COUNCIL BRIEF

UPDATE: STORMWATER MANAGEMENT PLANNING

FY 2019: Stormwater Management Capital Projects

- Ocean Outfall Maintenance (25th Avenue S, 14th Avenue N, 52nd Avenue N)
- Yaupon Drive Drainage Improvement Project – Phase I and II construction
- Watershed-based Stormwater Master Plan – Withers Basin Pilot Study Area
    - Address water quality and remaining localized flooding issues
    - Water quality improvement: Combination of source reduction and stormwater treatment
    - Successful pollutant reduction associated with settling, filtration, UV exposure, etc.
    - Preliminary recommendations by WK Dickson of 5 water quality-focused constructed wetland and stream enhancement stormwater treatment projects to promote bacteria and nutrient removal
    - Bioretention and constructed wetland systems are very effective in the removal of suspended solids that are known to transport bacteria and other urban stormwater pollutants with the use of sand filters, mulch, organic matter, and plants

FY 2020: Stormwater Management Capital Projects

- 25th Avenue S Ocean Outfall – Design of Header Pipe
- 24th Avenue N Ocean Outfall – Preliminary Design of Landward Improvements and Ocean Outfall
- Seaboard St Area/Industrial Park Drainage Improvements – Design
- 48th Avenue N – Hwy 17 Bypass Drainage Channel Improvements – Design
- Booker T. Washington/Oak St Drainage Improvements – Design
- FEMA Hazard Mitigation Grant Project Application – Hwy 501/Balsam St Drainage Improvements
- Next phase of the citywide Watershed-based Stormwater Master Plan development

May 9, 2019

NAME OF PROJECT: NEW TOWN PARK WETLAND and INFILTRATION (P-7) for Main Channel Improvements (South Central)

PROBLEM IDENTIFICATION and SITE CHARACTERISTICS

LOCATION: SW-12 (Main Stem of Withers Swash)

ISSUE: Water quality sampling in the subwatershed indicates FIB levels exceeding the standard of 200/100mL.

TREATED AREA: Drainage Area to Project is approximately 1450 acres.

PROJECT DESCRIPTION and BENEFIT

WETLAND ENHANCEMENT (1.5 acres): Provide approximately one acre of wetland enhancement and wetland creation for bacteria and nutrient removal as follows:

- Create approximately 1.5 acres of linear wetland for nearly 700 feet downstream of the Broadway Road Pond for bacteria removal.
- Install an outlet structure from the constructed wetland to regulate flow into the main channel.
- Create floodplain bench and outfall treatment along left bank upstream of 3rd Avenue South.
- Remove invasive plant species, and install native riparian plantings.

INFILTRATION SCM: Install an infiltration basin or bioretention area to capture runoff from the closed pipe system draining Withers Swash Drive in New Town Park.

Figure 1. Wade Park Wetland – Wilmington, NC

Figure 2. Marsh Creek Raingarden - Sandy Springs, GA

NAME OF PROJECT: BROADWAY WETLAND and STREAM IMPROVEMENTS (P-6) for Main Channel and Tributary 2 Improvements (Central)

PROBLEM IDENTIFICATION and SITE CHARACTERISTICS

LOCATION: SW-12 (Main Stem and Tributary 2)

ISSUE: Sampling in the subwatershed indicates FIB levels exceeding the standard of 200/100mL.

TREATED AREA: Drainage Area to Project is approximately 1350 acres. The confluence of the main stem of Withers Swash and Tributary 2 is at the Broadway Road Pond.

PROJECT DESCRIPTION and BENEFIT

CULVERT REPLACEMENT (70 LF) and STREAM ENHANCEMENT (300 LF): Provide stream enhancement for bacteria and nutrient removal and culvert replacement for increased conveyance on Tributary 2 as follows:

- Replace 70 LF of damaged culverts underneath 3rd Ave North.
- Regrade the banks and replant with native plant species for approximately 300 LF.
- Create a treatment wetland (approximately 0.25 acres) that ties into existing pump station BMP.

WETLAND ENHANCEMENT (0.7 acres): Provide wetland enhancement for approximately 0.7 acres for bacteria and nutrient removal on the main stem of Withers Swash as follows:

- Re-grade banks and perimeter of wetland to include defined shallow areas for wetland plantings.
- Create forebays at primary inflow locations.
- Install approximately 0.25 acres of native riparian buffer plantings.

BANK STABILIZATION (500 LF): Provide approximately 500 LF of stream enhancement.

Figure 3. Wetland Enhancement - Rocky Mount, NC

NAME OF PROJECT: BALSAM STREET PARK WETLAND ENHANCEMENT(P-4) for Tributary 2 Improvements (East Central)

PROBLEM IDENTIFICATION and SITE CHARACTERISTICS

LOCATION: SW-6 (Tributary 2 of Withers Swash)

ISSUE: Water quality sampling in the subwatershed indicates fecal indicator bacteria (FIB) levels exceeding the standard of 200n/100mL.

TREATED AREA: Drainage Area to Project is approximately 450 acres.

PROJECT DESCRIPTION and BENEFIT

WETLAND ENHANCEMENT (1 acre): The City currently has plans at this location for pipe improvements and a detention pond.

The City should consider incorporating wetland features as follows:

- Grading for a littoral shelf and defined shallow areas for wetland species plantings for approximately 1 acre of created wetland.
- Install a forebay for sediment removal.
- Create a riparian buffer zone with native plantings.

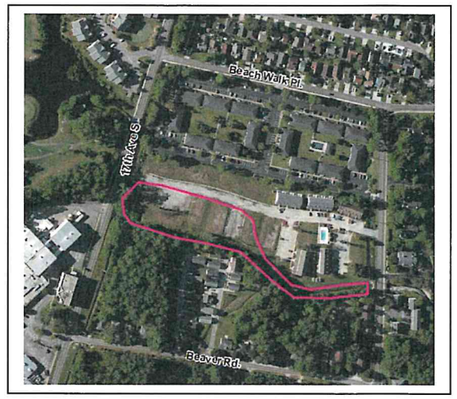
CULVERT REPLACEMENT (240 LF) and STREAM ENHANCEMENT (280 LF): Provide stream enhancement for bacteria and nutrient removal and culvert replacement for increased conveyance on Tributary 2 as follows:

- Replace approximately 240 LF of damaged culverts underneath 4th Ave North and extending onto private property.
- Provide approximately 100 LF of stream bank stabilization immediately downstream of the outfall by regrading the banks and replanting with native plant species.
- Continue stream enhancement for approximately 180 LF to the 3rd Avenue North culvert, adding in-stream structures for aquatic habitat such as snags and root wads to connect to proposed project P-4 downstream.
- Remove invasive plants and replant the buffer zone with native plant species.

Figure 5. Sedgefield Park - Mecklenburg County, NC

NAME OF PROJECT: BEACH WALK WETLAND and STREAM ENHANCEMENT (P-13) for Tributary 1 Channel Improvements (West)

PROBLEM IDENTIFICATION and SITE CHARACTERISTICS



LOCATION: SW-16 (Tributary 1 of Withers Swash)

ISSUE: Water quality sampling in the subwatershed indicates fecal indicator bacteria (FIB) levels exceeding the standard of 200n/100mL.

TREATED AREA: Drainage Area to Project is approximately 200-acres.

PROJECT DESCRIPTION and BENEFIT

CONSTRUCTED WETLAND (2 acres): Create approximately 2 acres of wetland to provide bacteria and nutrient removal on Tributary 1 as follows:

- Plant the littoral shelf with native wetland species.
- Install a forebay and water quality outlet structure.

STREAM ENHANCEMENT (500 LF): Provide approximately 500 LF of stream enhancement and for bacteria removal as follows:

- Regrade the banks and replant with native plant species.
- Reconnect to floodplain where feasible.
- Add in stream structures for aquatic habitat such as snags and root wads.
- Replant the buffer zone with native plant species.

Figure 4. Upstream View of Wade Park Wetland

NAME OF PROJECT: CANNON ROAD PIPE DAYLIGHT PROJECT (P-8) for Tributary 3 (North Central)

PROBLEM IDENTIFICATION and SITE CHARACTERISTICS

LOCATION: SW-12 (Tributary 3 of Withers Swash)

ISSUE: Water quality sampling in the subwatershed indicates (fecal indicator bacteria) FIB levels exceeding the standard of 200n/100mL.

TREATED AREA: Drainage Area to Project is approximately 270-acres.

PROJECT DESCRIPTION and BENEFIT

PIPE DAYLIGHT (800 LF): Provide piped stream daylighting for bacteria and nutrient removal as follows:

- Daylight approximately 300 LF of 48-inch pipe that runs parallel to Cannon Road.
- Daylight approximately 500 LF of 48-inch pipe running towards Owens Dr.

STREAM ENHANCEMENT (800 LF): Provide approximately 800 LF of stream enhancement along the daylighted stream by:

- Regrading the banks and replanting with native riparian plant species.
- Adding in-stream structures for aquatic habitat such as snags and root wads
- Remove any invasives in the buffer zone and replant with native species.
- Create benching to allow for floodplain reconnection.

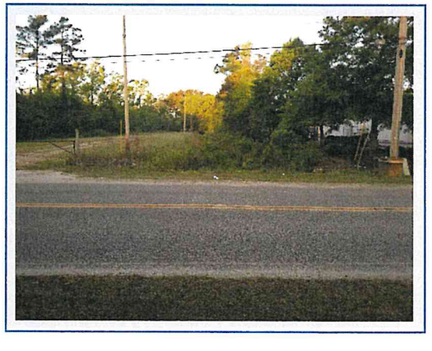


Figure 6. Cityview Stream Restoration - Charlotte, NC

Withers Basin Proposed Projects Map

CITY OF MYRTLE BEACH SOUTH CAROLINA

WK DICKSON

0 1,200 2,400 Feet

1 inch = 1,200 feet

Withers Basin Watershed

P-8
Cannon Road Pipe Daylight and Stream Enhancement
Treatment Area: 270 acres

P-6
Broadway Wetland and Stream Improvements
Treatment Area: 1,400 acres

P-4
Balsam Street Park
Wetland Enhancement
Treatment Area: 450 acres

P-13
Beach Walk Wetland and Stream Enhancement
Treatment Area: 200 acres

P-7
New Town Park
Wetland and Infiltration
Treatment Area: 1500 acres

ROBERT M GRISSOM PKY
MR JOE WHITE AVE
CANNON RD
HWY 501
CEDAR ST
BALSAM ST
BROADWAY ST.
17TH AVE S
13TH AVE S
3RD AVE S
3RD AVE N
4TH AVE N
S KINGS HWY
N KINGS HWY
Atlantic Ocean
N