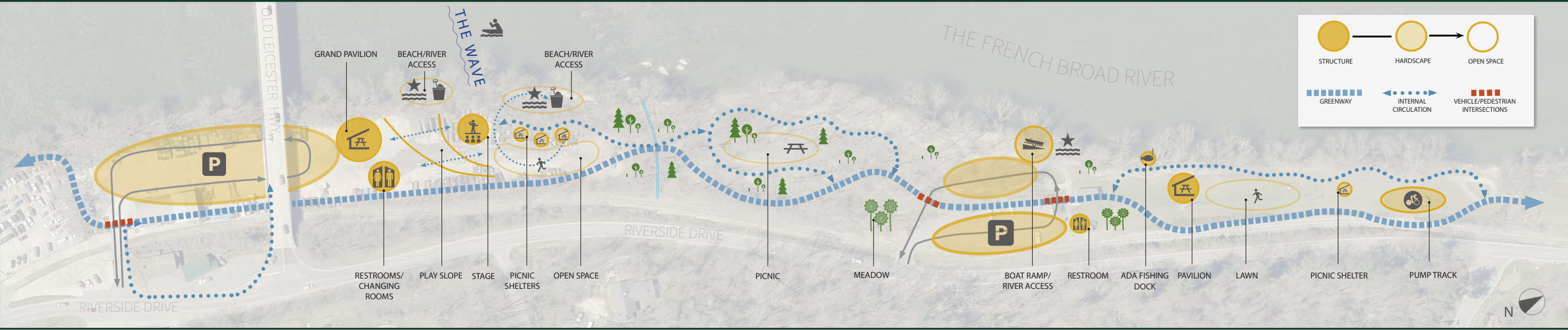
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These cost estimates do not include removing the remnants of the old bridge pilings as this is anticipated to be part of the Wave project.

Initial Concepts



APPENDIX B: INITIAL CONCEPTS

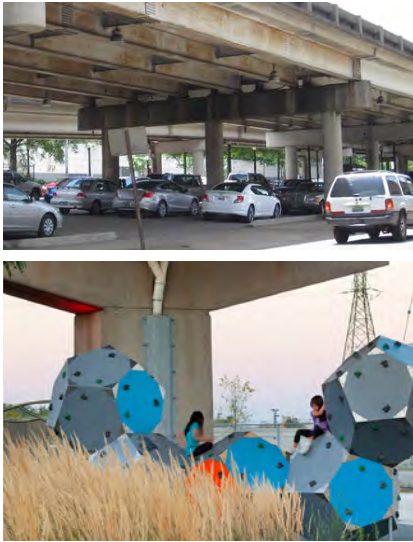


CONCEPT 1: A River Runs Through It

PARKING LOT (a)



BRIDGE UNDERPASS (b)



ENTRANCE PLAZA (c)



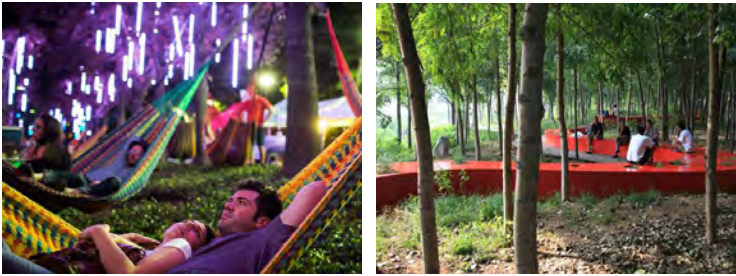
PLAY SLOPE (d)



OVERLOOK (e)



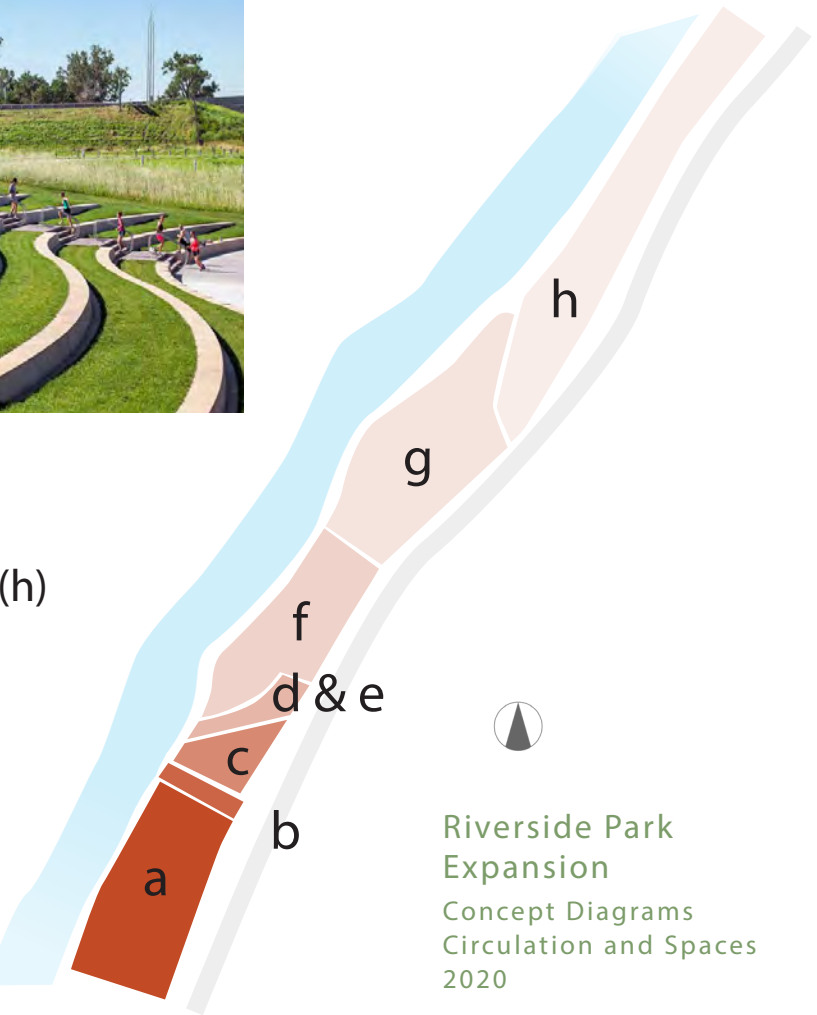
THE WOODED AREA (g)



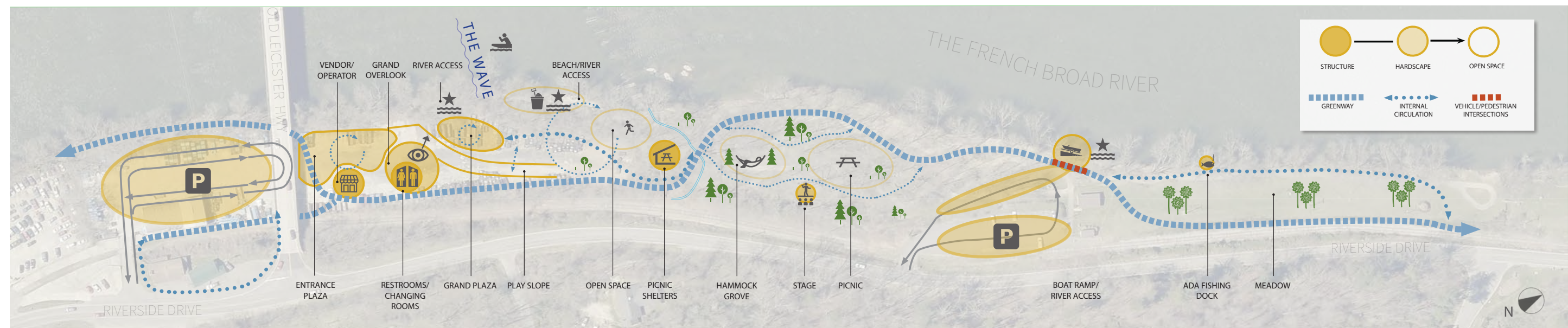
THE NORTHERN STRETCH (h)



WAVE ADJACENT (f)



APPENDIX B: INITIAL CONCEPTS



CONCEPT 2: Wave Dynamics

PARKING LOT (a)



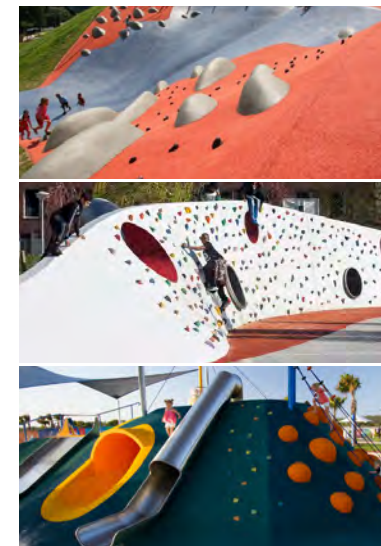
BRIDGE UNDERPASS (b)



ENTRANCE PLAZA (c)



PLAY SLOPE (d)



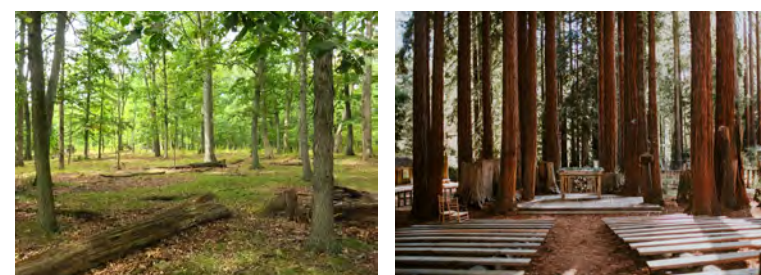
OVERLOOK (e)



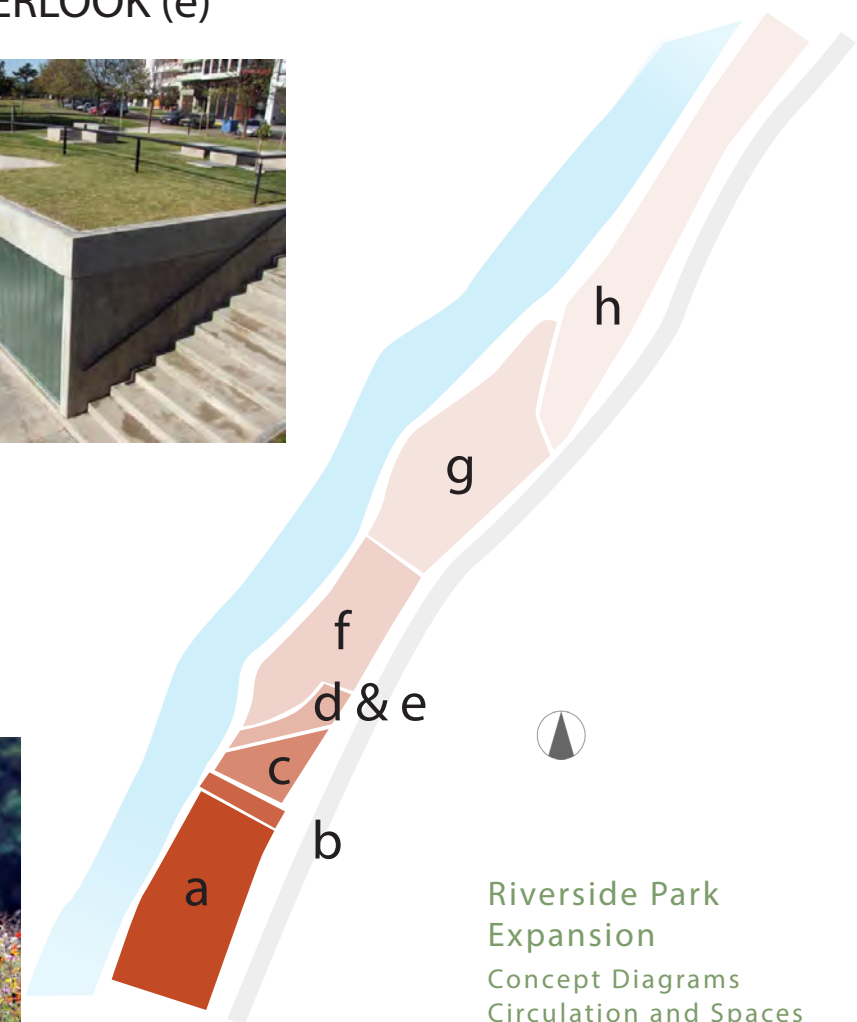
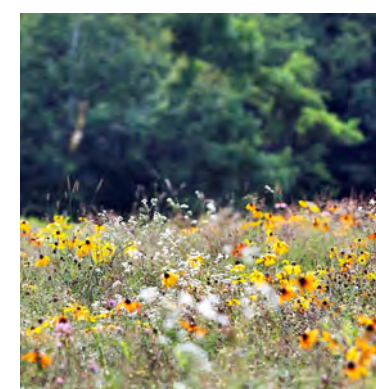
WAVE ADJACENT (f)



THE WOODED AREA (g)



THE NORTHERN STRETCH (h)



Riverside Park
Expansion
Concept Diagrams
Circulation and Spaces
2020

APPENDIX B: INITIAL CONCEPTS

APPENDIX C Communication/Outreach



APPENDIX C: COMMUNICATION/OUTREACH



MEMO

To: Kim Williams, Equinox
From: Brendan W. Merithew, NCDOT
Subject: Re: bridge questions
Date: 5/22/2020
CC: Jason Seickel, Equinox

Hi Kim,

Again, I'm sorry for the delay. Here are the responses. Pretty limited info. This project was put on the suspension list last September, and now with just about everything else suspended, it's really hard to say if the 2026 let date, as far away as it is, will be met. I don't anticipate any preliminary engineering work on this in the near future. I'm not aware of any survey work. For projects on the suspension list, we can't have firms work on the projects, but we can use internal forces to do the work. I'm not aware of my team having done survey work there recently. I'll check with our regional location survey group.

Regarding the pedestrian access, I would think with the relatively new complete streets guidelines that the possibility of ped connectivity would be good. How that would be done will depend on the design.

Is there a possibility to finalize the new bridge location of the new bridge being proposed on Old Leicester Highway?

This project is currently on-hold due to NCDOT budgetary restrictions. When we begin work on the planning and design phase of the project, we will explore different alternatives and their impacts. Our current preliminary data shows that an offsite detour is most likely not a viable option due to length, and we are considering maintaining traffic onsite and replacing on new alignment.

So I think I interpret this as meaning the bridge will be replaced in the same location it is currently at?

They're talking about using the existing bridge to carry traffic during construction instead of a detour. The new bridge would be constructed alongside, either north or south of the existing structure. Once complete, the old structure would be removed (or the town or county might have the option to take it over for use like the flowering bridge in Lake Lure, but not many towns can afford maintenance, liability, etc.). I've included a picture below from Burke County. We've got a bridge replacement project there and the initial plan was a detour and replace existing structure on existing alignment. But there was so much public and local official resistance to 18 months of closed bridge with 30 minute detour, the plan is now to do exactly what is mentioned above. This will be the third alignment for this bridge as you can see the old piers from the first bridge decades ago in the picture. I would not expect them to leave the piers for the current projects. Not sure what year it was when they left the existing piers shown below. I think it's not scheduled for let until 2026, so decisions on the alignment most likely won't be available for some time, but I'll see what I can find.



Text in blue are questions asked by Equinox to a NCDOT representative.
 Text in gray are responses from a NCDOT representative to Equinox.

Would structures be allowed under the bridge, if free standing/not attached to the bridge? Could a structure be inhabitable? Could we have electricity running to it? (I'm guessing no on all of this but we thought we would ask. We are thinking of a structure that could be movable like a shipping container.

The area under our existing bridge and proposed bridge will be within NCDOT Right of Way, so no buildings or habitual structures will be allowed. NCDOT will need to maintain access to the structure in order to periodically inspect the bridge and having any structures impede this inspection process would cause safety concerns for our inspectors. Please note that the railroads on either side of the French Broad River also have their own right of way, and no access to this property is allowed unless prior rights are granted or there is a designated crossing for the public.

Is there potential to work with NCDOT to get pedestrian access from the bridge down to the park via either stairwell or ramp? The grade change is pretty significant. Would ADA facilities be required on an NCDOT structure?

Which park are you referring to? The Woodfin Riverside Park? This park seems to outside of our current project limits which may mean this is beyond what our project would entail or could provide at this time. Within our project limits, we will investigate the need for pedestrian accommodations and provide those necessary accommodations within the limits and scope of our project. All NCDOT projects providing pedestrian accommodation are built in compliance with the ADA. When the planning phase of the project begins, we will reach out for public input about pedestrian accommodations needed within the area. We'll make a note about this request in our project file for future reference. For pedestrian access to the bridge, ADA requirements would apply.

It's been a long time since we talked, so I'll clarify again, sorry if confusing... The Town is looking to purchase the Waste Pro site which is under the bridge. Purchasing this property will allow them to double the size of the park. From what I remember, the latest concepts for the park plan look at having parking under the bridge. Bike/ped access is desired from the bridge because it will be one of the main entrances into the new part of the park. You may have heard of it, but at the furthest end of the property, away from the bridge, will be the planned whitewater wave.

We have parking under existing bridges. I'm sure you've seen the all the work in Asheville along the French Broad near New Belgium, etc. I would say that parking would be a viable consideration, but there'd be no final decision until the design work resumes. Not sure if there's a height minimum, etc. I will ask the structures management group to include the desire for that in the project file so it is considered when PE starts again.

Concept 01: Wave Dynamics • Woodfin Wave at Riverside Park

Woodfin Riverside Park & Wave Master Plan / Woodfin, NC

0 30 60 120 Feet



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Client:
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WOODFIN

Project Name:
RIVERSIDE PARK WHITEWATER WAVE

Status:
CONCEPT DESIGN

Drawing Name:
NEW PARK SITE COMMENTS

Revisions:
--

Drawn By:
CHRISTINE CLARK

Checked By:
Scott Shipley

Date:
05/31/2017

Stamp:

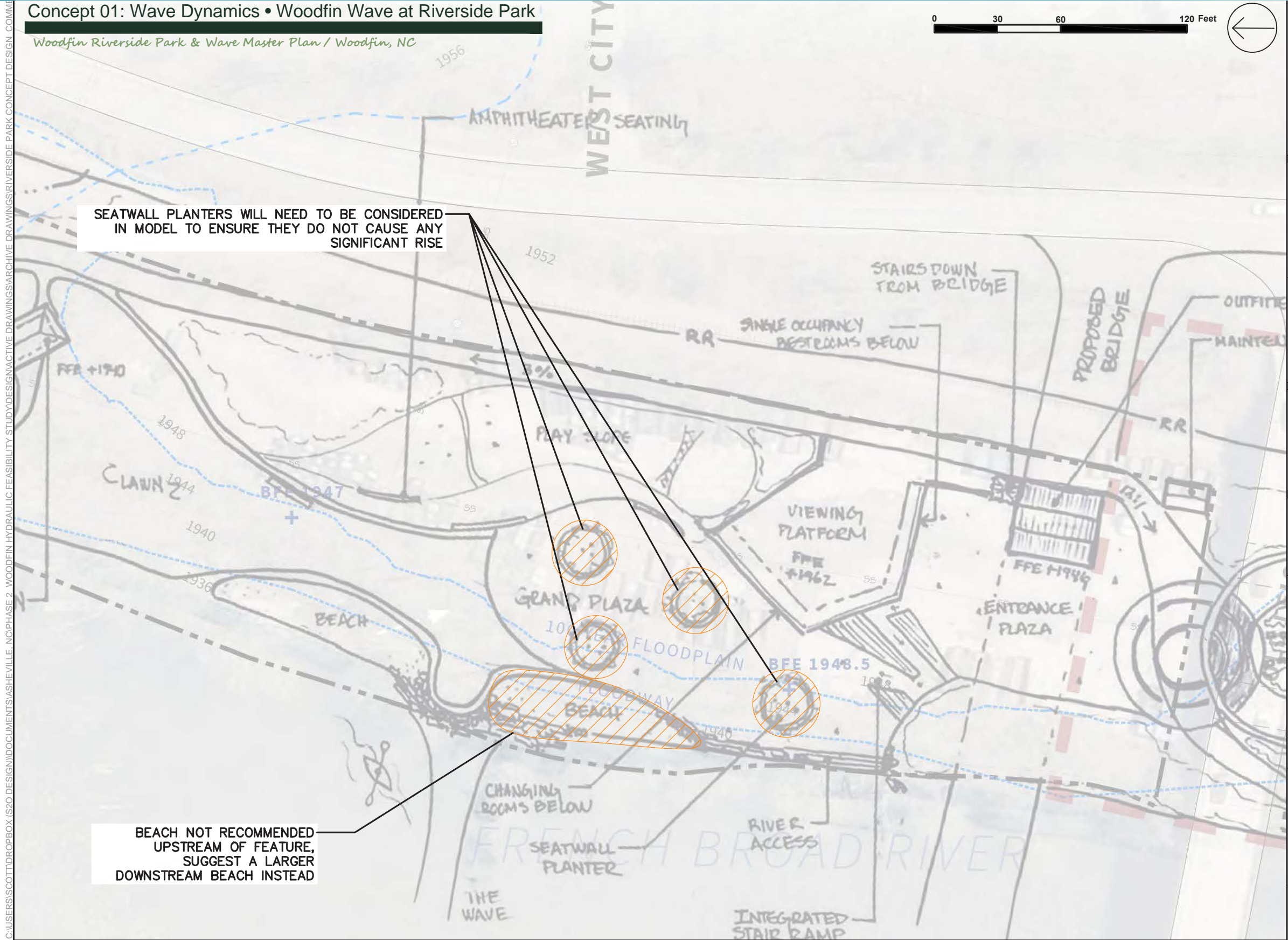
Scale:

Sheet:

WW-01

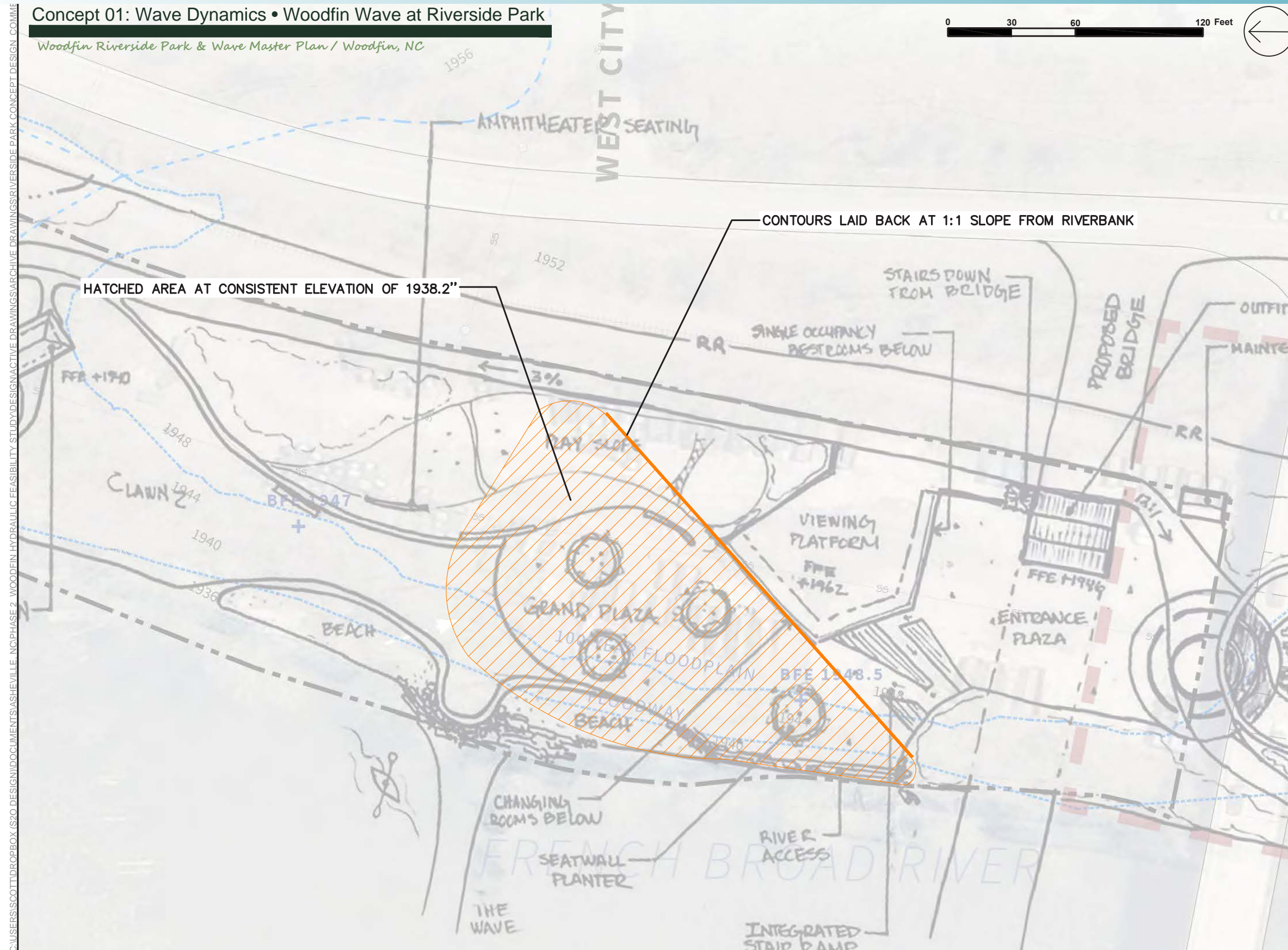
SEATWALL PLANTERS WILL NEED TO BE CONSIDERED
IN MODEL TO ENSURE THEY DO NOT CAUSE ANY
SIGNIFICANT RISE

BEACH NOT RECOMMENDED
UPSTREAM OF FEATURE,
SUGGEST A LARGER
DOWNSTREAM BEACH INSTEAD



Concept 01: Wave Dynamics • Woodfin Wave at Riverside Park

Woodfin Riverside Park & Wave Master Plan / Woodfin, NC



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Status:
CONCEPT DESIGN

Drawing Name:
NEW PARK SITE ELEVATIONS

Revisions:

Drawn By:
CHRISTINE CLARK

Checked By:
Scott Shipley

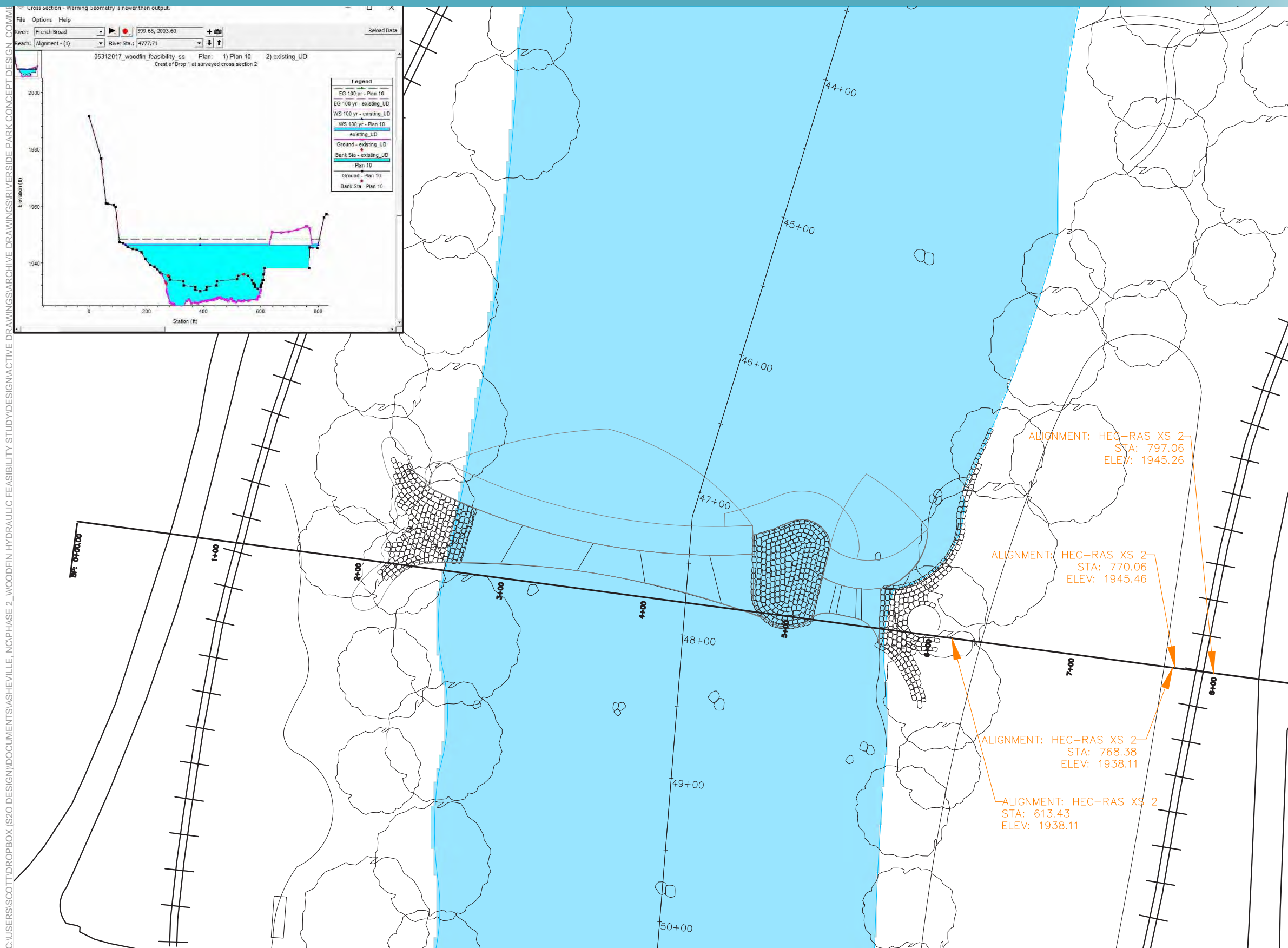
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Status:
CONCEPT DESIGN

Drawing Name:
MODEL 3 HEC-RAS CROSS SECTION

Revisions:

Drawn By:
CHRISTINE CLARK

Checked By:
Scott Shipley

Date:
05/31/2017

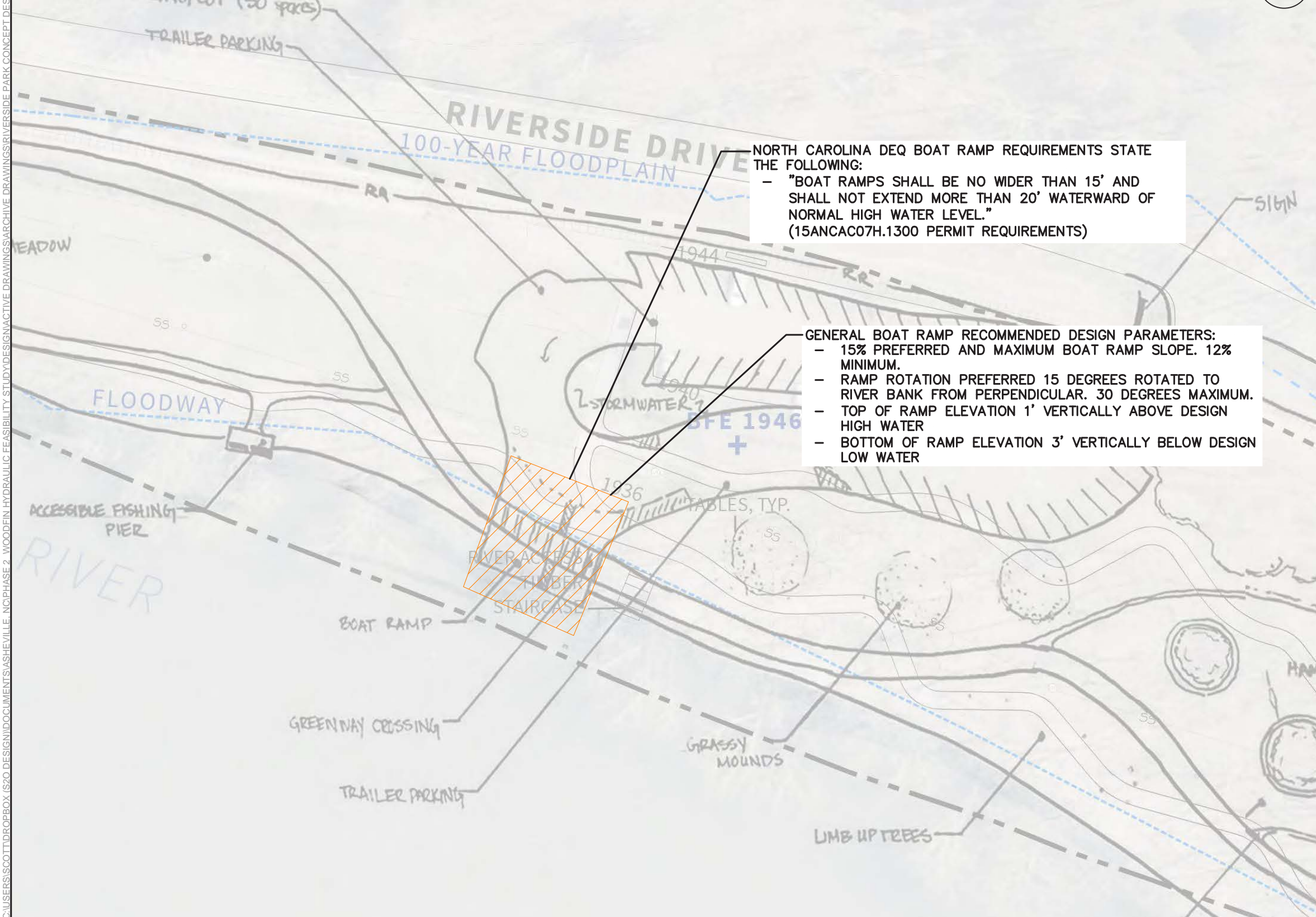
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WW-03

Concept 01: Wave Dynamics • Woodfin Wave at Riverside Park

Woodfin Riverside Park & Wave Master Plan / Woodfin, NC



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Status:
CONCEPT DESIGN

Drawing Name:
BOAT RAMP RECOMMENDATIONS

Revisions:

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Checked By:
Scott Shipley

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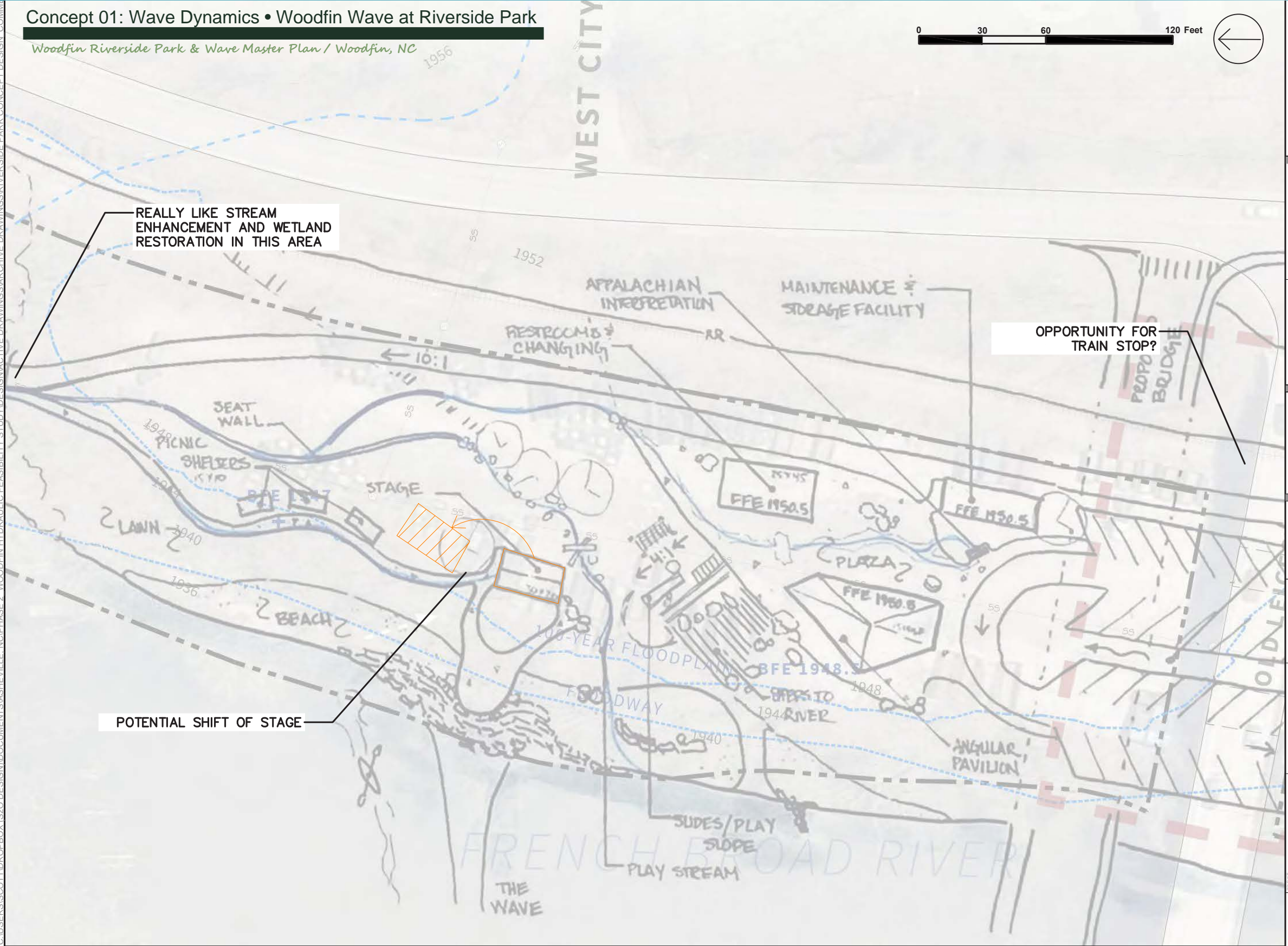
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WW-04

Concept 01: Wave Dynamics • Woodfin Wave at Riverside Park

Woodfin Riverside Park & Wave Master Plan / Woodfin, NC



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Project Name:
RIVERSIDE PARK WHITEWATER WAVE

Status:
CONCEPT DESIGN

Drawing Name:
NEW PARK CONCEPT 2 COMMENTS

Revisions:
--

Drawn By:
SYDNEY SALZWEDEL
Checked By:
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