PROPOSED STORMWATER PROJECT IMPLEMENTATION PLAN

- Execution of New and Expanded Flood Control Projects
- Program Options
**FLOOD CONTROL PROJECTS IN THE PROPOSED FY18-23 CIP BASED ON THE FIFTEEN YEAR $300M* ADDITIONAL FUNDING PROGRAM**

<table>
<thead>
<tr>
<th>Project</th>
<th>Estimated Total Project Cost</th>
<th>ATD</th>
<th>Funding in Years 1-6 FY 18-23</th>
<th>Funding in Years 7-10 FY 24-27</th>
<th>Funding in Years 11-15 FY 28-32</th>
<th>Remaining Balance to Complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windsor Woods</td>
<td>$35M</td>
<td>$3.8M</td>
<td>$16.5M</td>
<td>$8.3M</td>
<td>$6.3M</td>
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<tr>
<td>Princess Anne Plaza</td>
<td>$66M</td>
<td>0</td>
<td>$20M</td>
<td>$39.5M</td>
<td>$6.5M</td>
<td>0</td>
</tr>
<tr>
<td>The Lakes</td>
<td>$28M</td>
<td>0</td>
<td>$2M</td>
<td>0</td>
<td>$26M</td>
<td>0</td>
</tr>
<tr>
<td>Sherwood Lakes</td>
<td>$20M</td>
<td>0</td>
<td>$3M</td>
<td>0</td>
<td>0</td>
<td>$17M</td>
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<tr>
<td>Eastern Shore Drive Drainage</td>
<td>$83.2M</td>
<td>$13.1M</td>
<td>$35M</td>
<td>$11.5M</td>
<td>$6M</td>
<td>$17.5M</td>
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<tr>
<td>Ashville Park</td>
<td>$35M</td>
<td>0</td>
<td>$9M</td>
<td>0</td>
<td>$6.3M</td>
<td>$19.7M</td>
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<tr>
<td>Central Resort</td>
<td>$113M</td>
<td>$0.3M</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>$112.7M</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>$380.2M</strong></td>
<td><strong>$17.3</strong></td>
<td><strong>$85.5M</strong></td>
<td><strong>$59.3M</strong></td>
<td><strong>$51.1M</strong></td>
<td><strong>$166.9M</strong></td>
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* Note: Operation & Maintenance and Water Quality is approximately $104M  
  Flood Control is approximately $196M
INFRASTRUCTURE PROJECT DEVELOPMENT PROCESS

Typical Project Activity Flow and Components

- **Budgets, Grants, C.I.P.**
- **Staff**
  - "Clients"
  - The Public
- **Drawings**
  - Function/Capacity
  - Environmental
  - Participation
  - Geotechnical
  - Appearance
  - Permitting
- **Notice to Bidders**
- **Inspection & Testing**
  - Surveying
  - Safety
  - Unforeseen Conditions
  - Change Orders
- **Final Inspection**
- **Test Operation**
- **Manuals & Warranties**
- **Specs, Other Documents**
  - Strength/Arrangement
  - Location, Rights-of-Way
  - Utilities
  - Time-Schedule-Sequence
  - ESTIMATES!
  - Review and Approval
- **Opening, Review, Award**
- **Measurement**
- **Payment**
- **Time Management**
- **Communications**
- **Public Convenience**
- **Liens and Claims**
- **Conflict Resolution**
- **Final Payment**

**PROJECT CONCEPT**

**PROJECT TEAM**

**PLANNING & DESIGN**

**BIDDING & AWARD**

**CONSTRUCTION**

**PROJECT CLOSEOUT**

**Project Goals**

**Consultants**

**Utilities**

**Others Affected**

Source: American Public Works Association
PROJECT DEVELOPMENT PROCESS

- Preliminary Engineering Analysis and Report (9-18 months) (Modeling)
  - Identify, Model and Quantify the Problems
  - Identify any Improvements that can be Quickly Implemented
  - Establish Feasible Alternatives and Costs
  - Select Alternatives for Implementation
  - Develop Phasing Plan
- Design (15-30 months)
  - Develop Construction Documents – Plans, Specifications, other Bid Documents
- Environmental and Permitting (9-36 months)
  - Environmental Assessment / Environmental Impact Statement
  - Permits
- Acquisition (9-24 months) (If required)
  - Acquire Needed Lands, Easements, and Rights-of-Way
- Utility Adjustments (6-12 months) (If required)
  - Relocate Utilities in Conflict with Needed Improvements
- Construction (12-36 months per phase)
Improvements to address severe structural and roadway flooding
Includes tide gate, pump stations, & drainage system improvements
Construct canal improvements 5/2017 – 10/2018
Project will be designed and constructed in multiple phases

Schedule
- Begin Construction of Canal Improvements May 2017
- Began Preliminary Engineering Analysis and Report October 2016
- Begin Design Activities July 2017
- Begin Acquisition November 2019
- Begin Permitting July 2019
- Begin Utility Relocations July 2020
- Begin Construction July 2020
7-050 PRINCESS ANNE PLAZA DRAINAGE AREA

- Improvements to address severe structural and roadway flooding
- Includes multiple pump stations, tide gates, closure structures, and drainage system improvements
- Project will be designed and constructed in multiple phases

**Schedule**

- Began Construction of Ditch Improvements: May 2017
- Began Preliminary Engineering Analysis and Report: October 2016
- Begin Design Activities: July 2017
- Begin Acquisition: July 2020
- Begin Environmental Review Process & Permitting: July 2020
- Begin Utility Relocations: March 2021
- Begin Construction: July 2022
7-051 THE LAKES DRAINAGE IMPROVEMENTS

- Improvements to address severe structural and roadway flooding
- Includes pump station, tide gates, diversion of drainage away from the Lakes - directly to London Bridge Creek, and other drainage system improvements
- Project will be designed and constructed in multiple phases

**Schedule**

- Began Preliminary Engineering Analysis and Report: October 2016
- Begin Preliminary Design Activities: July 2017
- Begin Acquisition: July 2028
- Begin Permitting: July 2028
- Begin Utility Relocations: July 2029
- Begin Construction: July 2029
7-048 SHERWOOD LAKES DRAINAGE IMPROVEMENTS

- Improvements to address severe roadway and property flooding
- Project will design and construct initial drainage improvements including interconnecting two lakes and constructing connection services for temporary pump
- Future phases including downstream culvert improvements and pump station are not included in the current proposed 15 year program

Schedule
- Completed Preliminary Engineering Analysis and Report: March 2017
- Begin Design Activities: July 2017
- Begin Acquisition: July 2017
- Begin Permit Application: July 2017
- Begin Utility Relocations: July 2018
- Begin Construction: January 2019

Remaining BTC after 15 years: $9 M
7-151 EASTERN SHORE DRIVE DRAINAGE

- Includes tide gates, pump stations, canal improvements and drainage system improvements
- Design and construction of Section I & II
- Project will be constructed in multiple phases

Schedule
- Interim Tide Gate Construction Completion: July 2017
- Began Design Activities: November 2015
- Begin Acquisition & Permitting: July 2017
- Begin Construction: July 2018
- Completion Section I & II: July 2029

Remaining BTC after 15 years: $17.5 M
Storm water improvements to address severe roadway and property flooding

Improvements include tide gate, pump station, detention ponds and storm drain system upgrades

Funding for Initial Phase only

Exploring cost participation agreement with current developer

**Schedule**

- Preliminary Engineering Analysis & Report Completed: Feb. 2017
- Begin Design Activities: July 2017
- Begin Acquisition & Permitting: July 2018
- Begin Utility Relocations: July 2019
- Begin Construction of Initial Phase: July 2019

Remaining BTC after 15 years: $8.2M
7-041 CENTRAL RESORT DISTRICT DRAINAGE IMPROVEMENTS

- Improvements to address structural and roadway flooding
- Includes tide gates, pump stations, ocean outfalls, and other drainage system improvements
- Project will be developed in multiple phases

Programmed Funding: $300 K

Current and Remaining BTC after 15 years: $112.7 M
7-400 ARAGONA DRAINAGE IMPROVEMENTS

- Storm drain improvements to address severe roadway and property flooding
- Currently in the CIP
- Currently under design
- $1.4M Additional Funding
- Total Budget $3.7M

Schedule
- Began Design: August 2016
- Begin Construction: July 2018
- Completion: July 2019
Creating detailed Stormwater Models of the City’s 31 Watersheds
Includes Preliminary Engineering Analysis of known areas experiencing recurrent flooding and also will identify future Capital Drainage Projects
Funding necessary to complete the project
3 Watersheds Completed
6 Watersheds Underway
22 Remaining Watersheds
Ten Year Program Options

- **Option 1** – Accomplishing the proposed additional $300M program in 10 years, rather than 15 years (which is the basis of the currently proposed CIP).

- **Option 2** – Accomplishing the full $464M program in 10 years; i.e., all of the flood control projects in the proposed CIP fully funded.
# FUNDING OPTIONS

<table>
<thead>
<tr>
<th></th>
<th>Proposed $300M</th>
<th>Option 1: $300M</th>
<th>Option 2: $464M</th>
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<tbody>
<tr>
<td></td>
<td>15 year plan</td>
<td>10 year plan</td>
<td>10 year plan</td>
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<tr>
<td>Real Estate Tax</td>
<td>0.8</td>
<td>0.8</td>
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<tr>
<td>ERU Daily Rate Increase</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>FY 18</td>
<td>2.5 Cents</td>
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<td>FY 19</td>
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<td>FY 22</td>
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<tr>
<td>Total =</td>
<td>12.5 Cents</td>
<td>15.0 Cents</td>
<td>25.0 Cents</td>
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Note: Current Daily ERU Rate is 43.3 Cents  
Current Annual ERU Rate is $158.05  
1 Cent / ERU = $906K Annual
WHAT’S NOT INCLUDED

- Emerging Areas of Flooding Concern
  - Lake Chubb / Bradford Lake
    - Maintenance Work with Navy (Begin July 2017)
  - Hollis Road
  - Church Point
  - Western Shore Drive

- Flood Control Projects Identified Via the Comprehensive Response Plan to Sea Level Rise

- SWM Master Planning, Analysis, and Inventory identified flood control projects
  - Complete in 2019

- Balanced Program
DISCUSSION