Walnut Creek Wetland Park

Citizen Planning Committee Meeting #5

Foundation for Tomorrow

Walnut Creek Wetland Park Master Plan
October 16, 2017
Tonight’s Meeting Agenda

- Recap Meeting #4
- Highlights from Public Workshop
- Ross Andrews Memorial
- Stormwater at WCWP
- Master Plan Document Presentation
- Discussion of Priorities
- Closing Remarks
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Recap Meeting #4
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Highlights from Work Session

- Add connection to church
- Outdoor education play is key
- Apiary idea was popular - bees are the symbol for St. Ambrose
- Consider leaving relics/former materials onsite as site history education
- CPC majority approved to retain access to school to provide teacher/student convenience, but also equitable accessibility for the community
- CPC majority approved of extent of boardwalks, the plan should consider ecological inhabitants first
- CPC majority approved the use of wildlife cameras for both education and security
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Public Workshop #2 Highlights
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Ross Andrews Memorial
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Stormwater at WCWP
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What is a Watershed?

- Area of land that drains to the same place and ultimately a common water body.
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**Watershed = river basin**

- A river basin is the land area that is drained by a river and creeks or tributaries.

- North Carolina has 17 river basins. Each is made up of smaller watersheds.
What is a River Basin?

- Raleigh, Walnut Creek, Little Rock Creek, and the Walnut Creek Wetland Park are all part of the Neuse River basin.
Wetlands of the Neuse River Basin

- Wetlands are the kidneys of the watershed, removing sediment, run-off, nutrients and bacteria from the water.
- Wetlands are sponges.
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Watershed surfaces

• A watershed absorbs the rainwater through pervious and impervious surfaces.
• Rainwater is stormwater

Impervious ‘hard’ surfaces (roofs, roads, large areas of pavement, and asphalt parking lots) increase the volume and speed of stormwater runoff. This swift surge of water erodes streambeds, reduces groundwater infiltration, and delivers many pollutants and sediment to downstream waters.

Pervious ‘soft’ surfaces (green roofs, rain gardens, grass paver parking lots, and infiltration trenches) decrease volume and speed of stormwater runoff. The slowed water seeps into the ground, recharges the water table, and filters out many pollutants and sediment before they arrive in downstream waters.

Source: Chesapeake and Atlantic Coastal bays Trust Fund, 2013: Stormwater Management Reducing Water Quantity and Improving Water Quality
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What is stormwater?

- Stormwater has surface run-off not soaked into the pervious ground.
- The more impervious surfaces in the watershed, the more stormwater surface run-off will end up in the creeks and river basins.

- Annette Lucas, Post-Construction Stormwater Management Presentation
- NC DENR: http://www.ncstormwater.org

NY Sea Grant
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What pollutants are in stormwater?

- Dirt, nutrients, bacteria, chemicals, oil, and trash are pollutants that flow unfiltered into our waterways.

Annette Lucas, Post-Construction Stormwater Management Presentation
NCDENR: http://www.ncstormwater.org
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Stormwater Impact

More Impervious Area = More Stormwater Runoff

Volume of run-off... greatly increased by development

- Annette Lucas, Post-Construction Stormwater Management Presentation
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**Stormwater Impact**

More Stormwater Runoff =
More Impacts

- Health of Streams and Lakes = Valuable Resources
  - Swimming Water
  - Shell fish
  - Drinking water
- Downstream Property
- Flooding

Annette Lucas, Post-Construction Stormwater Management Presentation
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Stormwater

- Walnut Creek Wetland Park
- Rochester Heights

Zone AE are areas that have a 1% probability of flooding every year (also known as the "100-year floodplain"), and where predicted flood water elevations above mean sea level have been established. Properties in Zone AE are considered to be at high risk of flooding under the National Flood Insurance Program (NFIP). May 22, 2009
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Stormwater Control Measures

- Walnut Creek Wetland Park
  - Conserve, Restore & Maintain Wetland
- Rochester Heights

Green Stormwater Infrastructure (GSI)

- Reduces impacts on streams
- Reduces stormwater runoff
- Promotes infiltration
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Wetland Conservation
Presentation of Master Plan Document
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PHYSICAL CONDITIONS

WATERSHED

The Neuse River is the fourth largest watershed in North Carolina, at just over 6,000 square miles. Walnut Creek is a tributary of the Neuse River, running from Cary and flow through south Raleigh to Big Branch, into the Neuse River and eventually to the Atlantic Ocean. The Walnut Creek watershed drains an area of approximately 10 square miles, through one of the most developed and commercial areas of the Neuse River Basin. The watershed area, downstream of where Walnut Creek meets the Neuse, is approximately 24.1 square miles. The Walnut Creek Wetland Park sits upstream from the Walnut Creek Reservoir, and approximately 3 miles downstream from the Lake Raleigh Baseline. It is identified by the North Carolina Natural Heritage Program as a Significant Natural Area.

WETLAND DELINEATION

Wetlands at the Walnut Creek Wetland Park property were delineated using the methods outlined in the U.S. Army Corps of Engineers (USACE) 1987 Wetland Delineation Manual and the Technical Supplement to the Corps of Engineers' Wetland Delineation Manual: Eastern Mountains and Piedmont Regions (Version 2). The procedures involve using soil cut indicators, hydrology indications and vegetation survey to determine the presence or absence of potential wetlands. As a part of the delineation process, soils mapping for the Park was based on information taken from the Natural Resources Conservation Service (NRCS) Soil Survey.

Figure 1: Soil Types = Descriptions by Prevalence in Study Areas

- Waltonite: 70%
- Wasatch: 20%
- Holocene Sandy Loam with 10 to 15% Slope
- Juncus Fluffy Loam with 10 to 15% Slope
- Albemarle Scabland, 0 to 5 percent slopes, rarely flooded
- Paluma clay loam, 5 to 15 percent slopes
- Albemarle Scabland, 0 to 5 percent slopes (Native Land in Figure 1)
- Wasatch silt loam, 0 to 2 percent slopes, frequently flooded
-Wasatch and Haskett soils, 0 to 2 percent slopes, frequently flooded
-These soils are upland soils except for the Wasatch and the Wasatch-Haskett soils, which are characterized as fibric soils or soils where wetlands can occur. The Wasatch and Wasatch-Haskett soils cover approximately 78% of the Park site, based on the mapping.

NRCS mapping is a useful tool in determining the location and extent of soil characteristic on the landscapes, such as transitional wetlands, but it is not meant to be used as a substitute for more accurate field investigations where soils, hydrology and vegetation can be directly observed and documented.

The wetland upland boundary was marked in the field and located with GPS technology and soil types were mapped on top of both field and wetlands were calculated within the Park property. The results of the wetland and upland delineation are presented graphically in Figure 2. Survey and wetland areas are presented in Table 1.
SITE OPPORTUNITIES + CONSTRAINTS

A study area inventory and analysis of physical opportunities and constraints was completed using a combination of field review, resource analysis, and aerial imagery. This section summarizes that analysis and its findings.

HYDROLOGY

Walnut Creek Watershed

Walnut Creek, and succeeded is a link in a larger hydrological system, as part of the Neuse River Watershed that encompasses parts of Durham, Wake, Johnston, Wayne, Wilson, Nash, Onslow, and Craven counties. All the areas that Treatment Walnut Creek eventually flows into the Neuse River and ultimately into the Atlantic Ocean.

The Neuse River is 275 miles long and is the largest river entirely within North Carolina. The drainage basin is 5,360 square miles and is also included included within the same boundaries. The Neuse River basin is divided into upper Neuse, Constance, middle Neuse, and lower Neuse subbasins. The Walnut Creek Watershed resides in the upper house subbasin, which is an area of 554,474 acres.

The Walnut Creek watershed is 23,422 acres and the creek flows through the most inhabited portion of the Neuse River basin. It empties into Cary and empties through Lake Johnson and Lake Raleigh before merging with Bull Creek and emptying out into the Neuse River.

Floodplain/Floodway

The Walnut Creek watershed portion is almost entirely located within the floodplain except for 2.5 acres of the 3 acres northern parcel, and 1.27 acres in the central parcel at the mid-point. The floodplain is the area portion of the site with 41.7% of the site’s 14,417 acres on the north side of the street level being located within the floodplain.

The floodplain of Walnut Creek is defined as a continuous zone based on a stream to underwrite a floodplain management ordinance and specify the permitting procedures such as being planted above the regulatory flood protection elevation. The floodplain ordinance does not prohibit the placing park elements within the floodplain, however.

The floodway or floodway fringe is more stringent control because it is an area that, including fill, new construction, substantial improvements, structures, modified channel systems, and other developments, are prohibited within the floodway or non-encroachment areas unless it has been demonstrated that the proposed development would not adversely affect the capacity of the channel to flood. According to Raleigh’s current development ordinance, Re-16, allowed uses within a floodway are: golf courses, tennis courts, driving ranges, archery ranges, picnic grounds, parks, greenways, bikeways, horseback riding trails, botanical gardens, open space, and other similar private and public recreational uses that do not impact the ability of the floodway fringe to store water during a flood event. These allowed uses cover what is planned for the park.

Potential permitting constraints, locating elements in the floodplain and floodway can have other negative affects such as affecting the natural and hydrological environments and the lasting integrity of the park amenities. Because of these elements within the floodplain and floodway should be elevated or highly flood resistant and durable.

Wetlands

Wetlands: Walnut Creek drains through the site, with an unnamed tributary and a confluence with Little Rock Creek at the eastern boundary of the site. Three recreats and their associated wetlands within the 200-foot floodplain. Four wetland groups were delineated on site and are delineated in the following paragraphs. Wetland includes vegetation, surface standing water, coarse sand, and emergent wetland plants such as cattails, reed marsh, and submerged species.

Wetland B consists of two sub-area located south of Walnut Creek. A is 0.11 acres and is located in the southwest corner of the site. A incurs a derogation is the river marsh north of the intersection at State St. and Darby St. A is 0.47 acres and is a low gradient ponded floodplain area. The following ten wetland species were identified includes a rose and an exotic invasive, lesser
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3 CONCEPT ANALYSIS

PARK VISION
Expand Walnut Creek Wetland Center into an equitably accessible destination park with the focus of conserving the area’s environment and biodiversity, offering learning and social engagement opportunities for all, and celebrating arts and cultural heritage.

MASTER PLAN OBJECTIVES
- Encourage social engagement, economic development, and community pride
- Protect, conserve, and enhance the natural environment, biodiversity, and cultural heritage
- Provide a range of access for residents and visitors of all ages and abilities
- Promote understanding, acceptance, and appreciation of the unique wetland environment
- Support interdiscipinary fun and academic learning opportunities through training and skills development
ALTERNATIVES ANALYSIS

OPTION A: EDUCATION THROUGH INTERPRETATION

Park Concept Description: A new access to community interaction with the site through multiple connections and interpretive educational spaces allows visitors of the park to experience and gather within the Walnut Creek Wetland site.

- Arterial gateways enhance multiple access opportunities to connect the Community Center to St. Ambrose Episcopal Church and Innsbruck Hills.
- Connections are also improved to the north of the site with traffic calming, creating improvements and pedestrian infrastructure along Johnson Street at Carriage Middle School.
- Bike routes and parking promote sustainable transit to the site and entry features to transition to park trail bike and explore the wetland on foot.
- Outdoor classrooms, natural play areas, and public gardens at the corner of the park create opportunities for visitors to learn and experience nature and theconnection of the wetland habitat beyond.
- A viewing tower provides viewers over the wetland habitat above the park concepts and surrounding wetlands at Walnut Creek Wetland Park.

Results from Public Workshop:

- Too many walks, too much disturbance
- Has one to many activities I do think the community garden may need to be moved, too much in the area with the playground, I think the entire area of St. Ambrose is important to community members in that area are entitled to use the wetlands.
- Too near to insane asylum
- I like all the access to education but am concerned at the distance from the center at which it would lie and I like having less of trails but would they disconnect the area and how would they be maintained? Outdoor classroom and trail access is great.
- It might be cool to have activities like this be supported by museums and cultural heritage institutions throughout the site. This would involve history and nature education, both of which are linked to schools.
- What is being done to address anxiety on the property?
- Benefits of the outdoor classroom is great. I brought a summer camp group of 7-11 year olds here last summer and they had a ton of fun.
- Creating Strategies
- Very confused activity here with buses etc.
- Too much disturbance in this concept.
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ARTISTIC GATEWAYS

Artistic gateways frame the four main corners of the site, drawing its attention to the wetland park. Additional pedestrian and gateway references provide an opportunity to connect the Community Center to St. Andrews Episcopal Church and the Point San Pedro neighborhood. Each pedestrian gateway in the south also includes a cultural remembrance wetland garden that will foster conversation and pay homage to the neighborhood’s history. Connections are also improved to the north at the start with traffic calming, creating improvements and streamer infrastructure along Armenian Street at Carnegie Middle School. Side share parking provides sustainable access to the site and permet-to-cycle in park share bays and replaces the off-street on four. The primary access route connects the Wetland Center and the St. Andrews Episcopal Church via a footpath and bridge located over the wetlands and Walnut Creek to access a viewing area at the entrance of the park for an impressive perspective of the wetland habitat below. Two pedestrian bridges along Stars通车 and Garner Road are enhanced with viewing platforms and signage that also create safer access to the site and an opportunity for pedestrians to stop and observe Walnut Creek.

CULTURALLY UNIQUE AND ARTISTIC EXHIBITS

Culturally unique and artistic exhibits infuse park views about the wetland feature while preserving a significant amount of the site for nature species management, conservation and wildlife. These park elements located near the center include play with wetland exhibits, a wetland plant garden and a small stage for cultural expressions enhance the programming and cultural exhibits of the Wetland Center. The small stage displays the cultural past and present of the surrounding community and is the platform for performances or presentations. Proposed design of the stage will remain, and a screen connector from the Community Center building and parking lot behind the drive into a screened and accessible wetland.

SIGNATURE FEATURES

On the north side of Pearson Street across from the Community Center, a community garden presents educational opportunities for visitors to learn about the agricultural history of the site, postmill plants and species, and different ways to grow food. A natural surface loop accesses multiple displays on route for viewing that display the wetland through public art and interpretive signage, framing the beauty of the natural site and learning about the site’s heritage and its history as a space for higher education initiatives. A walk along the creek educates trail users about urbanization and its effects on our ecosystems, while they see the true process of creek restoration. A portion of the middle of the park contains a bridge over Walnut Creek and terraced seating and a hardcup as a coastal stage, which gives access to the city and river. A viewing tower in the middle of the Eighteenth, over the wetland/Baltic above the new canopy to observe the surrounding eastern section of Walnut Creek Wetland Park.
PUBLIC GARDENS

PCP and Wetland Park City staff expressed an interest in a city maintained community garden. The community garden is an educational opportunity and will require a full or part-time manager. The community garden’s educational indicators are these:

- historic garden
- food garden
- pollinator habitat garden

The historic garden demonstrates the history of the area as an agricultural field that was owned and operated by the Freytag, an African American family that farmed the land after the Civil War. The garden is envisioned to replicate the historic agricultural practices and to be a hub for historical education. The majority of the garden raised beds are food production plots with teaching community members, school students, and Wetland Center visitors opportunity to grow their own food and learn about best practices in North Carolina.

The pollinator habitat garden features a bee sqaure, pathways and recreation of the north end of the pond and the surrounding native plant beds, trees, walkways, and other elements. The historic garden should feature native plants, an internal and native native ecosystem to support and benefit wildlife with food, shelter, water, and nesting places. The apiary is a bee yard where bees are kept and hives are necessary to tend to the hives and harvest the honey. More information about apiary and beehive associations can be found at https://www.nchivekeepers.org/

Specific recommendations for public gardens include:
- Community Bench: A bench or bulletin board and information should be located in a sunken garden to provide information on events and programming.
- Raised Beds: Garden plots should be four feet wide and accessible from both sides. A minimum of 24 sq. ft. of (X 8”) is sufficient to grow a good range and quantity of produce.
- Accessible Raised beds should be included and should be 24” or 48” above grade, with an accessible ramp at entry.
- Soil test taken on ground and raised beds should be a minimum of 15” deep and should be amended for pH and nutrients.
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WALNUT CREEK WETLAND PARK:
PETERSON STREET TRAFFIC CALMING AND PUBLIC GARDEN
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Figure B: Enlargement, Wetland Center Area Amphitheater + Play Area

WETLAND DEMONSTRATION GARDEN

A wetland demonstration garden located at the community center is an opportunity to fully restore the existing wetland in this area of the park. The demonstration will showcase the benefits of restoring for wetland conservation and even the creation of wetland habitats in the future of development.

The project is symbol of the commitment to preserve a sensitive ecosystem in a rapidly developing urban context.

The opportunity to fully restore this wetland can provide the Wetland Center with a venue to demonstrate the benefits of wetlands as a repository for native plants, animals and insects as well as serve the purpose of an ecosystem to improve water quality by removing pollutants and pathogens, and act as floodprotection.

Also, a natural surface foot path will allow visitors access across the wetlands and an opportunity to explore native plant communities and wildlife.

BIOSWALE AMPHITHEATER/ OUTDOOR CLASSROOM

Walking off the Wetland Center the boardwalk continues on a ramp to a series of viewing platforms. The boardwalk continues through the northern corner until it crosses the stream and reaches the composting facility. To the west of the viewing platform, a path will lead to the site of a small amphitheater. This space could be used for small performances but its primary purpose is to function as an outdoor classroom.

The amphitheater itself is a series of concrete terraced seating areas with grass or pea gravel surfaces between the tiers. An elevated wooden bench in an elliptical shape will sit as a stage and accommodate 20 students. The elevation will allow for streamwater to move from the site to the wetland garden behind it.
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WALNUT CREEK WETLAND PARK: NATURE PLAY AND BOARDWALK EXPANSION
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Figure 1b: Enlargement, Park Core—Observation Tower + Bridge

**Boardwalk Ramps**
To increase the accessible path of travel and the loop the existing boardwalk located at State Street should be improved with an accessible pathway to contact the creek trail.

**Wildlife Cameras**
Wildlife cameras will be installed within the interior of the wetland for remote viewing at the Wetland Center. The motion-triggered remote cameras will be affixed to trees and the observation tower to get high-quality footage of wildlife species within the park. The wildlife cameras will be placed in the lower wooded riparian areas as well as higher-elevation areas to provide the wetland center with ed-educational features to observe animals.
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COMMUNITY PARTNERSHIP PROGRAMS

GARDENING MENTORSHIP PROGRAM

Many older adults in the community may have gardening experience that can be shared with younger residents. Intergenerational efforts to build community gardens can combine the energy and skills of younger adults with the resources and wisdom of older adults. As an example, residents at nearby schools and colleges can help build senior-friendly gardens with raised beds and provide labor in exchange for tools and space to establish a garden.

Ages: 6th Grade and Up

YOUTH-LED COMMUNITY GARDEN

A community garden section dedicated to area youth provides students an opportunity to belong, supports positive relationships and gives both students and residents something to be proud of through their hard work. Partnerships can be created between the garden and area markets to sell fresh, locally grown produce. A youth-organized garden also presents an opportunity to post information on local events and causes, and to find volunteers for projects and programs.

Ages: 9th - 12th Graders

BIKE SAFETY RODEOS

Bike safety courses can teach kids how to ride a bike and can provide educators for adults on responsibilities for both drivers and cyclists. By creating a dedicated, safe space to learn these skills, kids become more confident bicyclists. Strategies for implementation may include identifying potential locations for a bike safety course that are accessible, and ideally adjacent to greenways and trails, partnering with local schools to promote the safety rodeos, and dedicating a semi-permanent space for use as a "Bicycle Traffic Garden", where kids can go at any time to practice their bicycling skills.

Ages: Pre-K - 3rd Graders

NEIGHBORHOOD CLEANUP CAMPAIGN

A cleanup and beautification initiative enables people to improve their surroundings and take pride in their community. The Wetland Center can support trail, park, and neighborhood cleanups by providing and providing materials such as trash bags, maps of cleanup routes, and tools to clear weeds and prune overgrown bushes and trees.

Ages: All Ages
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ENVIROMENTAL JUSTICE FILM SERIES

Environmental Justice is a key part of the struggle to maintain a healthy and clean environment in low income and minority communities, which are disproportionately affected by living, playing and working closest to major sources of pollution.

This plays a central role in the history and formation of the Walnut Creek Wetland Center, which transformed through neighborhood efforts to cleanup and beautify the community.

A film series that focuses on the issues of environmental racism and environmental justice can bring these issues to light, both as an education tool and as inspiration for the community in building on past campaigns.

Ages: 7th Grade and Up

COMMUNITY BIKE MAINTENANCE PROGRAM

The Walnut Creek Wetland Center can partner with local bike shops or bike co-ops to provide free bicycle maintenance to local kids and residents at a fixed time each week. This may be a volunteer-based or sponsored program that can also educate bicycle on how to maintain their bikes and how to safely ride in the area.

Awards or discounts at local bike shops may also be provided as an incentive for employers or employees to arrive at the Wetland Center by foot, bike, or transit.

Ages: All Ages

NEIGHBORHOOD INFORMATION/EVENTS BOARD

A simple chalkboard or whiteboard posted in a visible location inside the Wetland Center can serve as a community bulletin board for events at the park as well as notices and gatherings throughout the community. Additionally, chalkboard can be used to gather feedback on the types of improvements and events people would like to see at the park.

Ages: All Ages

COMMUNITY GROUP BIKE RIDES

This may include a community-based cycling club or group ride that encourages diversity and inclusivity and advocates for community ownership of bicycling as a human right. Many prominent regional and national examples exist, such as Red Bike Gown in Atlanta and Slow Roll Bike Rides in Detroit and Chicago. These rides can build a community-wide cycling culture that respects the local history and that works towards environmental, health, and transportation equity.

Ages: 18 and Up
ARTS-BASED PROGRAMS
LOCAL ARTISTS EXHIBITS

Rotating art exhibits within the park or along trails and greenways can attract new groups to experience the park and neighborhoods. By combining art and greenway facilities, the community is creating a unique interpretive amenity for both residents and visitors. Such programs also attract new patrons, partners, promoters, and sponsors of the park and greenways network. To encourage participation by local communities, local artists could be provided the opportunity to sell their work that is on display in the Wetland Center or throughout the park.

Ages: All Ages

MUSIC IN THE MARSH

In addition to visual arts, music can draw more people to use the trails through programming and events. To hold concerts and attend musical talent, a temporary or permanent stage may be designed in a prominent and accessible location within the park. Additionally, opportunities for people to interact with music and/or instruments along the trail can provide a fun environment for people enjoying the parks and greenways. Examples include Atlanta’s “Pianos for Peace” program, where several pianos are placed in public spaces around town for a month each year.

Ages: All Ages

BIKE RACK DESIGN COMPETITION

The Walnut Creek Wetland Center and park are conveniently located at the confluence of the Little Rock and Walnut Creek trails, which provide excellent access for people arriving on bikes. Therefore, bike parking is key to enhancing the bike-friendliness of the park. Simple metal U, or staple racks are effective and easy to use bicycle racks. They are also affordable and lend themselves to artistic flourish as they are customizable and easily modified. A competition for local artists to design the bike racks can involve the arts community in the design and enhancement of the local trails and parks. Winning designs may be featured at locations where people need to secure their bikes, such as the Wetland Center, park entrances, picnic areas, and entrances to pedestrian-only trails.

Ages: 8th Graders and Up

WATERCOLOR PAINTING FOR ADULTS

The landscapes found in the wetlands and parkland lends itself well to watercolor or other arts classes such as photography and plein air painting. Classes may be open to all skill levels and materials may be donated from local arts fuels and arts supply stores.

Ages: 18 and Up
HEALTH-BASED PROGRAMS

TRAILS TO HEALTHY FOODS + INCENTIVE PROGRAM

Many communities are recognizing the role that both physical activity and healthier eating play in improving overall public health and wellness. This important link can be highlighted in a fun and interactive manner through promoting healthy food options near the parks and recreation areas by engaging community members from a variety of ages and backgrounds. These programs can range in focus from a guided walking tour of local gardens or farmers’ sites to a ride on a local destination or farmers’ market. The focus of each walk or ride should creatively portray walking as a positive and healthy mode of transportation. After the walk, reminders may be sent out to learn that they created a simple habit by incorporating walks and hiking into their daily routines.

The Walnut Creek Wetland Park has direct bike access to healthy food markets such as the Great Northern Market or the Walnut Creek Traffic. Potential partnerships with the Market may include incentives or vouchers for neighborhood residents to pick up at Walnut Creek Wetland Center for those who bike to the Great Northern Market.

Agens: 7th Grade and Up

NEIGHBORHOOD WALKING GROUPS

Groups walk and run for fun as an opportunity to engage community members from a variety of ages and backgrounds. These groups also serve as a guided walking tour of local gardens or farmers’ sites to a ride to a local destination or farmers’ market. The focus of each walk or ride should creatively portray walking as a positive and healthy mode of transportation. After the walk, reminders may be sent out to learn that they created a simple habit by incorporating walks and hiking into their daily routines.

Agens: 10 and Up

WALK WITH A DOC

Walking is one of the easiest forms of exercise for all ages that has numerous health benefits. According to the American Heart Association, walking is also the lowest risk form of physical activity. Walking with a doctor can be an easy way to get started and make it a part of your daily routine. Typically, a doctor will lead an informal walking group that is free and open to anyone, and will present on health topics, health risks, and how to prevent them. The group will meet at the Walnut Creek Wetland Park and walk at a comfortable pace, with the opportunity to ask questions about personal and community health. The program is open to anyone and is free of charge.

Agens: 10 and Up

EXERCISE CLASSES IN THE PARK

Many areas of the park may be suitable for frequent free exercise classes led by volunteers or park staff. This includes a range of classes that target specific age groups and that address various levels of activity. Examples may include yoga, Zumba, Tai Chi, and Qi Gong. The classes are held in the convenience of the park, and there are options for people to arrive by foot or bike, and participants may be encouraged to take the opportunity to start hiking or cycling to attend the classes.

Agens: 10 and Up
5K WALK & RUN
A 5K walk and run can attract locals and visitors to the park for a healthy and fun event. This can also provide an opportunity to market the park and the excellent trail connections to various destinations that are within walking and biking (and running) distance. The run could be developed in conjunction with other program ideas, such as a popup storytelling program, or together with a concert series.

Potential destinations for a 5K run from the Wetland Center include the State Farmer’s Market, Lake Raleigh (Wetlands to Lake E7), and Downtown Raleigh.

Ages: All Ages

BIKE SHARE AND/OR BIKE RENTAL DISCOUNT PROGRAM
According to the new Bike Raleigh bike share program, a station location is certainly planned for the Walnut Creek Wetland Center. This will provide numerous opportunities for bike connections to other major destinations in Raleigh, as well as a great access point for nearby neighborhoods. Depending on usage structures, many bike share programs may be perceived as too expensive or inaccessible to low-income residents. A program at the Wetland Center tailored to educate the public on how to use the new bike share program may be paired with incentives on payment structures. Additionally, low-income payment programs or free vouchers may be developed, such as Arlington’s Baby Bike Share program that allows low-income residents to use bike share for 90 minutes each day.

Ages: 4th Grade and Up

EDUCATIONAL PROGRAMS
HERITAGE TOURISM MAPS & GUIDES
The Walnut Creek Wetland Park has a unique history based on environmental justice. This story can be told and passed down to future users of this important community space.

A series of strategically developed park guides to heritage tourism can capitalize on and promote the rich history of the park and surrounding neighborhoods. One or more maps could be developed for the Wetland Center showcasing safe and enjoyable walking and biking routes to visit nearby cultural and historic sites.

Ages: 6th Graders and Up

EDUCATION COURSES FOR YOUNG ADULTS AND OLDER ADULTS
Currently, the Wetland Center provides many education courses for younger children that focus on the ecology and science within the park. These programs can be expanded in scope and targeted towards a range of ages. Additionally, partnerships with local colleges and high schools will create opportunities for experience-based learning. Examples of relevant classes for older adults may include:

- Hammock Camping 101
- Selfie Plane
- How to reduce your carbon footprint
- Green Building 101
- Health Benefits of Trees/Plants
- Urban Forestry
- Gardening with Native Plants

Ages: 18 and Up
Control of invasive species after they have been established and growing on a site of over 40 acres is challenging. A multi-step process is recommended for addressing invasive species at Walnut Creek Wetland Park.

1. Here, a clear detemination of what areas should be treated and priority should be developed. These areas may include those adjacent to the existing wetland area, areas along the existing shoreline or those containing the Master Plan design, etc. The entire park or major sections of it may be identified. This step should be ambitious, open-ended, and connected to the site for the planning process. This initial plan may bring into focus the species of the site, and the site of the future.

2. The invasive species that need control should be identified and prioritized. Which species are the most widespread? Which ones are problematic in the area? Which species are the most widespread? Which areas are most affected by the species?

3. Goals for invasive species control should be set, based on available resources. Total eradication could be the goal for some species, while control is probably more suitable for others. The decision to implement control with staff, volunteers, or a combination of both is an important consideration. Be as specific as possible. Determining a detailed budget is essential for the remaining steps in the process.

4. Once this decision is made, a feasible strategy for accomplishing species control goals can be formulated. Based on the outcome of step 2, the strategy should be developed that defines the specific techniques, determined through research and available resources, that should be used to control specific species.

5. A map should be developed that identifies which areas are to be treated, in what order, for what species. A schedule for treatment of various species should be produced and, based on the optimal season to control the species present.

6. An adaptive management approach should be used that tracks areas treated, the effectiveness of the treatments, and the effectiveness of the treatments. The level of success of the treatments performed should be evaluated and documented. Adjustments should be made based on these evaluations to maximize invasive species control effectiveness.

Based on a site reconnaissance, the two invasive species that occupy the most area on the site, and whose presence is most pronounced are Chinese privet (Ligustrum sinense), a shrub that occupies extensive areas of the riparian buffer zone, and Japanese stiltgrass (Microstegium vimineum), which occurs extensively in the non-wetland areas of the site.
PARPARTNERSHIPS

The success of the Walnut Creek Wetland Park is due to working partnerships with non-profit organizations and user groups. This partnership model builds on a legacy of support for future park development and improvements.

The following partnership standards are recommended for contributions to Walnut Creek Wetland Park improvements:

- All partnerships should have a written agreement between the City of Raleigh and the partner with measurable outcomes that will be shared with other partners and evaluated on an annual basis.
- All partnerships should work directly and reasonably with the park's management to ensure the success of their projects.
- Each partnership should engage in collaborative planning with an annual report on the state of the park and any improvements that have been made.

ROLES OF PARTNERS

For a successful park to be developed with the help of partners is crucial for the project to understand their role in supporting and managing efforts.

CITY OF RALEIGH

The Walnut Creek Wetland Park will be developed and managed by the City of Raleigh and its departments. Listed below are the key departments and organizations that will play a role in this implementation and management of future park elements.

Parks, Recreation, and Cultural Resources (FRCR)

FRCR will play a role in park design, construction, administration and management, and maintenance of the park. Walnut Creek Wetland Park staff are an extension of FRCR and will continue to operate and maintain the park. Park staff and FRCR staff will work closely with protect partners and volunteers throughout the development of future phases.

City Police Department

The City Police Department is responsible for the development and maintenance of the Walnut Creek Wetland Park and associated facilities.

Stormwater Management

The City of Raleigh's Stormwater Management will assist FRCR with the installation and maintenance of all proposed stormwater management facilities within and adjacent to the park. The department's cost-sharing programs are also available to support improvements on park properties. The program also funds education and signage if a benefit to the watershed can be demonstrated.

Public Schools & Educational Organizations

Public schools can support the efforts of the Walnut Creek Wetland Park by helping to maintain facilities and assets, providing student and community engagement, supporting site needs, providing programs and events, and maintaining the integrity of natural cultural resources through coordinated labor, equipment, or materials. Share University, Carnegie, Middle School, The Explorers School, NC State College of Agriculture, and NC Museum of Natural Sciences are all partners and continue to provide contributions to future park implementation.

CIVIC ORGANIZATIONS

Organizations and groups that support the efforts at the Walnut Creek Wetland Park can provide programs and events, including serving specific conditions to the community's collaborating. These organizations play a role in maintaining and managing park facilities and hosting events that raise money for the park. There are many ways in which civic organizations can participate in the development of the Walnut Creek Wetland Park. The most appropriate involvement can be determined by matching the goals and objectives of each organization in the context of the park program. Local civic groups include the Top Teens, the Junior League, Boy Scouts and Girl Scouts, Chamber of Commerce, St. Andrews Episcopal Church, and the City of Raleigh.
## PLANT LIST

### A1 Checklist of Vascular Flora

<table>
<thead>
<tr>
<th>Plant</th>
<th>Common Name</th>
<th>Invasive Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Persea</em></td>
<td><em>Atriplex palmeri</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Atriplex patula</em></td>
<td><em>Hyrise Spectabilis</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Alliaria</em></td>
<td><em>Alliaria apiculata</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Buddleia</em></td>
<td><em>Buddleia</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Loranthus</em></td>
<td><em>Loranthus</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Decapterus</em></td>
<td><em>Decapterus</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Cercocarpus</em></td>
<td><em>Cercocarpus</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Pseudotsuga</em></td>
<td><em>Pseudotsuga</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Gymnospermae</em></td>
<td><em>Gymnospermae</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Juniperus</em></td>
<td><em>Juniperus</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Thuja</em></td>
<td><em>Thuja</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Picea</em></td>
<td><em>Picea</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Pinus</em></td>
<td><em>Pinus</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Tigridia</em></td>
<td><em>Tigridia</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Monocots</em></td>
<td><em>Monocots</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Allium</em></td>
<td><em>Allium</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Stipa</em></td>
<td><em>Stipa</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Asteraceae</em></td>
<td><em>Asteraceae</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Asteraceae</em></td>
<td><em>Asteraceae</em></td>
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<tr>
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<tr>
<td><em>Asteraceae</em></td>
<td><em>Asteraceae</em></td>
<td>Native</td>
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</table>

### A1 Checklist of Vascular Flora (Continued)

<table>
<thead>
<tr>
<th>Plant</th>
<th>Common Name</th>
<th>Invasive Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Monocots</em></td>
<td><em>Monocots</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Poa annua</em></td>
<td><em>Poa annua</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Arrhenatherum elatum</em></td>
<td><em>Fescue</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Festuca rubra</em></td>
<td><em>Red Fescue</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Elymus repens</em></td>
<td><em>Blue Grass</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Dactylis glomerata</em></td>
<td><em>Dactylis</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Cynosurus echinatus</em></td>
<td><em>Canada Bluegrass</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Bromus erectus</em></td>
<td><em>Brome Grass</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Agrostis capillaris</em></td>
<td><em>Red Fescue</em></td>
<td>Native</td>
</tr>
<tr>
<td><em>Arrhenatherum elatum</em></td>
<td><em>Fescue</em></td>
<td>Native</td>
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<td><em>Festuca rubra</em></td>
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<td><em>Brome Grass</em></td>
<td>Native</td>
</tr>
</tbody>
</table>

* Denotes non-native species. Invasive species marked from NC Native Plant Society.
Walnut Creek Wetland Park

<table>
<thead>
<tr>
<th>PART 4 - COMMUNITY REVIEW, REDEVELOPMENT, PLAT, ASSN., WETLAND REMODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOTAL</strong></td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td><strong>Area</strong></td>
</tr>
<tr>
<td><strong>Cost</strong></td>
</tr>
<tr>
<td><strong>Close</strong></td>
</tr>
<tr>
<td><strong>Active</strong></td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
</tr>
</tbody>
</table>

DRAFT APPENDIX A6 | OCTOBER 2017

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**Walnut Creek Wetland Park**
Walnut Creek Wetland Park

**Draft Master Plan Document Review Process**

- City of Raleigh Staff Review: 10/18 – 10/27
- Public review, City website: 11/6 – 11/14
- Presentation to Park Planning: 11/9
- Presentation to PRGAB: 11/14
- Presentation to City Council for Adoption: 1/2

Save the Date!
Walnut Creek Wetland Park

Group Work Session
Walnut Creek Wetland Park

Prioritization...what to think about

- Development permits (time and $)
- Construction access (equipment and heavy machinery)
- Construction season
- Grant opportunities/seasons
- Existing park bond funding
- Value vs. cost of park elements
- Community and public desires
- Return on investment
- Vision and objectives of the master plan
AREA A

- Peterson Street Stormwater
- Trail Re-alignment
- Bike Share
- Public Gardens
- Parking Lot
- Habitat Garden

- $1.8 million - $2.2 million
WCWP Costs

**Area B**
- Community Center
- Boardwalk Access
- Amphitheater
- Play Area
- Little Rock Creek Restoration & Bridge
- Walnut Creek Overlook & State Street Loop
- Demonstration Wetland Garden
- $2.17 to $2.85 million
WCWP-Costs

**AREA C**

- Boardwalk
- Observation Tower
- Creek Access
- Creek Trail
- Walnut Creek Bridge
- Wetland Rehabilitation
- Bailey Drive Cultural Garden & Storm water

- $4.1 to $4.89 million
WCWP-Costs

**AREA D**

- Natural Surface Trails
- Boardwalk Access
- Walnut Creek Restoration & Overlook
- Demonstration Wetland Garden

- $2.08 to $2.56 million
WCWP-Costs

AREA A
- $1.8 million - $2.2 million

AREA B
- $2.17 to $2.85 million

AREA C
- $4.1 to $4.89 million

AREA D
- $2.08 to $2.56 million

TOTAL COST: $10.15 to $12.52
<table>
<thead>
<tr>
<th>Project</th>
<th>Cost Range</th>
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</thead>
<tbody>
<tr>
<td>Boardwalk</td>
<td>$85-$100/square foot</td>
</tr>
<tr>
<td>Creek Bridge (50’)</td>
<td>$85,000-$100,000</td>
</tr>
<tr>
<td>Observation Tower</td>
<td>$450,000- $550,000</td>
</tr>
<tr>
<td>Play Area</td>
<td>$250,000 - $350,000</td>
</tr>
<tr>
<td>Amphitheater</td>
<td>$80,000- $100,000</td>
</tr>
<tr>
<td>Trails (Natural Surface)</td>
<td>$8.00/square foot</td>
</tr>
<tr>
<td>Creek Restoration</td>
<td>$100-$150/ linear foot</td>
</tr>
<tr>
<td>Wetland Restoration</td>
<td>$7.00-$8.00/square foot</td>
</tr>
</tbody>
</table>
$1,000,000 Park Bond

- Master Planning: $150,000
- Design fees, Phase 1: $100,000
- Survey, Geotechnical, Civil Engineering, Permitting, General Requirements: $50,000

= $700,000 Park Bond
Your Consensus Choices:

1. **Endorsement** (Member fully supports it)

2. **Endorsement with minor point of contention** (Member likes it)

3. **Agreement with minor reservation** (Formal disagreement, but will not block or hold up the proposal/provision)

4. **Stand aside with major reservations** (Formal disagreement, but will not block or hold up the proposal/provision)

5. **Block** (Member will not support the proposed plan)
Measuring Consensus:

- **Consensus** = All committee members present rate the proposal as a 1, 2, or 3
- **Consensus with Major Reservations** = All committee members present rate the proposal as a 1, 2, or 3, except at least one Committee member rates it as a 4
- **No Consensus** = Any committee member rates the proposal as a 5
Let's Vote!

Walnut Creek Wetland Park