

STORMWATER UTILITY MONTHLY REPORT

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PART 1: WATER QUANTITY DRIVEN WORK

1. Broad Street Culvert Replacement



Project Description: This project will involve two phases to replace an old and undersized culvert on the 400 block of Broad Street. The first phase is preliminary engineering; the second will be construction.

Project Background: An old and undersized culvert on Broad Street has been responsible for previous overtopping of the road. This site has been included in previous Town flood studies by Sungate Engineering.

Status: Active/Funded. The Council approved funding for preliminary engineering in June (with budget modification in January). An RFQ for assistance with preliminary engineering from a private engineering firm(s) was released in June. Interviews were held in July, and contract negotiations and coordination continued in August-October since the bids that were received exceeded the amount approved by the Council and currently available in the Stormwater Enterprise Fund. The Town entered into contract with Sungate Design in January after budget modification. **A kickoff meeting with staff and Sungate occurred in February, along with a site visit with neighboring residents.** Preliminary engineering will be completed in FY 19/20, and construction bid in the summer of 2020.

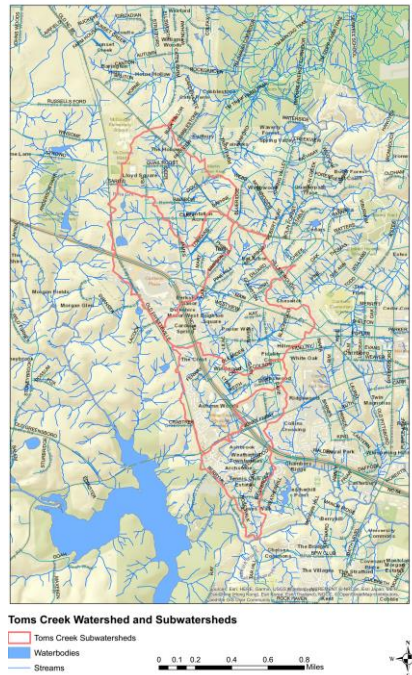
Fiscal and Staffing Considerations: The preliminary engineering is estimated to cost \$50k. Construction is preliminarily estimated to cost approximately \$125k; a separate project ordinance will be brought for that phase of work. There is a staff impact associated with project management.

Additional Information:

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E&FullText=1>

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E>

2. Toms Creek Watershed Assessment and Outreach



Project Description: In April 2019, the Council directed staff to move forward with an assessment of conditions in a subwatershed. In June, 2019, an outreach session was held. There is an ongoing need to address flooding issues in the upper Toms Creek watershed.

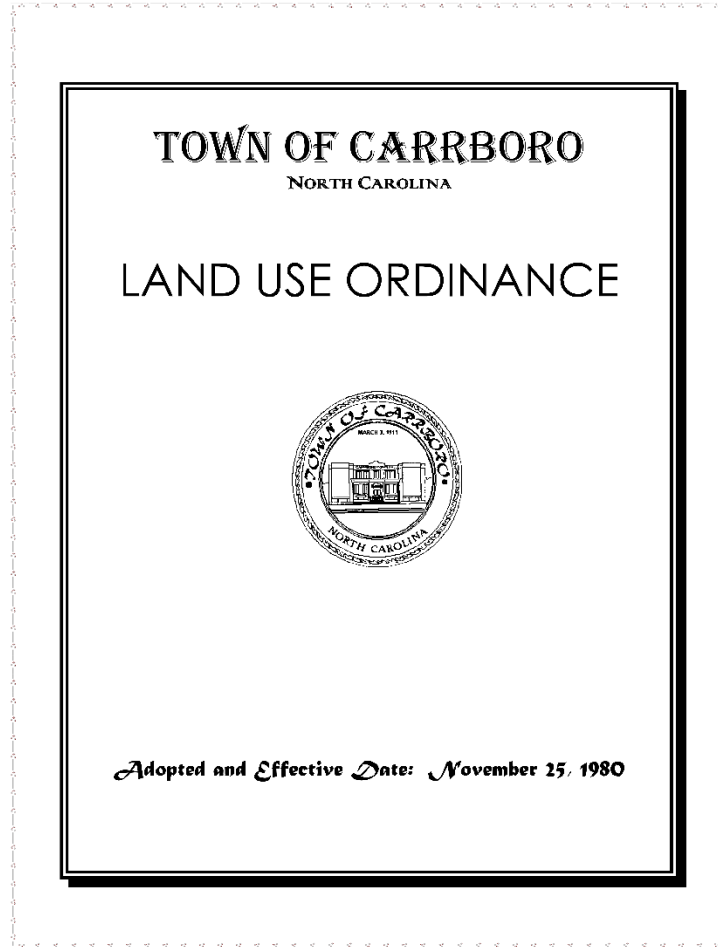
Project Background: For the Toms Creek watershed, flooding and drainage is a recurring and important theme. The upper watershed has received the most attention in recent years due to the degree of flooding and drainage issues experienced by residential property owners both in the regulated floodplain and other areas. A watershed based approach is needed to comprehensively address the issues that exist. An emerging concern is resiliency in consideration of the growing number of recent intense storms and the potential for a shift to more flooding in the future due to climate change.

Status: Active/Funded. An outreach session was held in June. Sungate Engineering is pursuing additional studies of a catchment between Hillsborough Rd. and West Main Street with known drainage issues. Work with the Center for Neighborhood Technology (CNT) to assist with neighborhood preparedness and resilience to flooding and drainage concerns is underway, including coordination with the Stormwater Advisory Commission. **A presentation and discussion with neighborhood members and the Stormwater Advisory Commission was held on February 13th. Preparation of draft and final reports and review by the Stormwater Advisory Commission and Council will be pursued in the late winter and spring of 2020. A field inspection with Sungate was also held in February.**

Fiscal and Staffing Considerations: Sungate's work is costing \$16.5k and the Center for Neighborhood Technology's work is costing \$25k. There could be further implementation costs as a result of these projects. There will be a staff impact with overseeing the work.

Additional Information: Additional information is available from multiple Council agenda items from 2013-2019. A [project website](#) has been created with relevant historical and project related information.

3. Land Use Ordinance Stormwater Provisions Review



Project Description: LUO stormwater provisions are under review.

Project Background: At the April 16, 2019 meeting, the Council referred further review of the stormwater provisions in the LUO to staff and the Stormwater Advisory Commission in consideration of the flooding and drainage impacts being experienced and elevated risk for increasing impacts due to climate change.

Status: Pending. This is being considered by Planning and Public Works staff, the Town Engineer, and the Stormwater Advisory Commission.

Fiscal and Staffing Considerations: There is no fiscal impact with reviewing and amending the LUO. There is a staff impact with performing the review.

Additional Information:

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=3919560&GUID=59CDD594-2973-4C2B-813C-738A1CF5707B&Options=&Search>

<http://www.townofcarrboro.org/DocumentCenter/View/698/Article-XVI-Floodways-Floodplains-Drainage-and-Erosion-PDF>

4. FEMA Hazard Mitigation Grant Program (HMGP) Active Elevation Project



Project Description: Utilization of FEMA HMGP funds to elevate homes on Lorraine Street.

Project Background: In 2016, the Town was awarded a FEMA grant (administered by the NC Department of Public Safety [NCDPS]) to elevate two homes at 400 Lorraine Street and 403 Lorraine Street. After start up project delays, the Town hired Summit Design and Engineering Services in the late spring of 2018 to assist with pre-construction/design and bidding services, construction administration and grant compliance monitoring. Stormwater staff began providing administrative support for the project in October 2018. Summit wrapped up the preconstruction/design phase of the project in December, construction bid advertisement followed, and a responsive bid was received, but the bid exceeded the available funding. Staff requested grant extension and additional funding to cover increased construction costs in February.

Status: Active-Construction. Construction for the elevations is active. Staff have been coordinating with a construction contractor (Rawlings Building), Summit staff, and the owners. Both Planning and Public Works staff are providing administrative and project management support.

Fiscal and Staffing Considerations: Costs for work covered by the grant (>\$300k) will first be borne by the Town and then reimbursed to the Town with a combination of both Federal and State funds covering eligible costs, provided that all grant requirements are met. There is a significant staff impact to administer the grant funds.

Additional Information:

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=3767377&GUID=67B319F8-E1CC-4E4B-9DC2-5FA5AEC6CCED&Options=&Search=&FullText=1>

<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2825729&GUID=06EB126A-0AE5-4A83-BFD0-0AA28C2CA6F1&Options=ID|Text|&Search=Flood>

https://www.fema.gov/media-library-data/1493317448449-b83f27544e36b7bf67913f964a56b15a/HMA_Homeowners_Guide_040717_508.pdf

5. FEMA Hazard Mitigation Grant Program Letters of Interest (Acquisition and Elevation)



Project Description: The information presented below is for an acquisition project for 116 Carol Street, and a new elevation project for 100 James Street

Project Background: Following on Hurricane Florence and Tropical Storm Michael, FEMA announced new rounds of HMGP funding. In addition to the Lorraine Street properties discussed above, two additional homeowners at 116 Carol Street and 100 James Street (properties included in previous HMGP applications for acquisitions that did not move forward) have responded, and were included in Letters of Interest submitted by the Town to the NC Department of Public Safety (NCDPS). Staff submitted one Letter of Interest for an acquisition project for 116 Carol Street and a second Letter of Interest for elevation of the home at 100 James Street in early 2019. Staff received notification in the summer of 2019 that the NCDPS would accept applications.

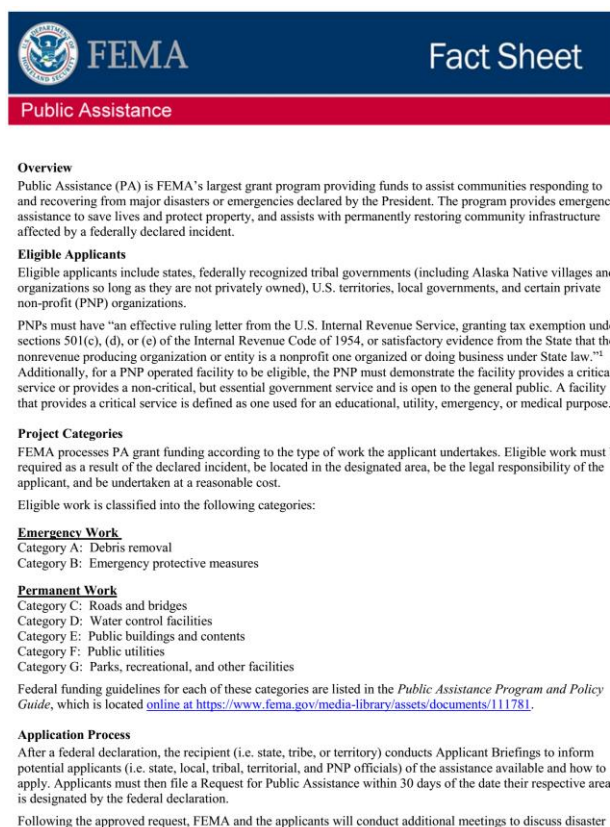
Status: Applications in Review. Application materials for the 116 Carol acquisition were submitted to the State in October under Hurricane Florence. Application materials for the 100 James Street elevation were submitted to the State in November under Tropical Storm Michael. Staff anticipate a response to the applications in the spring of 2020, and if approved, follow up pursuit of entering into (a) grant agreement(s) for one or both projects.

Fiscal and Staffing Considerations: If the Town is able to successfully enter into grant agreements (one for acquisition and one for elevation), costs for work covered by the grants will first be borne by the Town and then reimbursed to the Town with a combination of both Federal and State funds covering eligible costs, provided that all grant requirements are met. Elevation costs can be reimbursed at up to \$175k per home and acquisition costs at up to \$276k per home. There would be a significant staff impact to administer the grant funds.

Additional Information:

https://www.fema.gov/media-library-data/1493317448449-b83f27544e36b7bf67913f964a56b15a/HMA_Homeowners_Guide_040717_508.pdf

6. FEMA Public Assistance: Damage Recovery from Hurricane Florence



Project Description: The Town has been working through the FEMA Public Assistance process for damage recovery from Hurricane Florence. This aspect of Public Assistance is associated with covering the costs associated with debris removal, emergency protective measures, restoring roads, equipment and facilities to pre-storm conditions, and administrative costs. It is considered separately from the activities described in #3 and #4 above, although also under the Public Assistance umbrella.

Project Background: Stormwater staff have been leading the Town's pursuit of FEMA Public Assistance funding. Staff have submitted claims for losses not covered by insurance and have been working with FEMA/NCDPS staff to document and receive reimbursement, as well as reimbursement for staff time associated with emergency response and follow up. This process has been underway since the winter.

Status: Active. The Florence damage recovery Public Assistance, aside from the stream restoration project (first item in this report) is nearing completion.

Fiscal and Staffing Considerations: The Town has received about \$59k in uninsured costs from FEMA to date, with another \$25k anticipated in the near future. This does not including any funds granted for the stream restoration project (first item in this report), and for staff time for Public Assistance administration. This work has required over 400 hundred hours of Stormwater staff time.

Additional Information:

https://www.fema.gov/media-library-data/1534520496845-4b41646e3d8839c768deb3a7f4ded513/PADeliveryModelFactSheetFINAL_Updated_052418.pdf
https://www.fema.gov/pdf/government/grant/pa/fema323_app_handbk.pdf

PART 2: WATER QUALITY & FEDERAL/STATE REGULATORY DRIVEN WORK

7. NPDES Town Wide Permit

What is an MS4 Permit Compliance Audit?

An MS4 Audit is a structured review of the Stormwater Management Program to evaluate whether the MS4 is meeting the requirements specified in the NPDES MS4 Permit & Stormwater Management Plan (SWMP)



AKA do you have your ducks in a row?

Department of Environmental Quality



Regulatory Requirement: The Town is regulated under a town wide permit that requires the Town to implement a comprehensive stormwater management program that includes six minimum measures:

- (1) Public education and outreach on stormwater impacts
- (2) Public involvement/participation
- (3) Illicit discharge detection and elimination
- (4) Construction site stormwater runoff control (delegated to Orange County)
- (5) Post-construction stormwater management for new development and redevelopment, and
- (6) Pollution prevention/good housekeeping for municipal operations.

The initial Carrboro permit was issued effective July 1, 2005, renewed in 2011, and again in 2017.

Background: In 1990, under the authority of the federal Clean Water Act and starting with large (population >100k) municipalities (and industries), EPA began regulating stormwater runoff. In 2000, the scope was extended to smaller municipalities, and EPA delegated the authority to the State to issue these municipalities (including Carrboro) a stormwater permit.

Status: Active. There is a planned EPA/State NPDES Phase II stormwater permit audit in 2020, with new compliance expectations from EPA and the State. Given: the State's communications about the new requirements, and that 16 of the 20 communities that have been audited in 2019 have received Notices of Violation and 3 additional communities have received Notices of Deficiency, staff anticipate that a Notice of Violation or at best a Notice of Deficiency will result from the audit.

Fiscal and Staffing Considerations: Preparing for this audit and improving the Town's permit compliance and record keeping activities has been and will continue to be a major undertaking for staff.

Additional Information:

<https://deq.nc.gov/about/divisions/energy-mineral-and-land-resources/stormwater/stormwater-program/npdes-ms4-permitting>

8. NPDES Public Works Facility NPDES Permit

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES
GENERAL PERMIT NO. NCG080000

TO DISCHARGE STORMWATER UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

for establishments primarily engaged in the following activities:

Vehicle Maintenance Areas

Regulatory Requirement: Under federal and state law, the Public Works facility continues to be regulated through an NPDES stormwater general permit.

Background: In 1990, under the authority of the federal Clean Water Act and starting with large (population >100k) municipalities (and industries), EPA began regulating stormwater runoff. In 2000, the scope was extended to smaller municipalities, and EPA delegated the authority to the State to issue these municipalities a stormwater permit. In addition to receiving a town wide permit, Carrboro received a separate permit for the Public Works facility given the operations occurring at the site and potential for stormwater impacts on water quality.

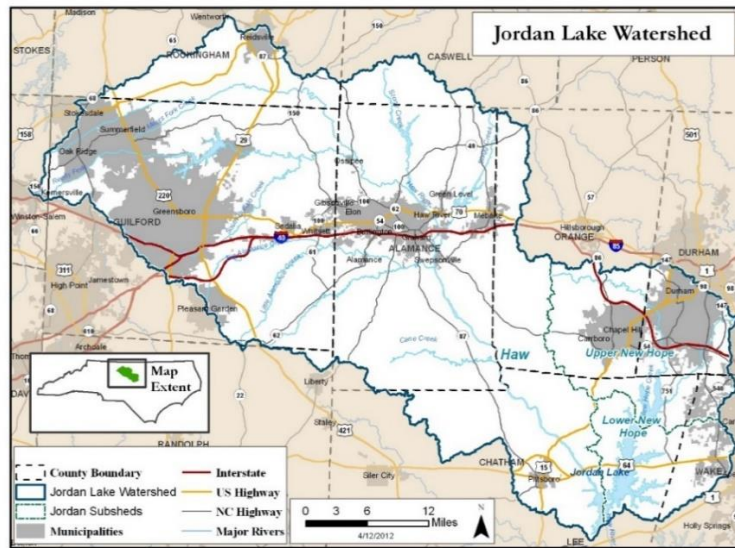
Status: Active. This activity has been and remains in a regular/routine operational status, with the facility remaining compliant with federal/state requirements.

Fiscal and Staffing Considerations: The Town has been working with a consultant for about \$6k/year to support regulatory compliance. There is also an ongoing and relatively low level of staff activity to maintain compliance.

Additional Information:

<https://deg.nc.gov/about/divisions/energy-mineral-land-resources/npdes-stormwater-gps>

9. Jordan Lake Rules Compliance



Regulatory Requirement: The Jordan Lake Rules are a nutrient management strategy designed to restore water quality in the lake by reducing pollution entering the lake. Restoration and protection of the lake is essential because it serves as a water supply for several thriving communities, a prime recreation area for more than a million visitors each year, and an important aquatic ecosystem.

Background: Jordan Lake was impounded in 1983 by damming the Haw River near its confluence with the Deep River. It was created to provide flood control, water supply, fish and wildlife conservation, and recreation. The lake has had water quality issues from the beginning, with the NC Environmental Management Commission declaring it as nutrient-sensitive waters (NSW) the same year it was impounded. Since that time, Jordan Lake has consistently rated as eutrophic or hyper-eutrophic, with excessive levels of nutrients present. The most relevant provisions in the rules for Carrboro relate to stormwater management for both new and existing development, riparian buffers, and fertilizer application.

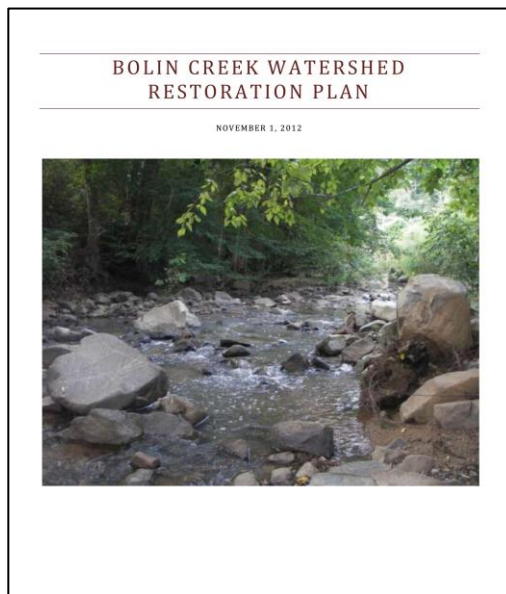
Status: Under Review (State). There was significant Town activity between about 2005 and 2015 to prepare for and enact ordinance provisions and begin work on implementation activities. The State then chose to pursue further studies to guide implementation. **Jordan Lake Rules regulatory review has begun now that a NC Policy Collaboratory study has wrapped up. The goals of the rules readoption process is to evaluate the Collaboratory's findings and engage stakeholders throughout the watershed to help develop draft rules. The NC Division of Water Resources (DWR) has contracted with Triangle J Council of Governments (TJCOG) to administer this public participation process.**

Fiscal and Staffing Considerations: The Town continues to be required to submit annual reports identifying stormwater retrofits, and has programmed several projects in the CIP. It is preliminary at this point to speculate on the potential fiscal/staff/regulatory impacts that will result, beyond an understanding that some staff time will be required to stay informed and report back as the review is pursued.

Additional Information:

<https://deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/jordan-lake-nutrient>
<https://www.tjocog.org/programs-energy-environment%E2%80%AF-water-resources/jordan-lake-one-water>

10. Bolin Creek Watershed Restoration Plan Implementation



Regulatory Requirement: The downstream extent of Bolin Creek in Carrboro, and continuing into Chapel Hill, is on the state/federal list of impaired waters. Local actions are needed to improve water quality.

Background: Carrboro staff worked with Chapel Hill and other local, state and federal agency staff in 2006 to create the Bolin Creek Watershed Restoration Team (BCWRT) because of the impaired waters listing. At the time, the Bolin Creek watershed was selected as one of only 7 watersheds in the state to receive focused state and federal assistance in preparing grant applications and leveraging other resources to remove Bolin Creek from the impaired waters list. The selection was based on the listing and the existence of restoration planning efforts for the larger Morgan and Little Creek Watersheds, but also, because of the local interest in and capacity for progressive environmental initiatives. The BCWRT's long term goal is to improve the health of Bolin Creek and its tributaries and remove it from the impaired waters list. This is an ambitious goal that will require a robust commitment for many years to come.

Status: Pending. Watershed restoration plan implementation has been inactive since 2012 due to insufficient staff capacity and funding resources. Stormwater staff met with Bolin Forest neighborhood representatives and others in 2019 regarding collaborating on a potential grant application.

Fiscal and Staffing Considerations: There are no near term considerations. Longer term fiscal and staff considerations are uncertain. Competitive 319 grant funds (40% local match) could be pursued.

Additional Information:

<https://townofcarrboro.org/280/Bolin-Creek-Watershed-Restoration>

PART 3: WORK DRIVEN BY BOTH WATER QUANTITY AND QUALITY INTERESTS

11. Public Works Stream Restoration



Project Description: This project involves two phases of repairing/restoring a badly eroding stream channel in an extremely high risk situation adjacent to Public Works. The first phase is preliminary engineering; the second will be construction/restoration.

Project Background: There are two unnamed intermittent streams that flow from the south side of downtown along South Greensboro Street and Old Pittsboro Road, join just above the 54 Bypass, and then flow under the bypass and along the Public Works property line before joining Morgan Creek. The stream channel is very incised adjacent to Public Works, with an extremely actively eroding bank. During Hurricane Florence, a large section of the streambank immediately adjacent to the fuel tanks (as well as outbuildings) collapsed, escalating and accelerating the importance of addressing the bank erosion. This project has been an identified need since 2015.

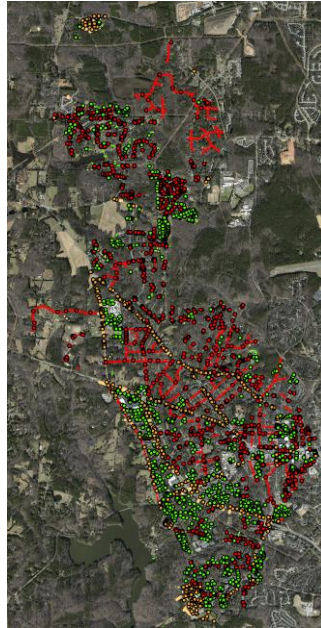
Status: Active/Funded. The Council approved assistance with preliminary engineering from a private engineering firm in June. A contract was executed with Jennings Environmental in August. 30% design review occurred in October, 60% review in November, and 90% review in January. The adjacent property owner has provided permissions and **all environmental permitting has been completed. The final design, bid documents, and construction cost estimates were completed in February and are in final review. A project ordinance for the construction phase is being prepared for Council review.** Stormwater staff consider this to be the highest priority capital project.

Fiscal and Staffing Considerations: The contract with Jennings Environmental is for \$58k. **Construction is estimated to cost \$265k.** Staff are continuing to work diligently with NCDPS and FEMA to pursue federal assistance for this project, although there is not a guarantee of federal funding. There is a significant staff impact associated with project management and pursuit of federal funding.

Additional Information:

https://www.fema.gov/media-library-data/1534520496845-4b41646e3d8839c768deb3a7f4ded513/PADeliveryModelFactSheetFINAL_Updated_052418.pdf
<https://carrboro.legistar.com/LegislationDetail.aspx?ID=2288740&GUID=0B2EA271-314B-4ED8-8A38-0E199F87A49F%3E&FullText=1>

12. MS4 Inventory Update, Condition Assessment, Asset and Workflow Management



Description: This initiative involves using new technology to update the MS4 inventory, assess MS4 conditions, and create asset management and workflow systems and tools. Asset management is a strategic approach to maintaining and sustaining infrastructure in order to deliver services at the lowest overall life cycle cost. This method is intended for managing any assets, has traditionally been used for drinking water and wastewater, and is increasingly being used by stormwater utilities.

Background: A GIS based system inventory was first completed about 15 years ago in preparation for the Town's NPDES permit. While maintenance of the inventory is ongoing, some additional work is needed to fully complete the inventory so it can serve as the foundation for comprehensive stormwater workflow, regulatory tracking and asset management needs. The Town is in the process of implementing a new workflow management system (CityWorks) and GIS based field inventory capabilities. A system condition assessment has not been completed, nor has an asset management system been created. It is recommended that sufficient resources be allocated to allow this work to move forward.

Status: Active. Investments are being made in new information technology and staff are in the early phase of systems development, configuration, and staff training.

Fiscal and Staffing Considerations: There is no direct fiscal impact currently. The need for additional resources (additional staffing and/or engineering or contractual services) will depend on the technical requirements and overall staff workload and the desired pace of moving this work forward.

Additional Information: <https://louisville.edu/cepm/projects/sustainable-community-capacity-building/asset-management-for-stormwater>

<https://www.epa.gov/sites/production/files/2018-01/documents/overcoming-barriers-to-development-and-implementation-of-asset-management-plans.pdf>

13. Stormwater Project Planning and Prioritization

				Points						
	Criteria	Type	Possible	10	9	8	7	6	5	4
	Public safety/welfare	Public interest	Mandatory	High infrastructure impacts			Medium infrastructure impacts			Low infrastructure impacts
Community Benefits	Conveyance repair/replacement	Infrastructure	10	Public infrastructure or insurable structures affected			Private property impacted			
	Public visibility/educational value	Public interest	10	High			Medium			
	Detention	Flood mitigation	10	Public infrastructure, insurable structures protected			private insurable structures protected			no insurable structures protected
	Water supply protection	Public interest	10				Yes			
							> 1 acre & reduction in curve # by >15			Other green infrastructure
	Green infrastructure	Multiple	10	Green street/parking lot						
Environmental Benefits	Stream/riparian repair/restoration	Stream/geomorphic	10	Perennial stream			Intermittent stream			
	Runoff (volume) reduction	Multiple	10	>cfs			> < cfs			>< cfs
	Impaired waters	Water quality/stream	8			Lower Bolin Creek		Upper Bolin Creek		
	Nutrient reduction	Water quality	7				> N reduction			< < N reduction
Feasibility	Landowner	Feasibility	10	Town owned		Other local agency		State/ federal		Private-landowner easement/agreement
	In CIP?	Feasibility	5						Yes	

Description: The purpose of this work is to create a process for planning for and prioritizing large stormwater improvement/capital projects, to inventory all potential projects with a 10-20 year planning horizon, and to develop a prioritized 5 year project list/CIP update during FY 20.

Background: Carrboro has been identifying stormwater capital projects in the Capital Improvements Program (CIP) since 2012. These projects have historically been significantly but not solely motivated by the implementation of State's rules to restore Jordan Lake. Other studies have been completed and potential projects identified by the Town Engineer and also through, for example, the State's Ecosystem Enhancement program, Bolin Creek watershed restoration efforts, and efforts to identify infrastructure replacement/ improvement and stream repair/restoration projects. Identifying and implementing capital projects is an ongoing Town process, with updates to the CIP typically prepared annually.

Status: Active. Town staff have been working on planning level cost projections as part of the Service Delivery Review (#12). Jordan Lake Rules (#10), Bolin Creek Watershed Restoration (#11), and Condition Assessment/Asset Management (#13) are also relevant. Stormwater input has been provided as part of the annual CIP update.

Fiscal and Staffing Considerations: There is no fiscal impact associated with identifying, planning for, and prioritizing projects. There will be a staff impact to pursue this work through FY 19/20, and a lower level impact in subsequent years.

Additional Information:

http://www.townofcarrboro.org/AgendaCenter/ViewFile/Agenda/_12052018-3552

14. Drainage Policy Review and Residential Assistance Program

TOWN DRAINAGE POLICY

The following constitutes a statement of the official policy of the Town of Carrboro, as adopted by the Board of Aldermen on June 12, 1984, relating to the improvement and maintenance of drainage ways within the town. This supersedes all previously adopted policies.

I. Drainage on Public Rights-Of-Way and Easements

The Town will continue to maintain at its own expense all drainage ditches, piped and uniped, and other drainage ways located within public street rights-of-way or drainage easements conveyed to and accepted by the Town.

II. Drainage Problems On Private Property For Which the Town Is Legally Responsible

The Town will correct at its own expense a drainage problem created on private property where it is demonstrated to the reasonable satisfaction of the Public Works Director that: (i) surface water is being channeled from the public street right-of-way onto private property in a location where water would not naturally have flowed in the pre-development stage; or (ii) the drainage problem is created by water being channeled from the public street right-of-way onto private property, into a natural drainage way that is inadequate to handle the volume of water so channeled, and a substantial portion of the water consists of runoff from land not drained by the natural drainage way in the predevelopment stage; or (iii) the Town is otherwise legally responsible and liable for creating the drainage problem.

III. Town Participation In Drainage Improvements On Private Property Where The Town Is Not Legally Responsible For The Drainage Problem.

A. The Board of Aldermen has determined that drainage problems exist throughout the Town and that it is in the public interest and serves a public purpose for the Town to establish a public drainage system and to participate in the costs of making improvements to the public drainage system in accordance with the policies and procedures set forth in this section.

B. The Board of Aldermen hereby adopts that map entitled Stormwater Drainage Map and dated May 1, 1984 as the official public drainage system map for the town. The map indicates the network of natural drainage ways located on private property within the Town that the Town will improve and maintain, subject to the remaining provisions of this

Description: Stormwater staff have initiated a review of the Town's 1984 Drainage Policy and development of recommendations for an assistance program for residential property owners.

Background: Since the Stormwater Utility was formed, stormwater technical assistance provided by staff has increased. The residential assistance that staff have provide to date has not involved any financial assistance. An updated policy and program would help clarify the details of both technical and financial assistance (if any) that the Town may wish to provide for private residential property owners.

Status: See Pilot Study (#3). The work by the Center for Neighborhood Technology (CNT) described in #3 will inform the development of an updated policy and program. Staff anticipate working on this after the CNT pilot project is completed through internal staff review initially, followed by Stormwater Advisory Commission and Town Council review.

Fiscal and Staffing Considerations: Any fiscal impact resulting from financial assistance to be provided as part of a new program will be determined through administrative and policy level review. There has been and will continue to be a staff impact associated with technical assistance. This impact will increase if staff will be administering a new program.

Additional Information:

http://www.townofcarrboro.org/AgendaCenter/ViewFile/Agenda/_03142019-3607