



# MEMORANDUM

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**To:** Mayor and Members of the City Council

**From:** Montrè Freeman, City Manager  
Dwan Bell, Public Utilities Director  
Jon Hawley, Grants Administrator

**Date:** September 22, 2023

**Re:** Presentation - Dawson-Hunter Stormwater Improvement Study

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***BACKGROUND:***

The neighborhoods on Dawson, Hunter, Morgan and nearby streets have long experienced repetitive flooding. Many factors contribute to this flooding, including low elevation, proximity to Charles Creek and the Pasquotank River, and limited or deteriorated drainage infrastructure. The City needs to make significant stormwater infrastructure improvements for these communities, but Public Utilities has first needed a better understanding of the surrounding drainage basin.

To those ends, the City last year obtained \$200,000 in grants for the Dawson-Hunter Street Stormwater Improvement Study. These include a Water Resources Development Grant from the NC Department of Environmental Quality, and a Flood Mitigation Program grant from Golden LEAF. Each was for \$100,000.

City staff tasked AECOM, one of our on-call engineering firms with extensive experience in stormwater projects, to perform this study, which entailed an elevation survey, watershed assessment, hydrologic and hydraulic analysis, and developing priority project recommendations. They are now ready to formally present their findings to the Council, after which they can finalize the Dawson-Hunter study and its recommendations.

***ANALYSIS:***

Members of AECOM's project team will present their work virtually during the City Council's work session. A draft of the Dawson-Hunter study is also provided for review; City staff have already reviewed the document as well. City staff are satisfied with the study and its deliverables. We are also pleased to report it was finished on-budget and well within our grant deadlines.

This memo will defer to AECOM for a detailed discussion of the study, but City staff did want to make the Council aware of one matter. Striving to implement the study – and make real change for Dawson-Hunter area residents – City staff and AECOM are already pursuing funding for AECOM's top project recommendation: reinforcing and lining the severely eroded canal flowing from Park to Dawson Streets. We have requested total Golden LEAF funding in the amount of \$419,392 be applied towards Phase I of the Park-Dawson Canal Project. This would restore the banks of the canal and install sheet piles there, protecting surrounding residential property and the sanitary sewer pump station on Dawson Street. The \$419,392 request includes \$169,392 in remaining Golden LEAF funds from the Sanitary Sewer Pump Station Replacement Project – which was completed for less than our award amount – and a new, \$250,000 request to the Flood Mitigation Program. Effective September 1, Golden LEAF paused consideration of new applications, forcing City staff to submit this application last month or lose any chance of funding for the near future. The project will not require matching funds; if costs are higher than expected, the project scope will be reduced to compensate.



Golden LEAF is still considering our request. We believe our Phase I proposal shows our commitment to putting the Dawson-Hunter study into action. City staff also wish to acknowledge the special effort AECOM staff made in making these proposals possible. They worked quickly to support our Phase I proposal, and at no additional cost.

Following AECOM's presentation, we request the Council, by motion, accept the Dawson-Hunter study and its recommendations; this motion could be modified to include minor revisions, if any are desired. This will allow us to finalize the document and successfully close out the WRDG and FMP grants.

If major revisions are requested, it may be more appropriate to table acceptance of the study to a future meeting, allowing those changes to be addressed. However, this will likely require Golden LEAF's approval to extend our current FMP.

#### STAFF RECOMMENDATION:


By motion, accept the Dawson-Hunter Stormwater Improvement Study.

# Dawson-Hunter Stormwater Improvement Study

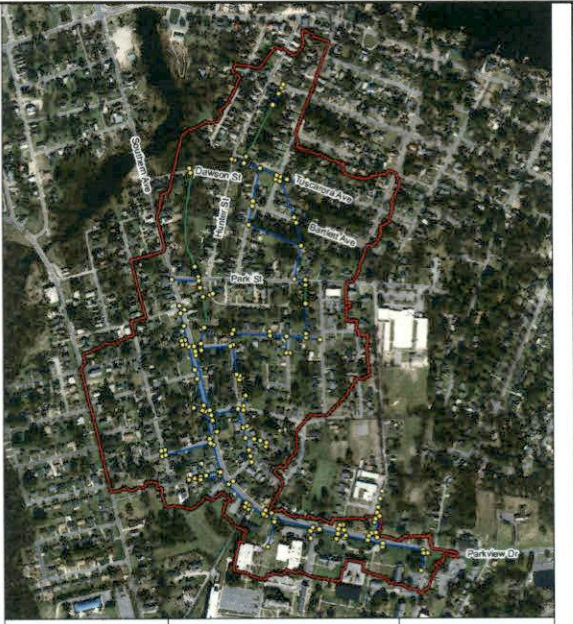
City of Elizabeth City, North Carolina  
September 25, 2023

Jonathan Hawley – Grants Administrator (Elizabeth City)  
Maureen Harris, PE – Project Manager (AECOM)  
Todd St. John, PE – Senior Technical Lead (AECOM)

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### Dawson-Hunter Project Location



- Long-established residential area in the heart of Elizabeth City
- Just south of downtown waterfront on Pasquotank River
- Directly adjacent to Charles Creek
- Watershed area approx. 120 acres (0.19 square mile)



Prepared By:  
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Junction   
  Watershed  
 Ditch  
 Pipe  
 0 200 400 800  
 Feet

WATERSHED AND STORMWATER NETWORK  
 DAWSON-HUNTER  
 STORMWATER  
 IMPROVEMENT STUDY  
 CITY OF ELIZABETH CITY, NC



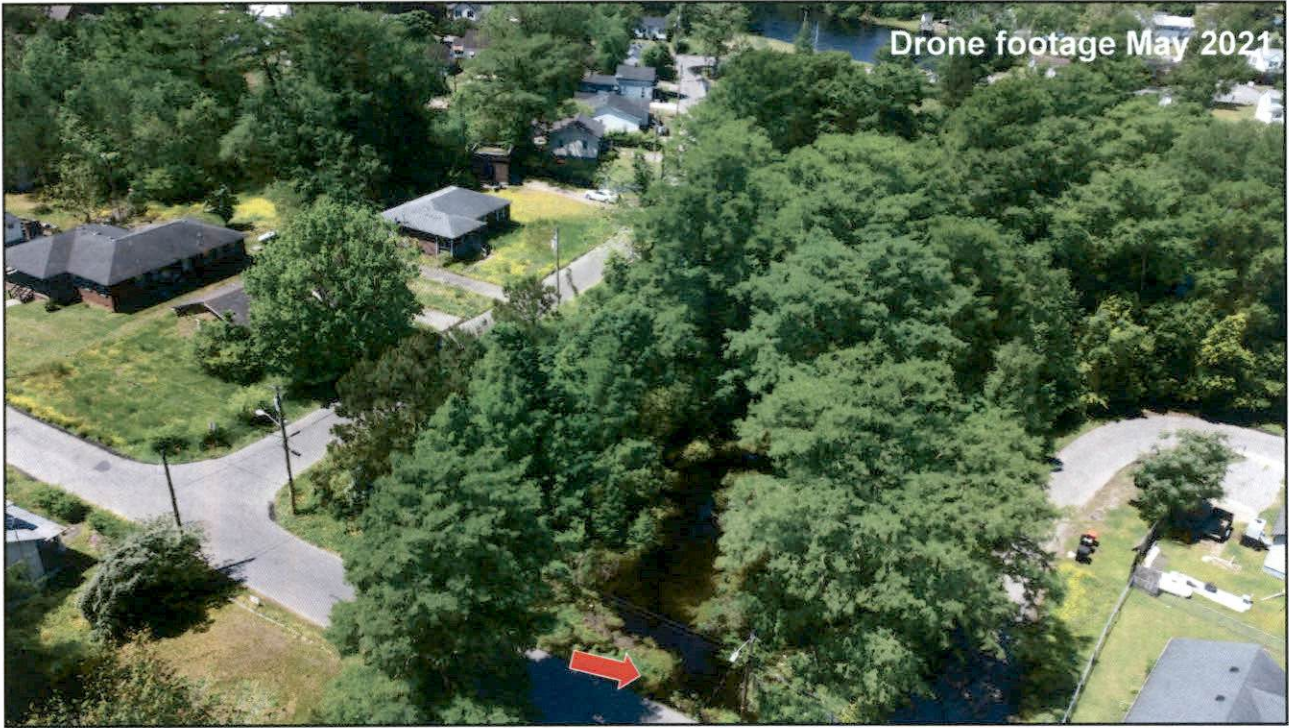
# Historic Issues & Areas of Concern

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## Dawson-Hunter-Tuscarora Flooding





### Flooding and Property Loss at Dawson & Hunter Streets



### Flood Damage and Property Loss at Dawson & Hunter Streets



### Property Flooding on Bartlett Avenue



### Property Flooding on Bartlett Avenue



### Advancing of Canal Between Park Street and Dawson Street



Photos taken  
September 2022



### Advancing of Canal Adjacent to Dawson St. Pump Station



July 2014



July 2023



Drone footage May 2021

### Study Objectives

- ◆ Survey stormwater infrastructure
- ◆ Perform hydrologic and hydraulic (H&H) modeling analysis to understand flooding and identify potential project locations
- ◆ Gather public input via public meeting and survey
- ◆ Evaluate and prioritize 10 projects to reduce flooding
- ◆ Develop planning level construction cost estimates
- ◆ Made possible through grant funding from Golden LEAF and NCDEQ (\$100K each)

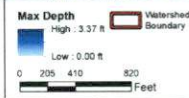


### H&H Modeling Takeaways

- ◆ Most severe flooding areas included Park-Dawson canal and Bartlett Avenue
- ◆ Project identification focused on reducing depth and duration of flooding in these areas
- ◆ Evaluated performance for 2-, 10-, 25, and 100-year, 24-hour storm events



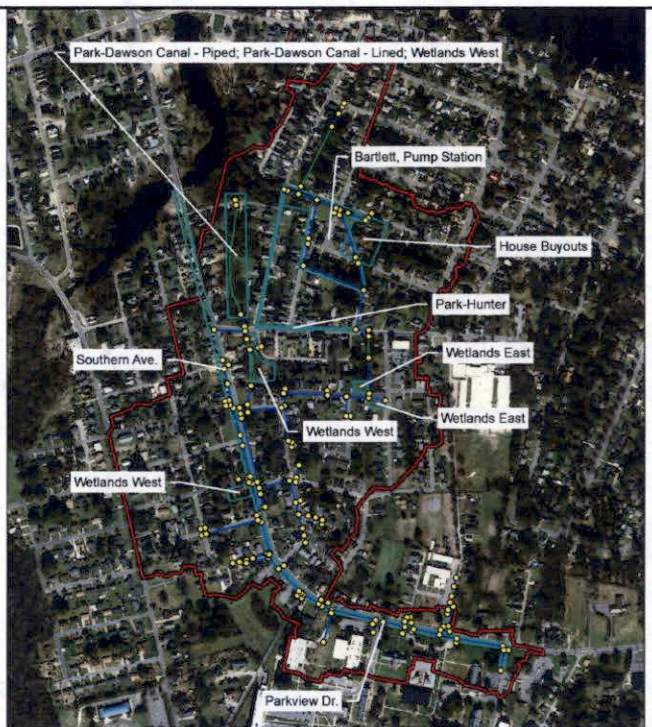
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**100 YEAR STORM MAX FLOODING DEPTHS**  
 DAWSON-HUNTER  
 STORMWATER  
 IMPROVEMENT STUDY  
 CITY OF ELIZABETH CITY, NC

## Proposed Project Alternatives

- ◆ Suite of potential solutions including:
  - ◆ Infrastructure upgrades
  - ◆ Addition of new infrastructure
  - ◆ Canal improvements
  - ◆ Dredging
  - ◆ New pump station
  - ◆ Strategic wetland locations
  - ◆ Property buyouts



## Project Prioritization

- ◆ Proposed projects reduced depth of flooding by less than 1 inch to more than 1 foot for 10-year storm
- ◆ Improvements to Park-Dawson canal showed greatest flood reduction
- ◆ Incorporated a suite of prioritization criteria to rank projects, including:
  - ◆ Flood reduction
  - ◆ Water quality benefits
  - ◆ Construction cost
  - ◆ Constructability and implementation constraints
  - ◆ Public acceptance

### Project Prioritization Results

Project Opportunity and Prioritization Criteria	Relative Rating for Each Prioritization Criterion									Total Project Score	Project Rank
	Target Area Flood Reduction	Overall Watershed Flood Reduction	Water Quality Benefit	Project Cost	Grant Funding Potential	Constructability	Implementation Constraints	Public Acceptance	Project Dependency		
<b>Weighting Factor (1-4)</b>	4	2	2	3	3	2	2	3	1		
Project 1: Park-Dawson Canal – Piped	2	1	3	2	2	3	2	3	4	58	4
Project 2: Park-Dawson Canal – Lined	3	1	3	2	3	3	3	3	4	68	1
Project 3: Southern Ave.	3	2	2	1	3	3	3	3	4	65	2
Project 4: Parkview Dr.	2	1	2	1	2	3	3	3	1	51	8
Project 5: Bartlett	1	1	1	3	3	2	3	3	4	56	7
Project 6: Park-Hunter	2	1	1	3	3	3	3	3	4	63	3
Project 7: Pump Station	3	2	1	1	2	2	2	2	4	51	8
Project 8: West Wetlands	2	2	4	2	3	3	1	1	4	57	6
Project 9: East Wetlands	2	2	3	3	3	3	1	1	4	58	4
Project 10: Property Buyouts	1	1	1	2	1	4	1	2	4	42	10

### Conceptual Construction Cost Estimates

Project Name	Construction Cost Estimate (2023 USD)
Alternative 1: Park-Dawson Canal – Piped	\$1,717,000
Alternative 2: Park-Dawson Canal – Lined	\$1,110,000
Alternative 3: Southern Ave.	\$2,056,000
Alternative 4: Parkview Dr.	\$2,914,000
Alternative 5: Bartlett	\$880,000
Alternative 6: Park-Hunter	\$770,000
Alternative 7: Pump Station	\$6,850,000
Alternative 8: West Wetlands	\$1,947,000
Alternative 9: East Wetlands	\$324,000
Alternative 10: House Buyouts	\$1,532,000

## Recommendations

- ◆ Proceed with phased implementation of Alternative 2 (“Park-Dawson Canal – Lined”)
- ◆ Key features of Alternative 2:
  - ◆ Regrade Park-Dawson Canal from Park St. to outfall at Charles Creek
  - ◆ Stabilize with bulkhead/sheet piling
  - ◆ Replace and enlarge culvert crossing on Dawson St.
  - ◆ Dredge downstream of outfall to allow system to drain



## What's Next?

- ◆ Discuss Golden LEAF funding opportunities

Thank you!!

