



# QUARTERLY STORMWATER UPDATE – FLOOD CONTROL PROJECTS

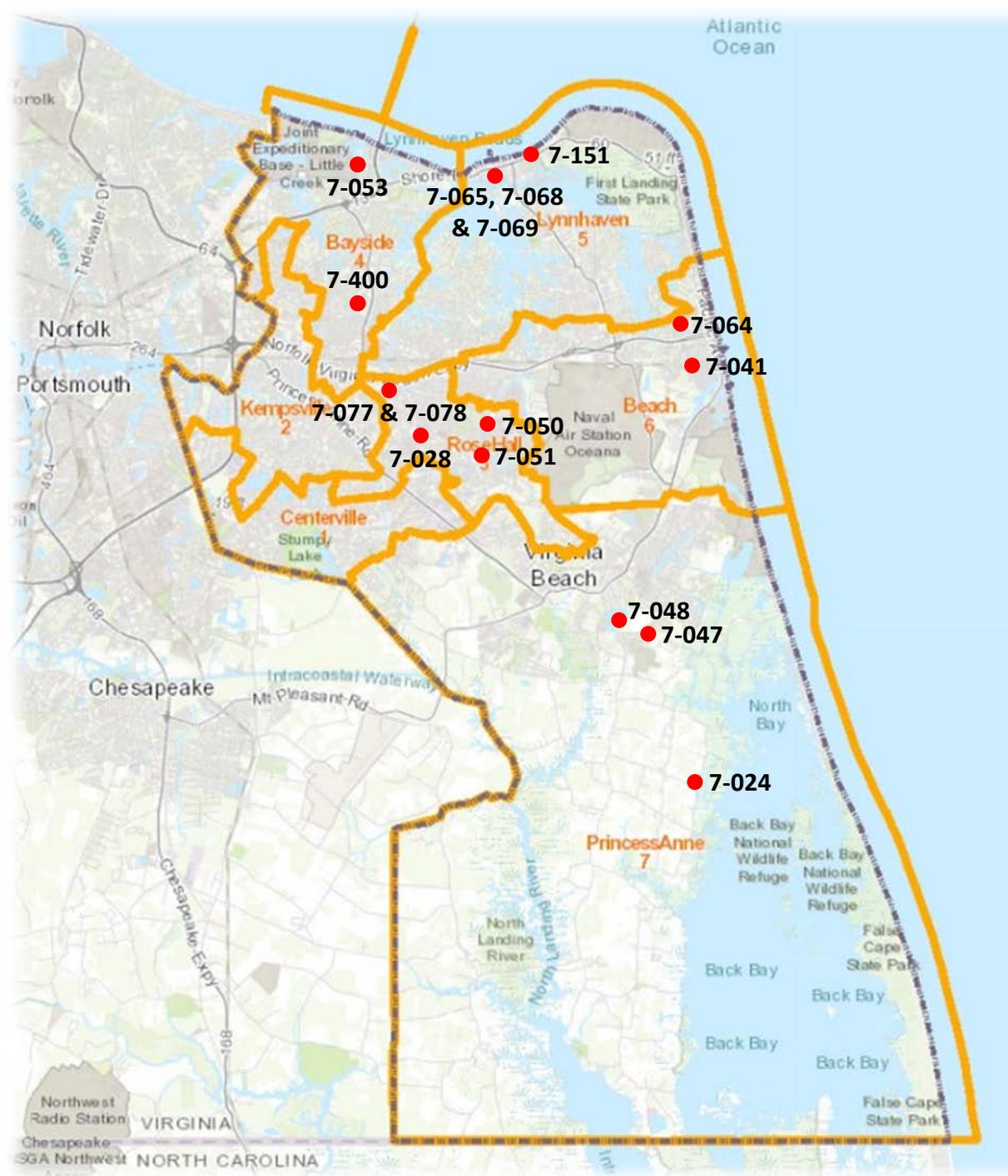
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TONI ALGER, P.E.  
STORMWATER ENGINEERING CENTER ADMINISTRATOR  
JUNE 25, 2019

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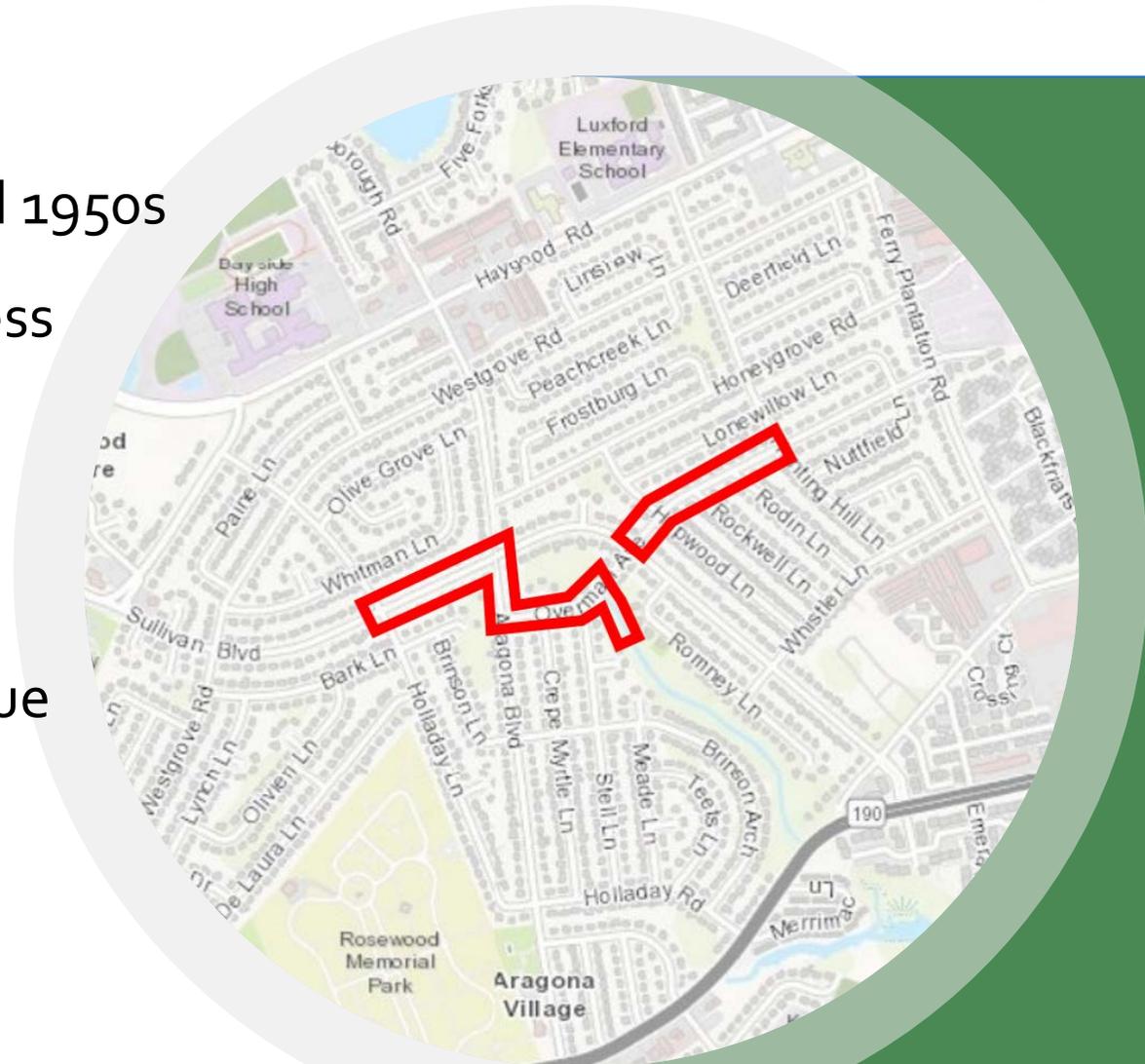
- Aragona Drainage Improvements, 7-400
- Ashville Park Drainage Improvements Phase I, 7-047
- Central Resort District Drainage Improvements, 7-041
- Central Resort District – 24th Street Culvert, 7-064
- Chubb Lake/ Lake Bradford, 7-053
- Eastern Shore Drive Drainage Phase I, 7-151
- Eastern Shore Drive – Cape Henry Canal Phase II, 7-065
- Eastern Shore Drive – Lynnhaven Colony Park Pump Station, 7-068
- Eastern Shore Drive – Lynnhaven Drive Pump Station, 7-069
- Sherwood Lakes Drainage Improvements, 7-048
- Southern Canal/Lead Ditch & Culvert Improvements, 7-024
- Stormwater Master Planning, Analysis and Inventory, 7-027
- Princess Anne Plaza Drainage, 7-050
- The Lakes Drainage Improvements, 7-051
- Windsor Woods Drainage, 7-028
- Windsor Woods Pump Station, 7-077
- Windsor Woods Tide Gate, 7-078

# LOCATION OF PROJECTS BY DISTRICT



# ARAGONA DRAINAGE IMPROVEMENTS , 7-400

- Neighborhood developed in the mid 1950s
- Storm drain improvements to address severe roadway flooding
- Project limits include Sullivan Boulevard to Aragona Boulevard, Overman Avenue to the Outfall at Betty's Bottom, and Overman Avenue East of Sullivan Boulevard



| Total Project Cost | Appropriated to Date | FY20      | FY21 | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-----------|------|------|------|-------|------|---------------------|
| \$4,400,000        | \$3,760,000          | \$640,000 |      |      |      |       |      | \$0                 |

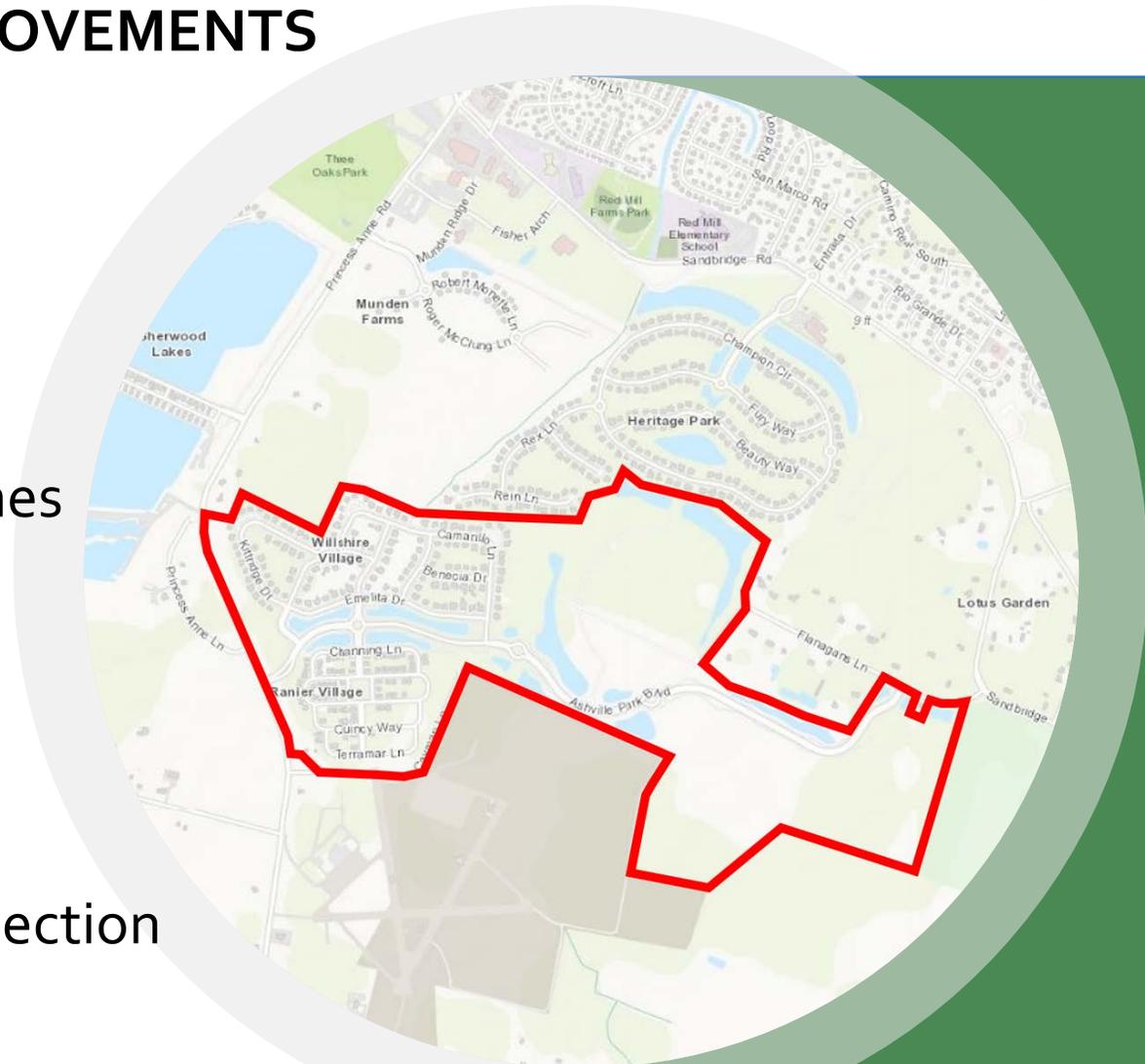
# ARAGONA DRAINAGE IMPROVEMENTS SECOND QUARTER 2019 ACTIVITIES

- In Progress – Temporary Construction Easements and Permanent Drainage Easement acquisitions
- July 2019 – Scheduled to advertise for construction
  - Construction is expected to take 15 months



# ASHVILLE PARK DRAINAGE IMPROVEMENTS PHASE I, 7-047

- 3 new Stormwater Ponds
- Expand an Existing Pond
- Channels Connecting Ponds
- Regrade and Stabilize Existing Ditches
- Stormwater Pump Station
- Gated Control Structure at Flanagans Lane
- Ditch and Culvert Improvements at New Bridge/Sandbridge Road Intersection



| Total Project Cost | Appropriated to Date | FY20        | FY21 | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|------|------|------|-------|------|---------------------|
| \$12,000,000       | \$9,000,000          | \$3,000,000 |      |      |      |       |      | \$0                 |

# ASHVILLE PARK DRAINAGE IMPROVEMENTS PHASE I SECOND QUARTER 2019 ACTIVITIES

- Project is divided into 3 Plan Sets
  - Stormwater Pump Station
    - Design – 90% Complete
    - Construction Start – December 2019
  - Drainage and Roadway Improvements
    - Design – 95% Complete
    - Construction Start – December 2019
  - Princess Anne Farm Ditch Stabilization Plan
    - Design – Complete
    - Construction Start – October 2019



# ASHVILLE PARK DRAINAGE IMPROVEMENTS PHASE I SECOND QUARTER 2019 ACTIVITIES

- April 25, 2019 – Princess Anne District Forum
- May 14, 2019 – Project Update to Creeds Ruritan Club

## Lake #14 Weir

- Construction is complete

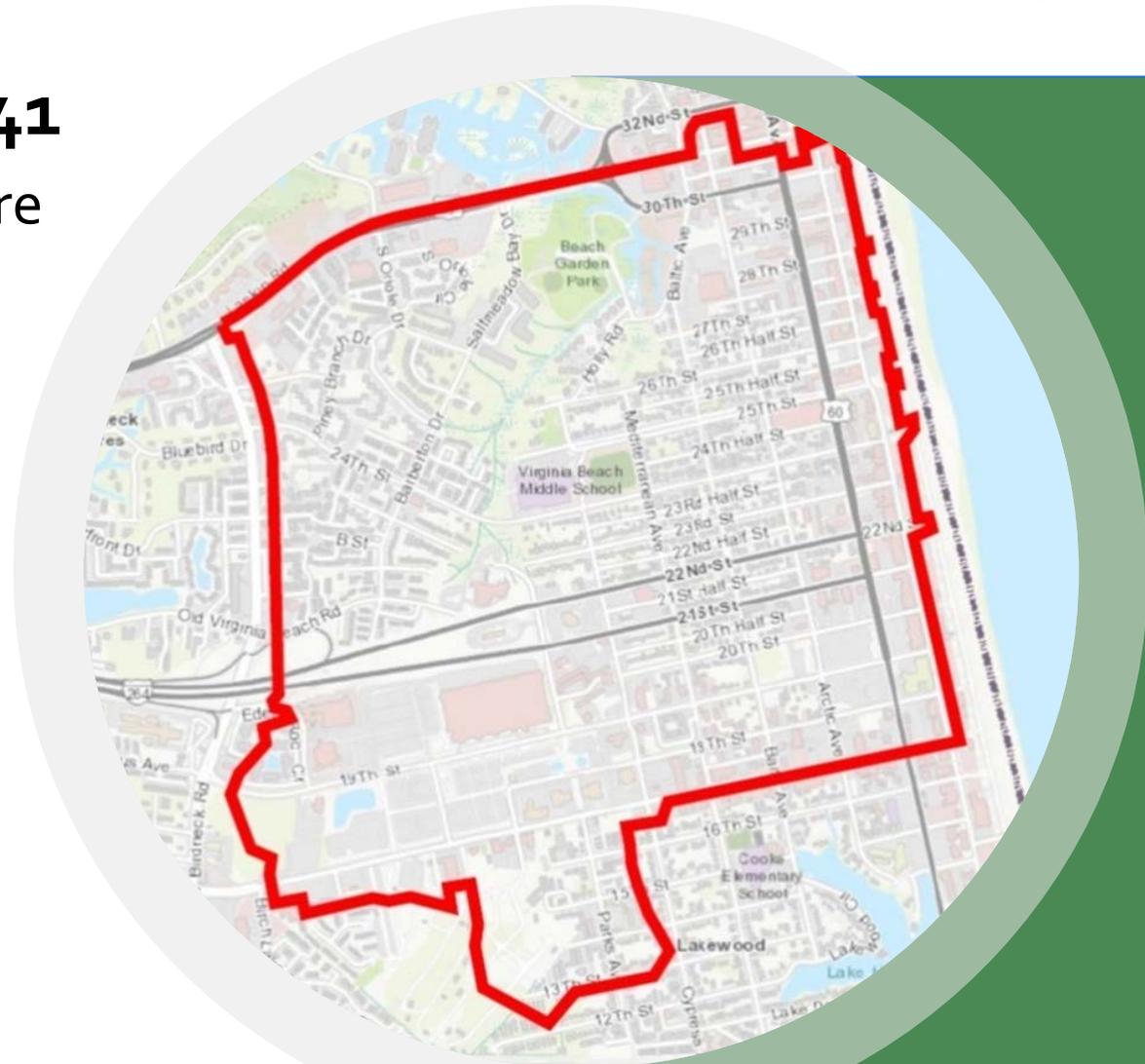
## Remaining Items

- Electrical and SCADA items



# CENTRAL RESORT DISTRICT DRAINAGE IMPROVEMENTS, 7-041

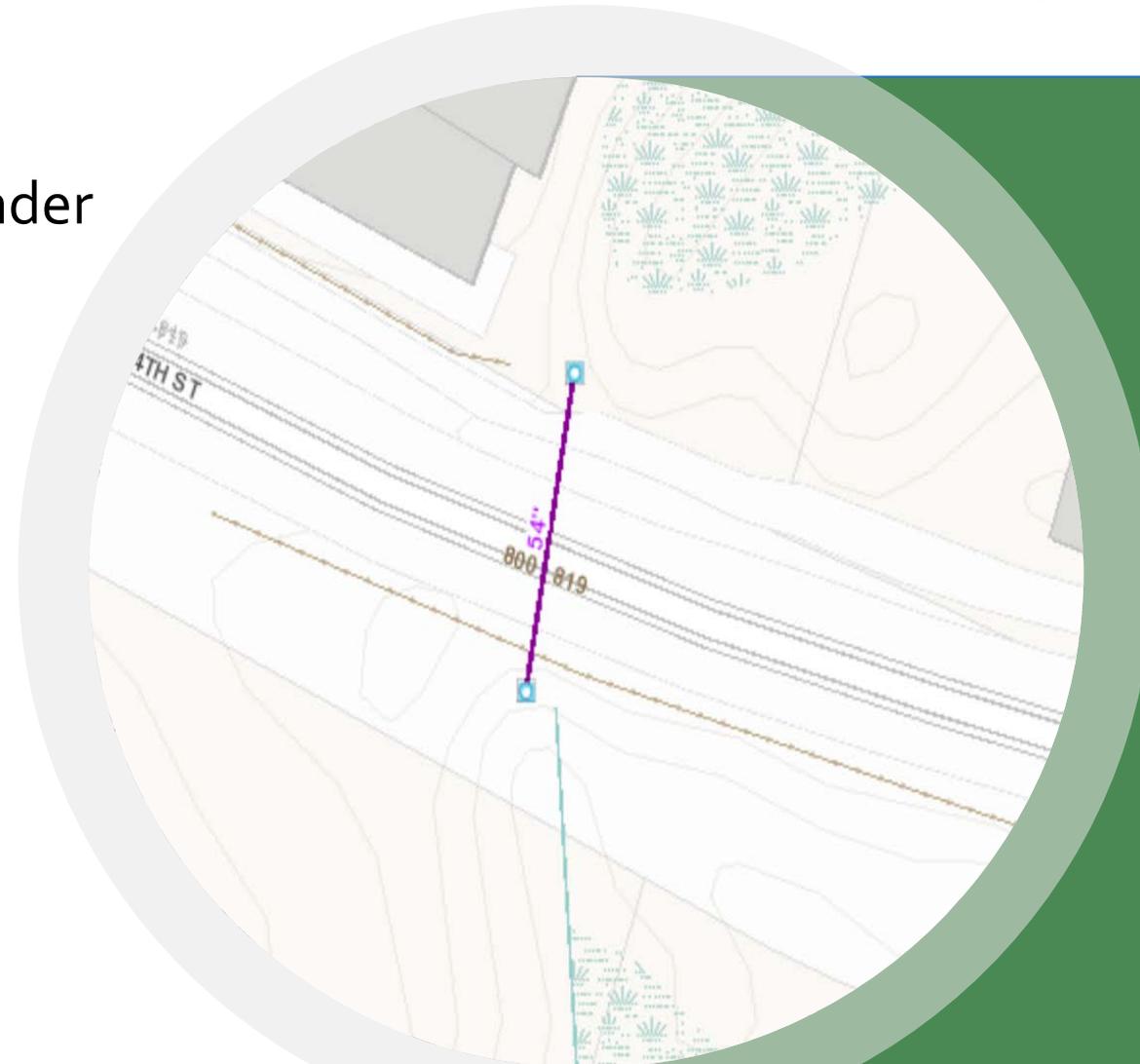
- Multi-phase project to address severe roadway flooding
- Ultimate improvements include additional storm drains, tide gate, pump station & ocean outfall
- Breakout Projects in FY20 CIP
  - 24<sup>th</sup> Street Culvert, CIP 7-064
    - Funding in FY20
  - Redirect Stormwater to 16th St. Pump Station, CIP 7-08
    - Funding in FY22



| Total Project Cost | Appropriated to Date | FY20 | FY21 | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|------|------|------|------|-------|------|---------------------|
| \$92,800,000       | \$800,000            |      |      |      |      |       |      | \$92,000,000        |

# CENTRAL RESORT – 24<sup>TH</sup> STREET CULVERT, 7-064

- Replace existing 54" pipe located under 24th Street with box culverts
- Evaluate culverts at Parks Avenue and Old Virginia Beach Road
- Existing Culverts are Under-Sized
  - Chokes the Upstream Drainage System
  - Causes Street Flooding



| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|-------------|------|------|-------|------|---------------------|
| \$5,200,000        |                      | \$1,200,000 | \$4,000,000 |      |      |       |      | \$0                 |

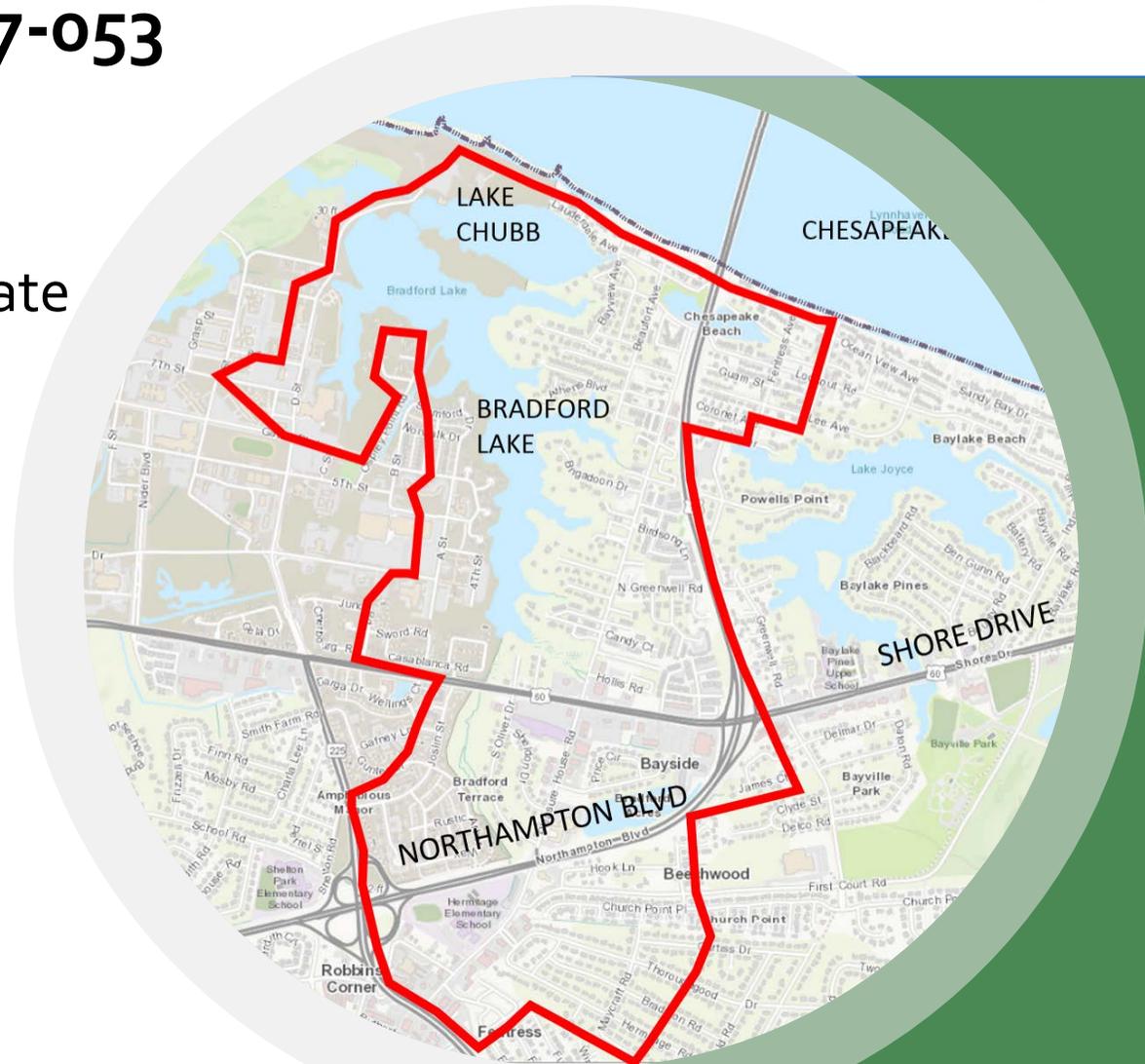
# CENTRAL RESORT – 24<sup>TH</sup> STREET CULVERT SECOND QUARTER 2019 ACTIVITIES

- April 29, 2019 – Received Design Alternatives Memo for 54-inch pipe replacement
- July 2019 – 30% Design Plan of Selected Alternative
- Summer 2020 – Advertise for Construction



# CHUBB LAKE/BRADFORD LAKE, 7-053

- Multi-phase project
- Storm drain improvements to alleviate roadway flooding
- Additional stormwater culverts under roadways
- Tide control devices such as mechanical sluice gates
- Stormwater management pond improvements
- Channel and ditch clearing



| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22        | FY23        | FY24        | FY25        | Balance To Complete |
|--------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|
| \$32,000,000       | \$2,168,200          | \$1,084,100 | \$1,084,100 | \$1,084,100 | \$1,084,100 | \$1,084,100 | \$1,084,100 | \$23,327,200        |

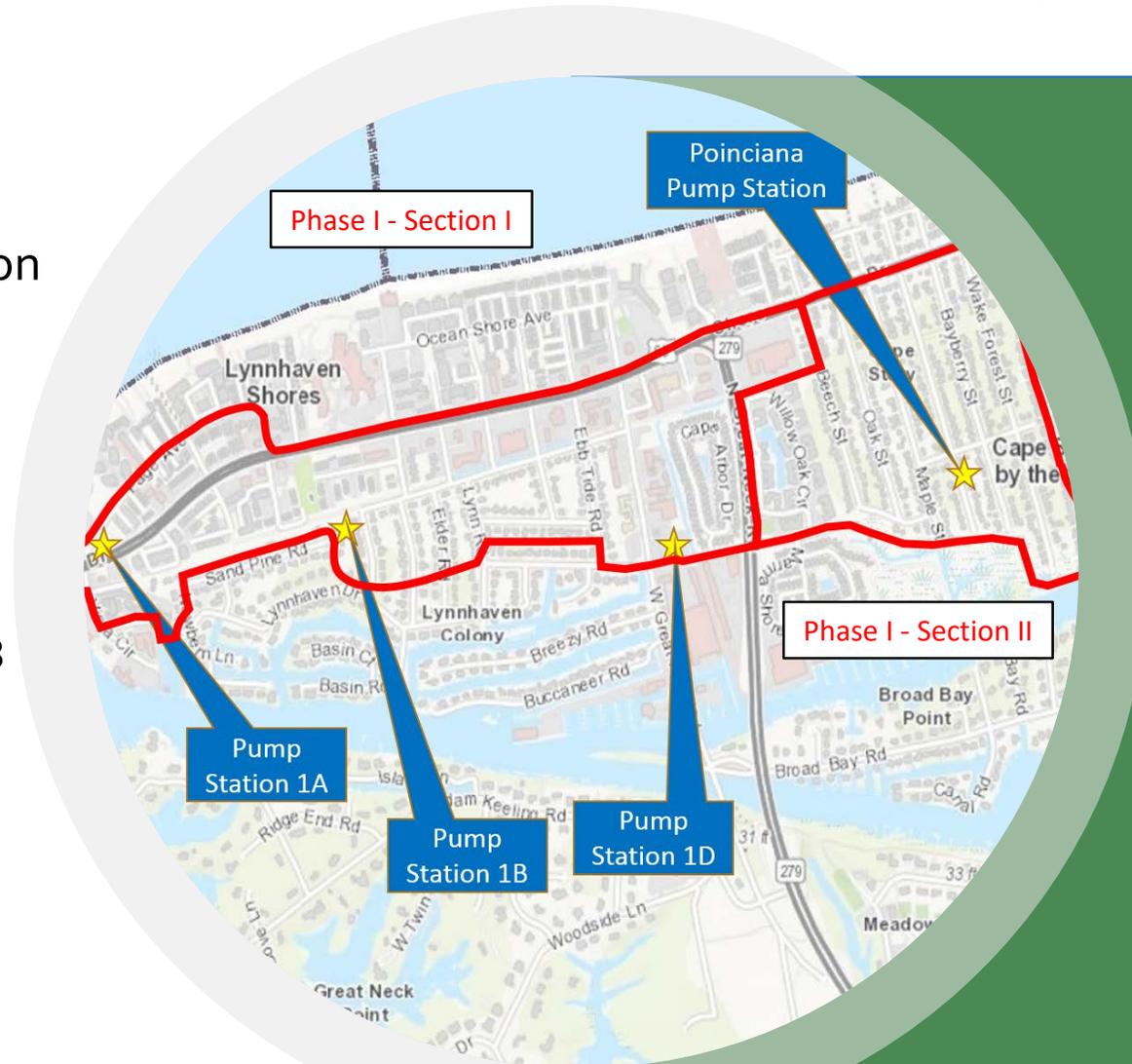
# CHUBB LAKE/BRADFORD LAKE SECOND QUARTER 2019 ACTIVITIES

- Ongoing – Coordinate with Navy to open the weir gate when major rain events are forecasted
- Preliminary Engineering Report
  - Scheduled to be complete summer 2020
- Interim Projects:
  - Pleasure House Lake Outfall
    - April 19, 2019 – Design NTP
    - Winter 2020 – Advertise for construction
  - Lake Bradford Ditch Dredging
    - May 15, 2019 – Design NTP
    - Summer 2020 – Advertise for Construction



# EASTERN SHORE DRIVE DRAINAGE PHASE I, 7-151

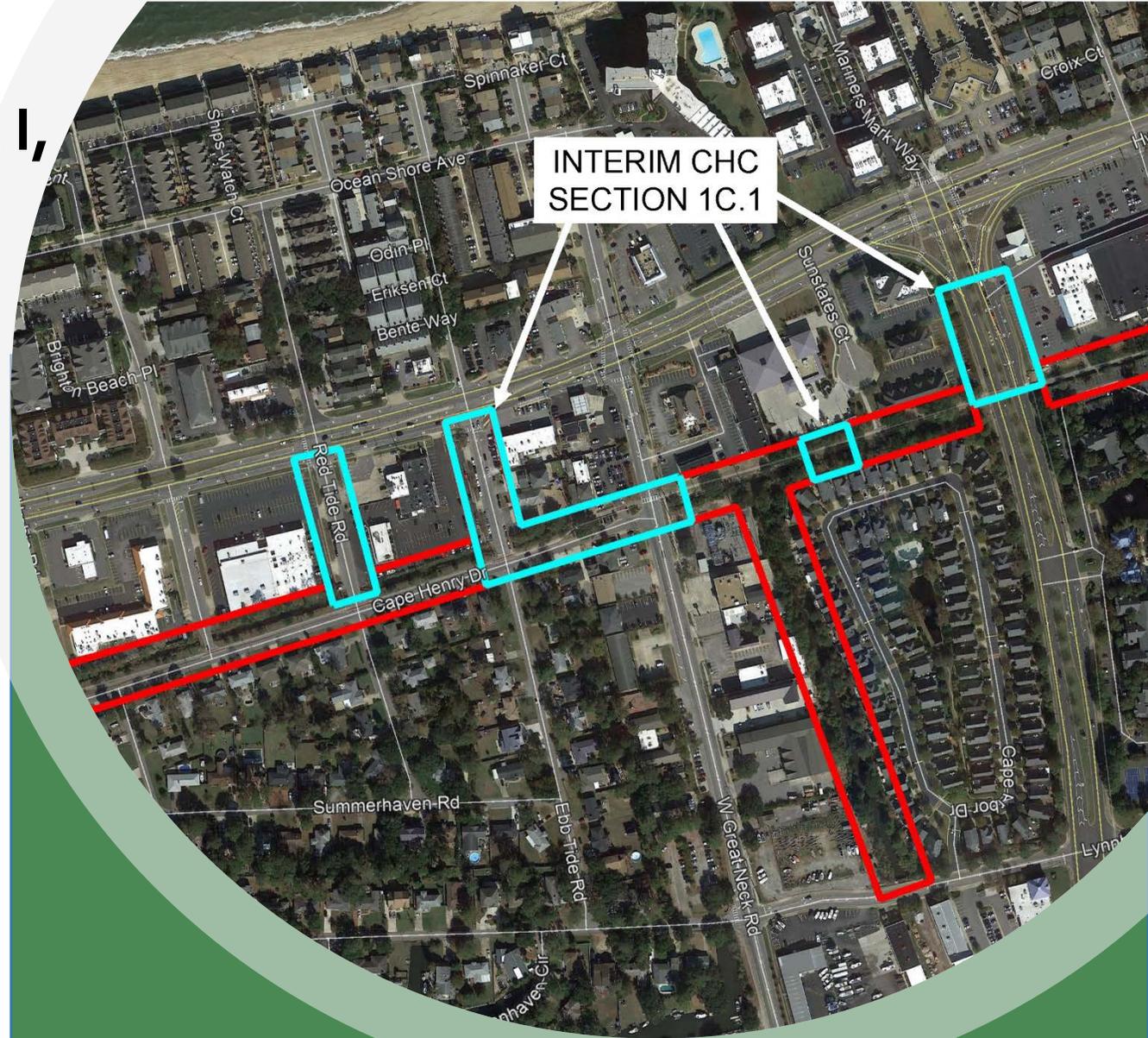
- Parent project of a Multi-phase project
- Improvements include stormwater collection systems, tide gates & pump stations
- Phase I includes Cape Henry Canal Drainage Improvements
- Breakout Projects in FY20 CIP
  - Cape Henry Canal Phase II, CIP 7-065
    - Funding in FY20
  - Lynnhaven Colony Park Pump Station, CIP 7-068
    - Funding in FY20
  - Lynnhaven Drive Pump Station, CIP 7-069
    - Funding in FY20
  - Vista Circle Pump Station, CIP 7-070
    - Funding in FY23
  - Elevate Lynnhaven Drive, CIP 7-066
    - Funding in FY23



| Total Project Cost | Appropriated to Date | FY20      | FY21 | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-----------|------|------|------|-------|------|---------------------|
| \$17,500,000       | \$17,339,357         | \$160,643 |      |      |      |       |      | \$0                 |

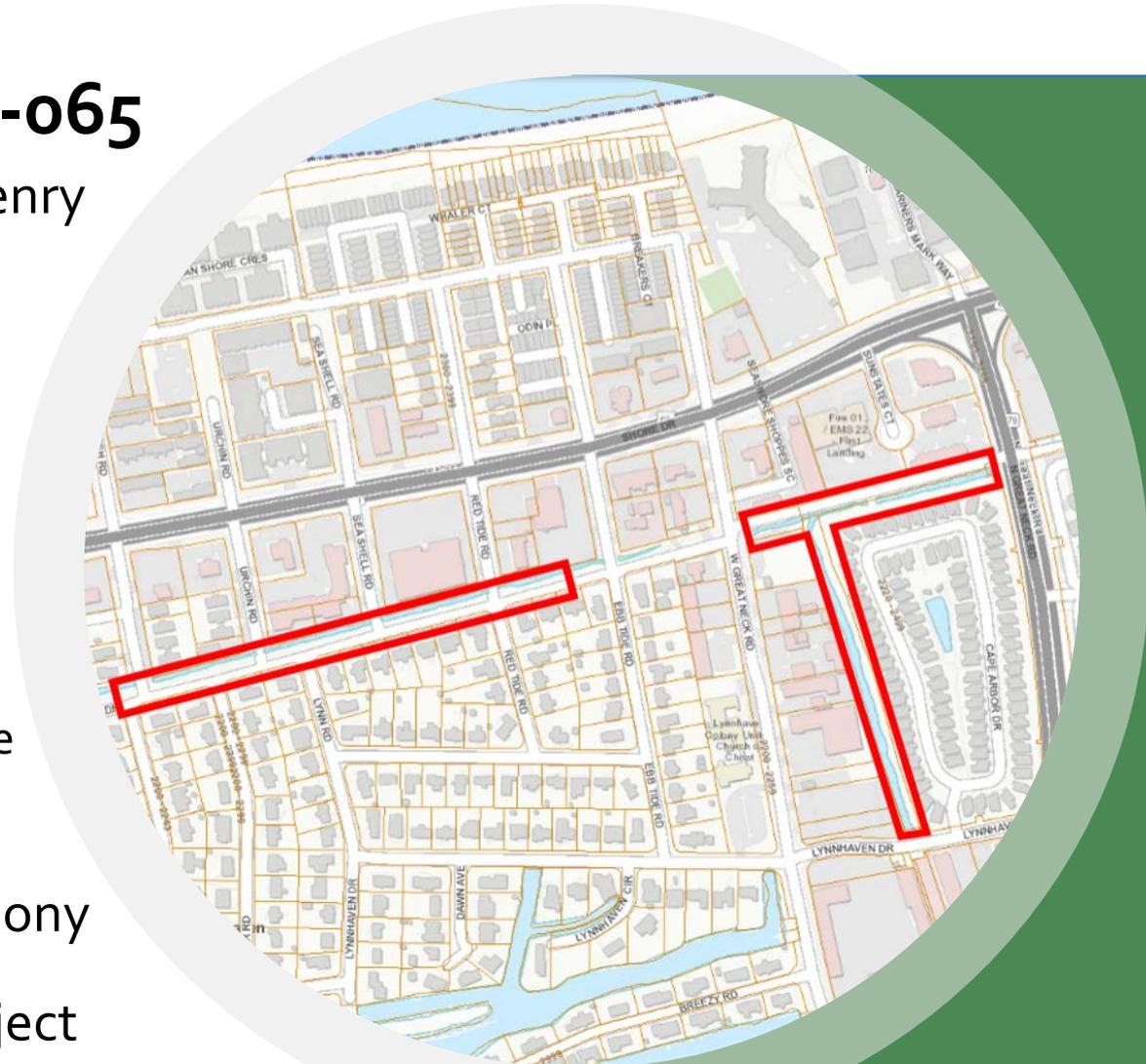
# EASTERN SHORE DRIVE DRAINAGE PHASE I, CAPE HENRY CANAL DRAINAGE IMPROVEMENTS, 7-151 SECOND QUARTER 2019 ACTIVITIES

- Cape Henry Canal Drainage Improvements includes:
  - Box culvert from Ebb Tide Road to West Great Neck Road
  - Side Street Outfall Improvements to Starfish Road, Ebb Tide Road & Red Tide Road
  - Estimated Project Cost – \$3.5M
- April 28, 2019 – Advertised for Construction
- May 8, 2019 – Pre-Bid meeting
- May 24, 2019 – Addendum #1 issued
  - Clarifications on the plans and specifications
- June 19, 2019 – Addendum #2 issued
  - Extends Bid Opening to July 23, 2019



# EASTERN SHORE DRIVE – CAPE HENRY CANAL PHASE II, 7-065

- Drainage Improvements Along Cape Henry Canal
- Limits Include:
  - Starfish Road to Ebb Tide Road
  - West Great Neck Road to North Great Neck Road
  - Between Cape Henry Drive and Lynnhaven Drive
- Improvements include:
  - Relocate a gravity sanitary sewer from Cape Henry Canal to Cape Henry Drive
  - Widen and Deepen Cape Henry Canal
- Interconnected with the Lynnhaven Colony Park Pump Station project and the Lynnhaven Drive Pump Station project



| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22      | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|-------------|-----------|------|-------|------|---------------------|
| \$4,300,000        |                      | \$1,800,000 | \$2,000,000 | \$500,000 |      |       |      | \$0                 |

# EASTERN SHORE DRIVE – LYNNHAVEN COLONY PARK PUMP STATION, 7-068

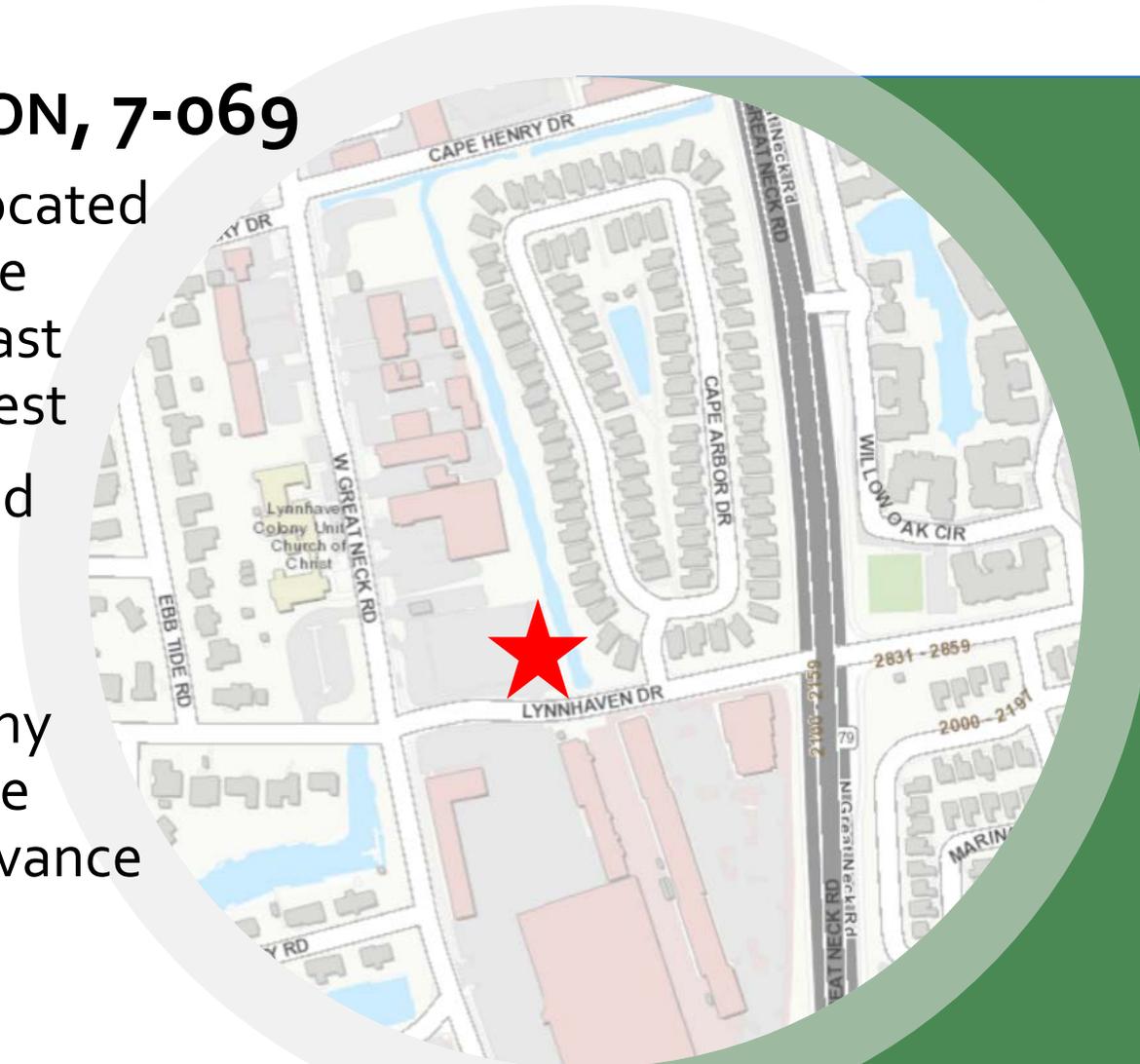
- 60 cfs Stormwater Pump Station located on the south side of Lynnhaven Colony Park adjacent to existing Sanitary Sewer Pump Station
- Construction includes an outfall energy dissipation structure at Lynnhaven Municipal Marina
- Works in Sync with Lynnhaven Drive Pump Station to draw down the water in the Cape Henry Canal in advance of a significant storm



| Total Project Cost | Appropriated to Date | FY20      | FY21 | FY22        | FY23        | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-----------|------|-------------|-------------|-------|------|---------------------|
| \$10,900,000       |                      | \$500,000 |      | \$5,300,000 | \$5,100,000 |       |      | \$0                 |

# EASTERN SHORE DRIVE – LYNNHAVEN DRIVE PUMP STATION, 7-069

- 120 cfs Stormwater Pump Station located on the north side of Lynnhaven Drive between Cape Henry Canal to the east and West Great Neck Road to the west
- Construction includes a tide gate and an outfall structure at Lynnhaven Marina
- Works in Sync with Lynnhaven Colony Park Pump Station to draw down the water in the Cape Henry Canal in advance of a significant storm



| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22        | FY23        | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|-------------|-------------|-------------|-------|------|---------------------|
| \$13,700,000       |                      | \$2,500,000 | \$1,000,000 | \$8,500,000 | \$1,700,000 |       |      | \$0                 |

# SHERWOOD LAKES DRAINAGE IMPROVEMENTS, 7-048

- Project to address severe roadway and property flooding
- Improvements include a pump station with a pipe connection between lakes



| Total Project Cost | Appropriated to Date | FY20 | FY21 | FY22 | FY23 | FY24 | FY25 | Balance To Complete |
|--------------------|----------------------|------|------|------|------|------|------|---------------------|
| \$3,400,000        | \$3,400,000          |      |      |      |      |      |      | \$0                 |

# SHERWOOD LAKES DRAINAGE IMPROVEMENTS, 7-048 SECOND QUARTER 2019 ACTIVITIES

- Ongoing – Lakes pumped down to elevation 3.0 in advance of forecasted significant rainfall
- Interconnect Pipe project
  - Substantially Complete
  - Expected Completion – July 2019
- North Sherwood Lake Permanent Pump Station project
  - Under Construction
  - Expected Completion – September 2019



# SOUTHERN CANAL/ LEAD DITCH & CULVERT IMPROVEMENTS, 7-024

- Drainage improvements to canals, lead ditches and culverts in the southern rivers watershed
- Improvements may include:
  - Pipe/culvert replacement
  - Ditch cleaning /regrading
  - Pavement Overlay



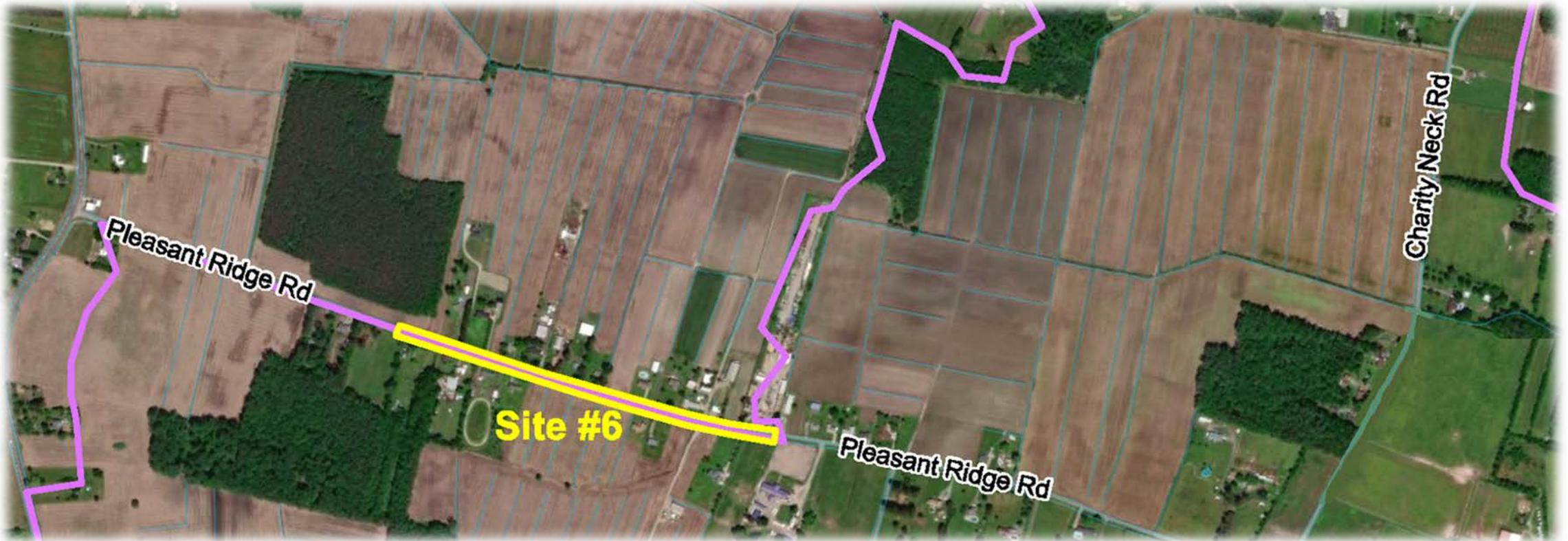
| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22        | FY23        | FY244       | FY25        | Balance To Complete |
|--------------------|----------------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------------|
| N/A                | \$3,740,000          | \$2,390,000 | \$2,390,000 | \$2,390,000 | \$2,390,000 | \$2,390,000 | \$2,390,000 | N/A                 |

# SOUTHERN CANAL/LEAD DITCH & CULVERT IMPROVEMENTS – SITE #5



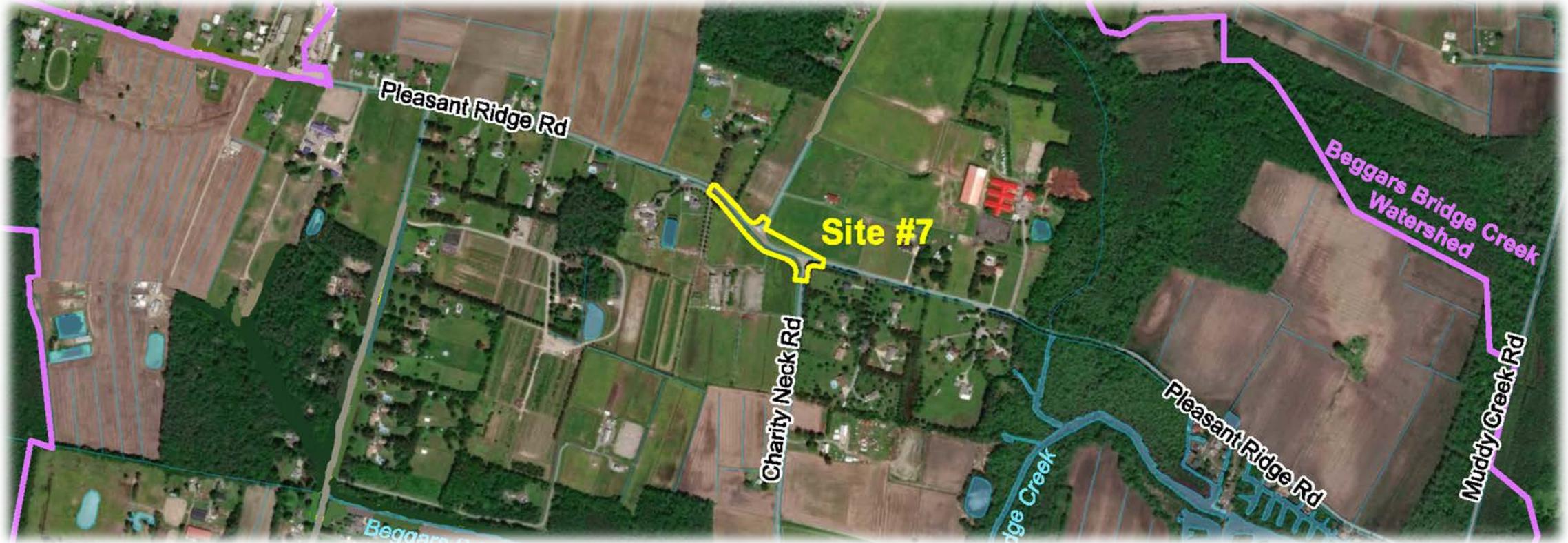
- Dawley Road between Pleasant Ridge Road and Beggars Bridge Creek Culvert
  - Clean Culverts
  - Clear and Reshape/Regrade Roadside Ditches along Dawley Road
  - Clear Beggars Bridge Creek and Farm Ditches East and West of Dawley Road (Winter 2020)
- Ditch Clearing along Dawley Road is complete
- Environmental Permits for Beggars Bridge Creek sections are expected in August 2019

# SOUTHERN CANAL/LEAD DITCH & CULVERT IMPROVEMENTS – SITE 6



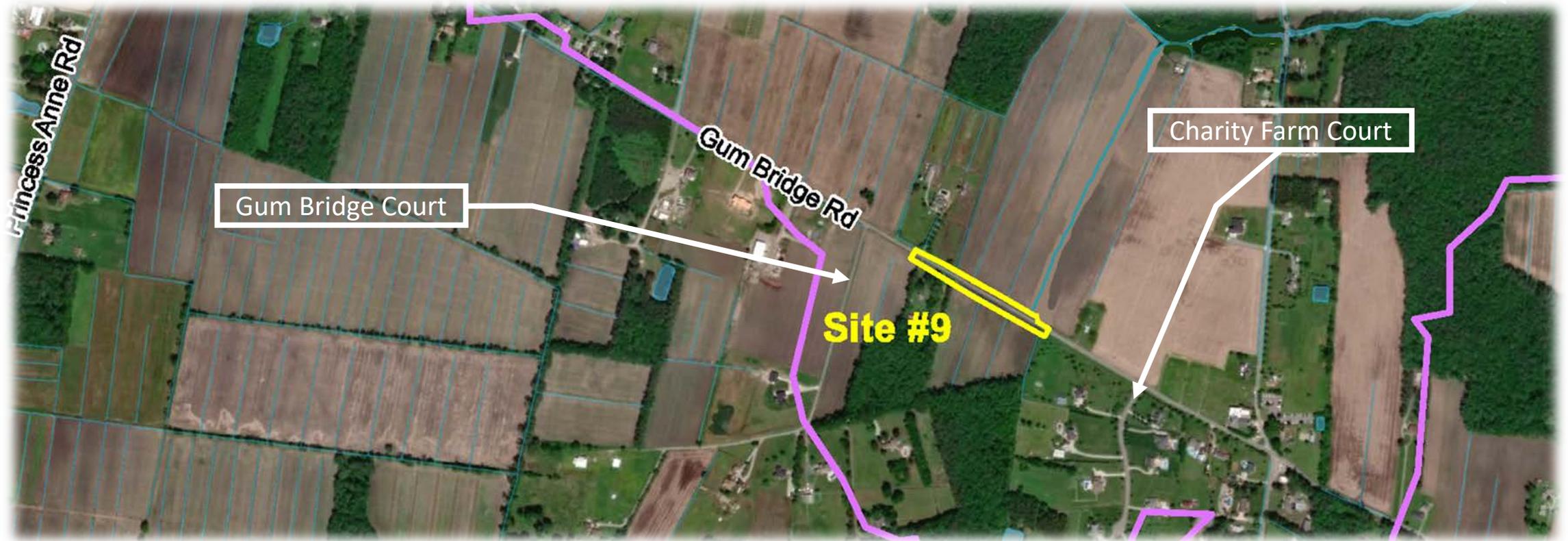
- Pleasant Ridge Road west of Dawley Road
  - Reshape/Regrade Ditches on both sides
  - Replace Culverts Under Pleasant Ridge Road
- Environmental Permits obtained in April 2019
- Ditch Clearing along Pleasant Ridge Road to begin Fall 2019
- Design for Culverts Underway – 30% Complete

## SOUTHERN CANAL/LEAD DITCH & CULVERT IMPROVEMENTS – SITE 7



- Intersection of Pleasant Ridge Road and Charity Neck Road
  - Replace Culverts Under Pleasant Ridge Road
  - Regrade the Roadway Pavement
  - Reshape/Regrade Ditches
  - Relocate Above Ground Utilities
- Design Underway – 30% Complete

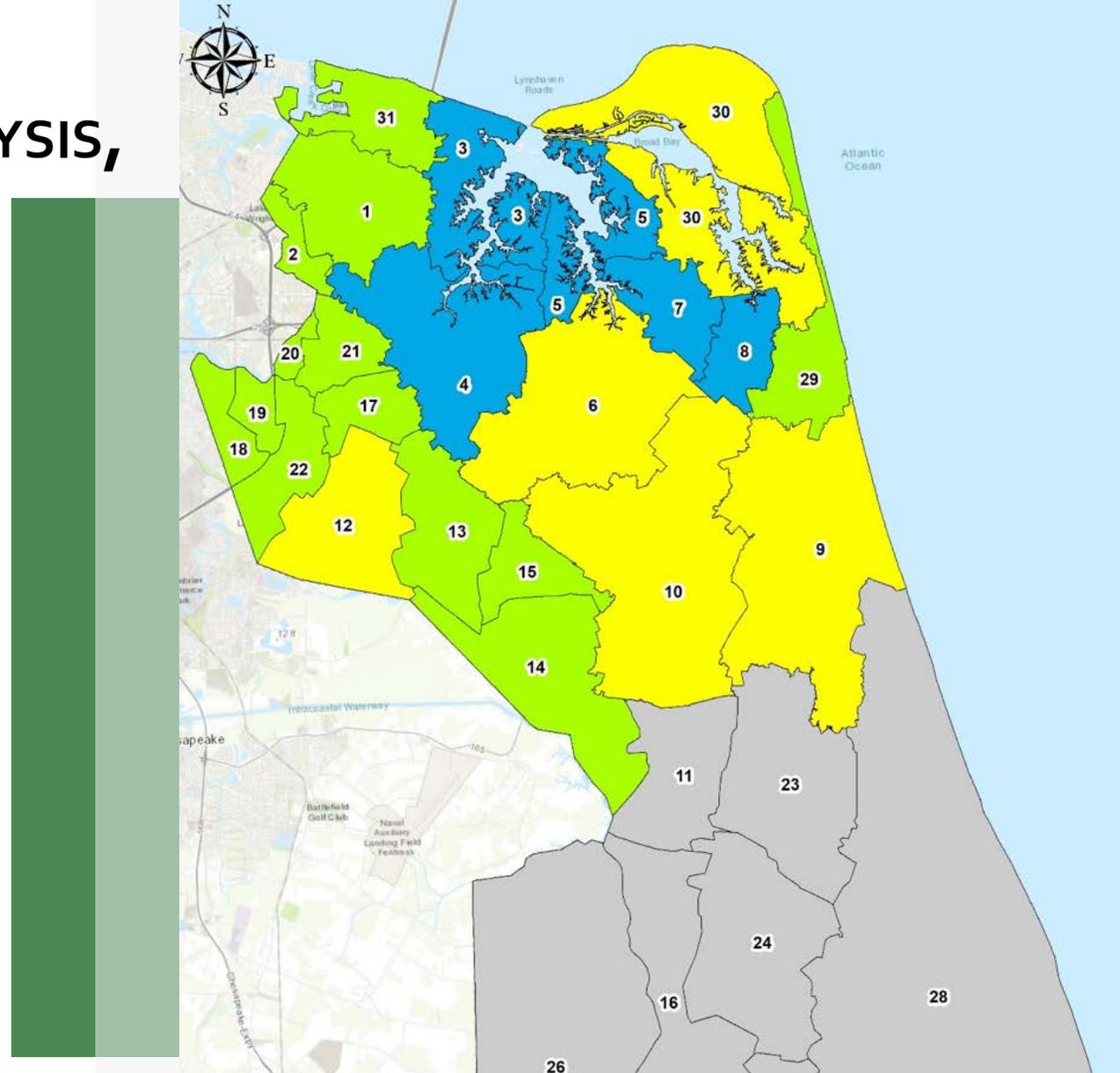
# SOUTHERN CANAL/LEAD DITCH & CULVERT IMPROVEMENTS – SITE 9



- Gum Bridge Road Between Charity Farm Court and Gum Bridge Court
  - Clean Existing Culvert/Regrade Ditches
  - Culvert Replacement
  - Widen Ditches
  - Overlay Pavement
  - Relocate Above Ground Utilities
- Design Underway – 30% Complete

# SWM MASTER PLANNING, ANALYSIS, AND MODELING , 7-027

- Update the City's 31 Stormwater Drainage Basin Models
- Models provide drainage design parameters such as downstream water surface levels to developers for projects
- Models identify deficiencies and gaps in the existing stormwater infrastructure
- Preliminary Drainage Analysis will identify future Capital Drainage Projects in conjunction with results of Sea Level Rise study



| Total Project Cost | Appropriated to Date | FY20 | FY21      | FY22        | FY23        | FY24        | FY25        | Balance To Complete |
|--------------------|----------------------|------|-----------|-------------|-------------|-------------|-------------|---------------------|
| \$14,788,056       | \$9,770,906          |      | \$997,430 | \$1,002,430 | \$1,002,430 | \$1,007,430 | \$1,007,430 | \$0                 |

# SWM MASTER PLANNING, ANALYSIS, AND MODELING SCHEDULE

| WATERSHED             | DRAINAGE BASIN       | SCHEDULED COMPLETION                                      |
|-----------------------|----------------------|-----------------------------------------------------------|
| Lynnhaven             | 3 thru 8 & 30        | Completed                                                 |
| Little Creek          | 1 & 31               | Completed                                                 |
| Atlantic              | 29                   | Validation/Calibration by July 2019                       |
| Elizabeth River       | 2 & 17 thru 22       | Awaiting Validation Locations (2), September 2019 (17-22) |
| Southern Rivers       |                      |                                                           |
| ➤ Upper West Neck     | 10                   | Completed                                                 |
| ➤ Stumpy Lake         | 12                   | Completed                                                 |
| ➤ Canal #1 South      | 9                    | Completed                                                 |
| ➤ Southern            | 11, 16, & 23 thru 28 | Completed                                                 |
| ➤ Upper North Landing | 13 thru 15           | September 2019                                            |

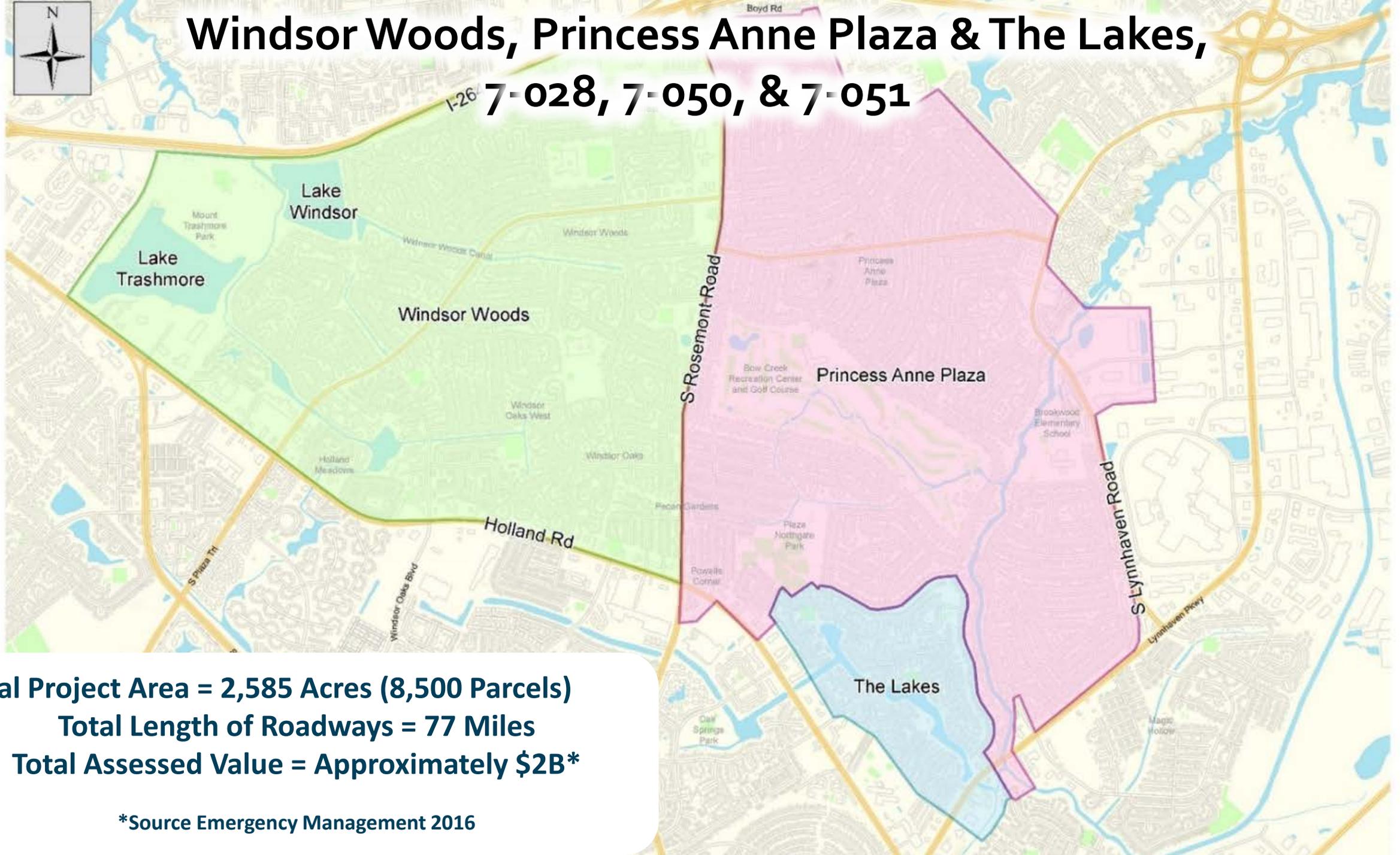
**Dates represent when there is a validated/calibrated model.**

**Please send flooding pictures to [stormpics@vb.gov](mailto:stormpics@vb.gov)**



# Windsor Woods, Princess Anne Plaza & The Lakes,

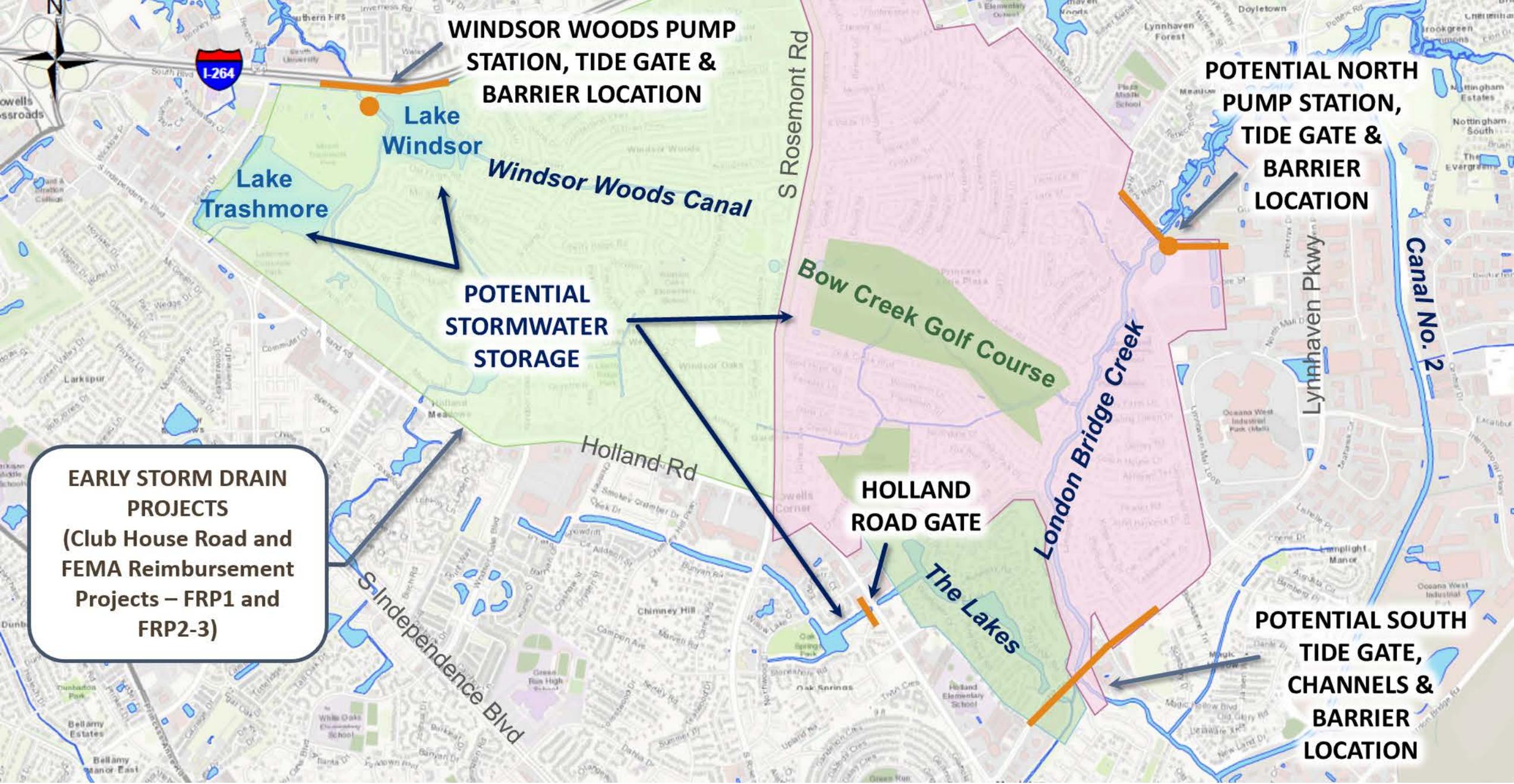
I-26 7-028, 7-050, & 7-051



**Total Project Area = 2,585 Acres (8,500 Parcels)**  
**Total Length of Roadways = 77 Miles**  
**Total Assessed Value = Approximately \$2B\***

\*Source Emergency Management 2016





**WINDSOR WOODS PUMP STATION, TIDE GATE & BARRIER LOCATION**

**POTENTIAL NORTH PUMP STATION, TIDE GATE & BARRIER LOCATION**

**POTENTIAL STORMWATER STORAGE**

**HOLLAND ROAD GATE**

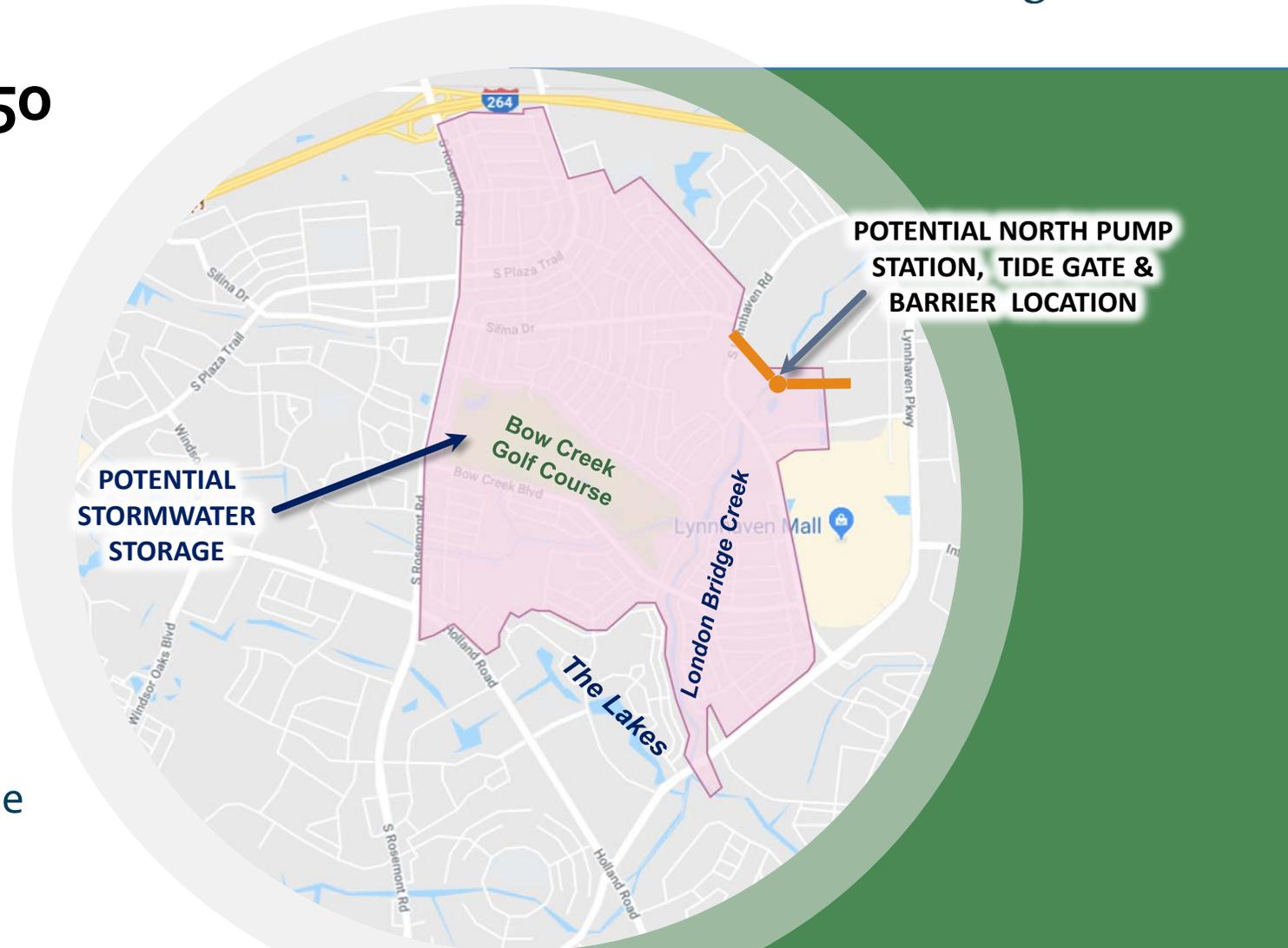
**POTENTIAL SOUTH TIDE GATE, CHANNELS & BARRIER LOCATION**

**EARLY STORM DRAIN PROJECTS**  
 (Club House Road and FEMA Reimbursement Projects – FRP1 and FRP2-3)

**PRELIMINARY CONCEPT PLAN (PHASE I – \$225M)**

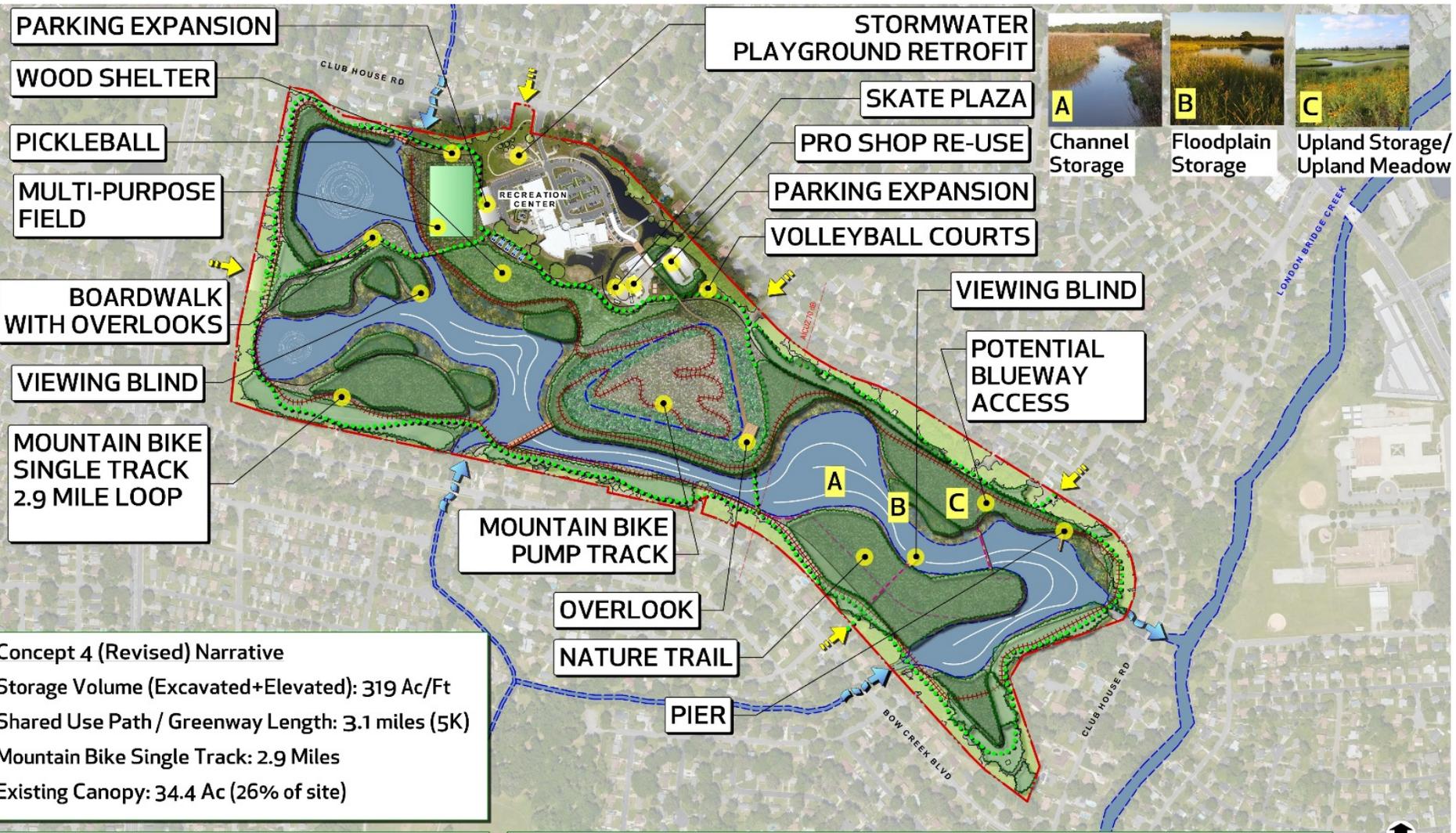
# PRINCESS ANNE PLAZA DRAINAGE IMPROVEMENTS, 7-050

- Improvements Include:
  - Tide Gate/Barriers
  - Pump Station
  - Additional Storage
  - Increase Capacity in Stormwater Conveyance System
- Breakout Projects in FY20 CIP
  - Princess Anne Plaza Golf Course Conversion, CIP 7-073
    - Funding in FY21
  - Princess Anne Plaza North London Bridge Creek Pump Station, CIP 7-089
    - Funding in FY21



| Total Project Cost | Appropriated to Date | FY20 | FY21 | FY22 | FY23 | FY24 | FY25 | Balance To Complete |
|--------------------|----------------------|------|------|------|------|------|------|---------------------|
| \$5,073,597        | \$5,073,597          |      |      |      |      |      |      | \$0                 |

# PRINCESS ANNE PLAZA GOLF COURSE CONVERSION CONCEPT, CIP 7-073



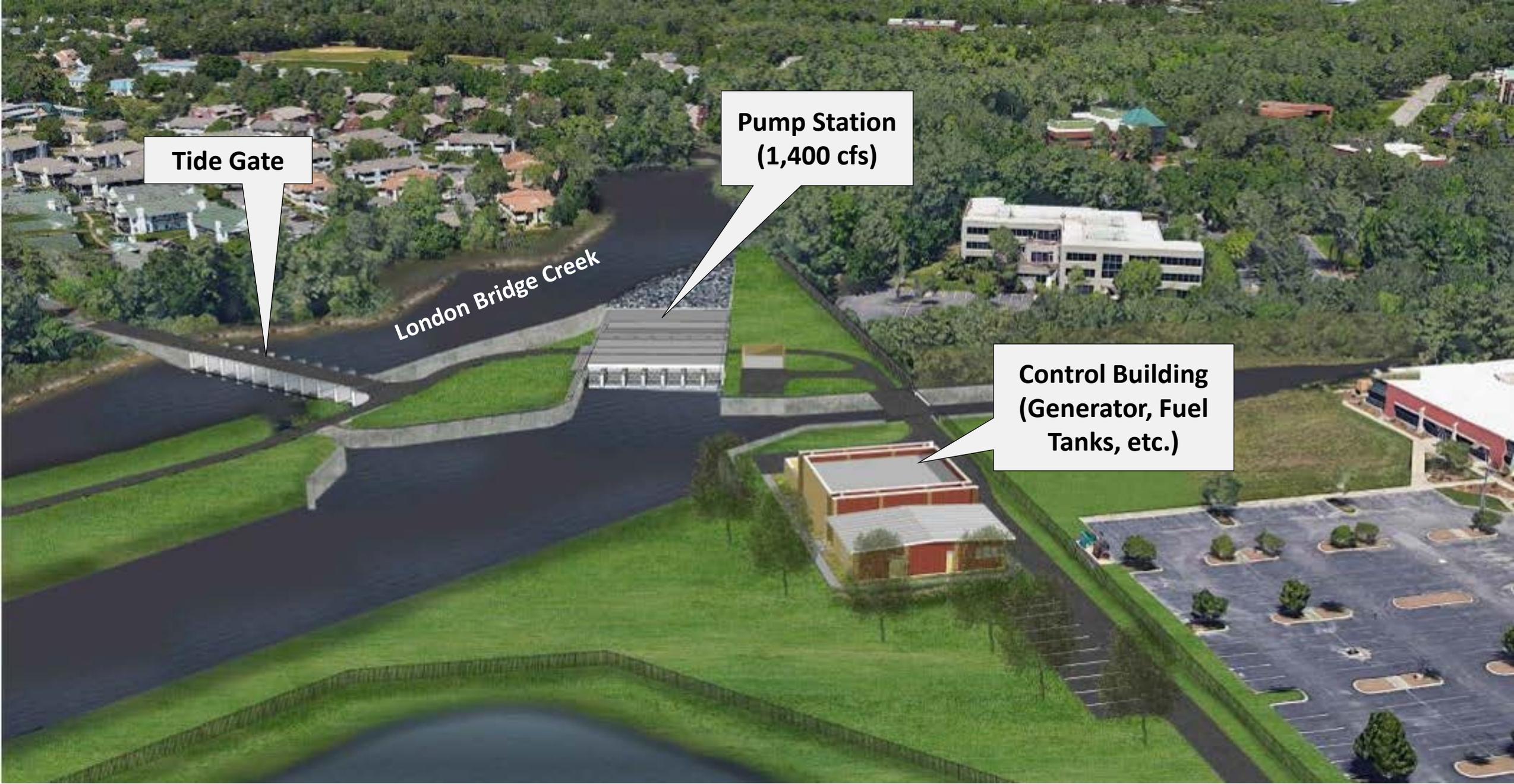
### Legend

- Upland Storage
- Floodplain Storage
- Channel Storage
- Proposed Lawn
- Existing Trees to be Preserved
- Proposed Trees
- Property Line
- Shared Use Path / Greenway
- Mountain Bike Trail
- Natural Surface Trail
- Public Access / Trailhead
- Water Inflow

**Concept 4 (Revised) Narrative**  
 Storage Volume (Excavated+Elevated): 319 Ac/Ft  
 Shared Use Path / Greenway Length: 3.1 miles (5K)  
 Mountain Bike Single Track: 2.9 Miles  
 Existing Canopy: 34.4 Ac (26% of site)

- Park Amenities - Active Uses**
- Pickleball Courts
  - Skatepark Features
  - Sand Volleyball Courts
  - Multi-Purpose Field
  - Mountain Bike Trail
  - Nature/Interpretive Trail

- Park Amenities - Passive Uses**
- Walking Paths
  - Interpretive Stormwater
  - Playground
  - Overlooks / Wildlife Viewing Blinds
  - Foot Bridges
  - Piers and Blueway Access
  - Shelter
  - Parking
  - Pro Shop Re-use



**Tide Gate**

**London Bridge Creek**

**Pump Station  
(1,400 cfs)**

**Control Building  
(Generator, Fuel  
Tanks, etc.)**

# THE LAKES DRAINAGE IMPROVEMENTS, 7-051

- Stormwater flows to London Bridge Creek to the Eastern Branch of the Lynnhaven River or to West Neck Creek to the North Landing River
- Drainage Improvements Include
  - Tide Gate/Barriers
  - Channels
- Breakout Project in FY20 CIP
  - South London Bridge Creek Channels and Tide Gate, CIP 7-094
    - Funding in FY22



| Total Project Cost | Appropriated to Date | FY20 | FY21 | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|------|------|------|------|-------|------|---------------------|
| \$2,000,000        | \$2,000,000          |      |      |      |      |       |      | \$0                 |



**The Lakes Canal**

**Tide Gate**

**Green Run Canal**

*Fern Ridge*

*Lynnhaven Parkway*

*West Neck Creek*

*Magic Hollow Blvd.*

# WINDSOR WOODS DRAINAGE IMPROVEMENTS, 7-028

- Projects Underway
  - Club House Road Drainage Improvements Project
  - FEMA Reimbursement Projects
    - Three Pipe Projects
- Breakout Projects in FY20 CIP
  - Windsor Woods Pump Station, CIP 7-077
    - Funding in FY20
  - Windsor Woods Tide Gate, CIP 7-078
    - Funding in FY20
  - Thalia Creek/Lake Trashmore Improvements, CIP 7-076
    - Funding in FY24

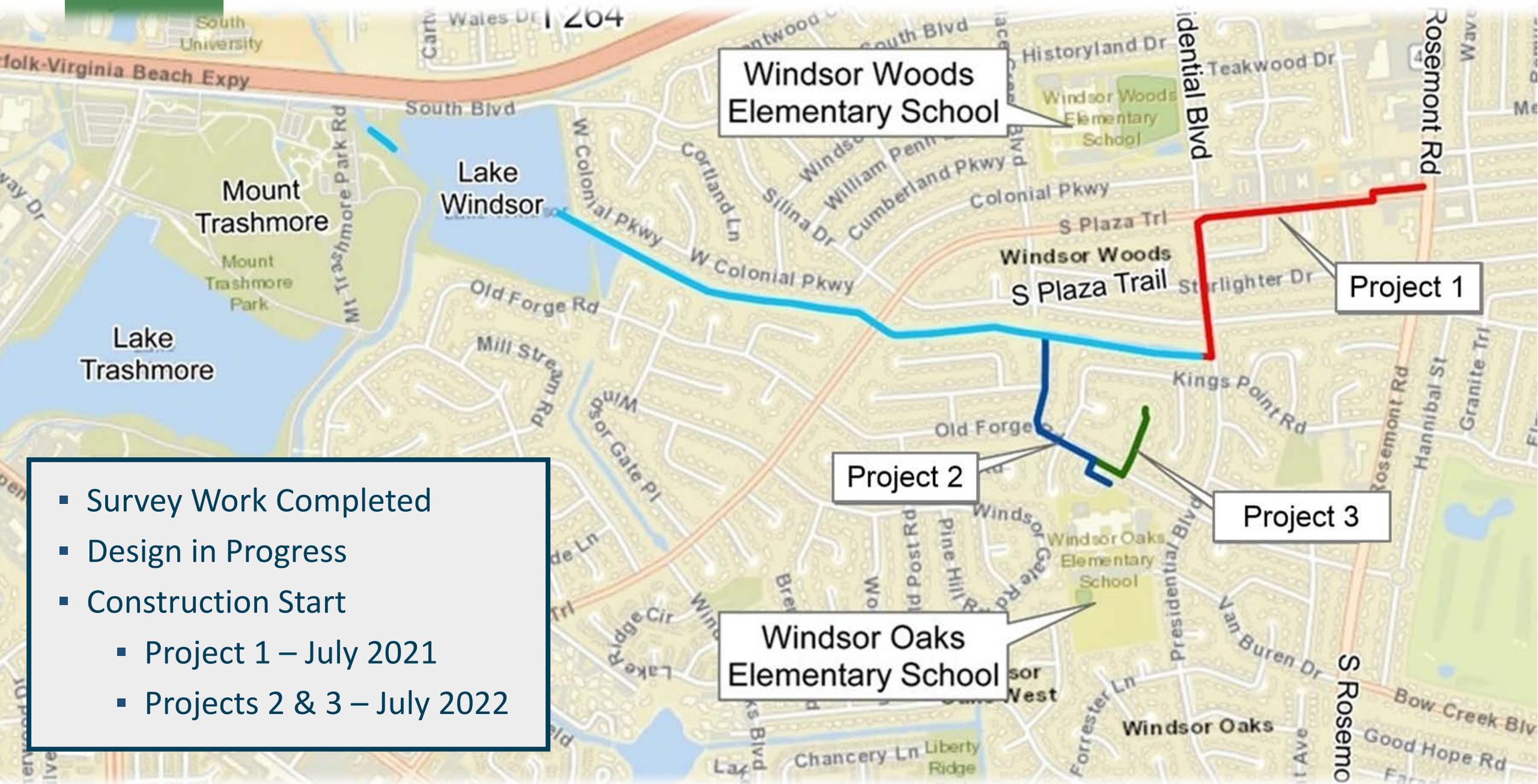


| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22 | FY23      | FY24 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|-------------|------|-----------|------|------|---------------------|
| \$18,377,237       | \$12,677,237         | \$1,668,000 | \$3,100,000 |      | \$932,000 |      |      | \$0                 |



**PROPOSED  
STORM  
DRAIN**

- Finalizing Design
  - Approximately 90% Complete
- Easement Agreements Signed
- Construction Start: February 2020
- Estimated Construction Cost: \$3.3M

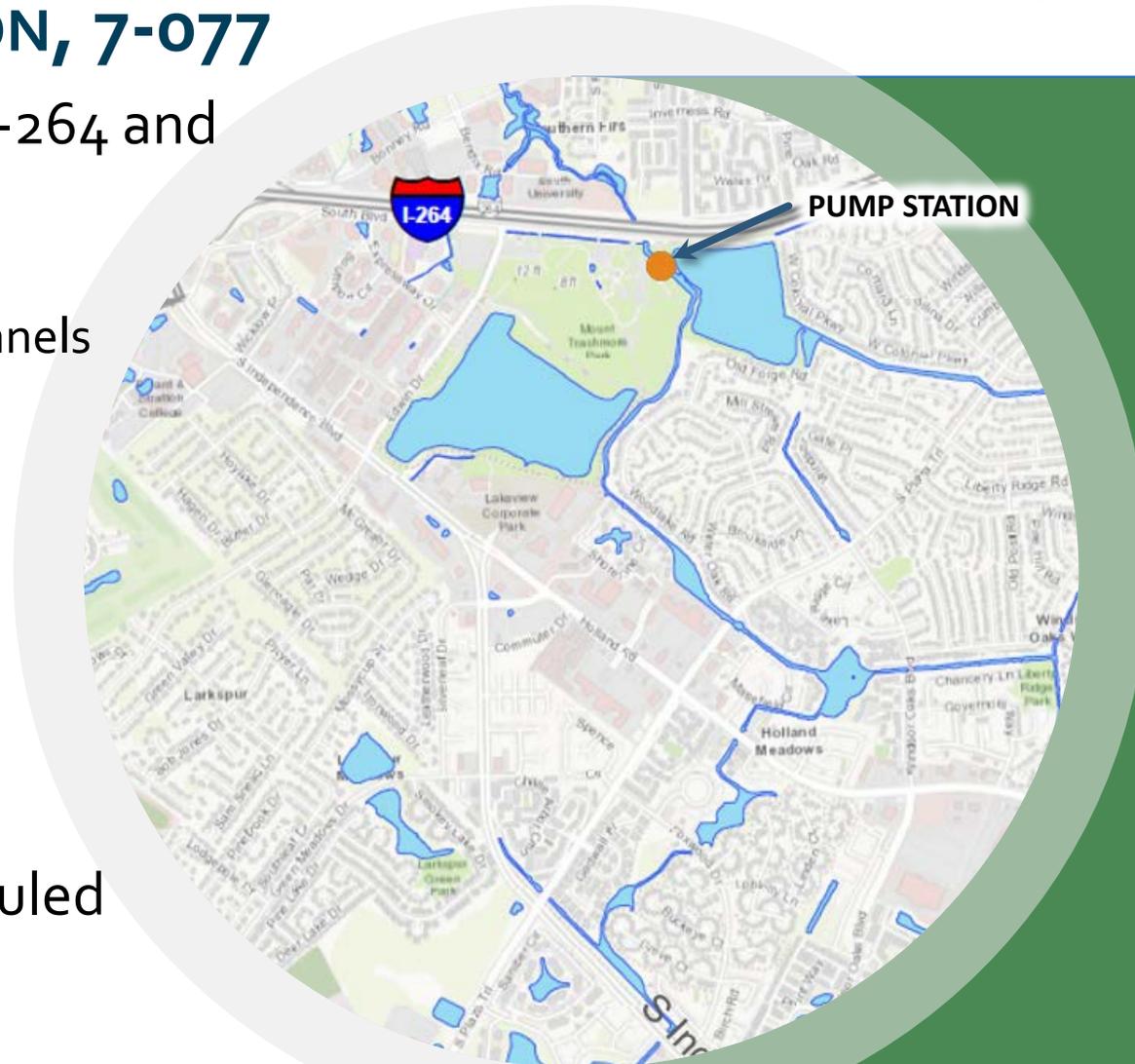


- Survey Work Completed
- Design in Progress
- Construction Start
  - Project 1 – July 2021
  - Projects 2 & 3 – July 2022

# FEMA REIMBURSEMENT PROJECTS

# WINDSOR WOODS PUMP STATION, 7-077

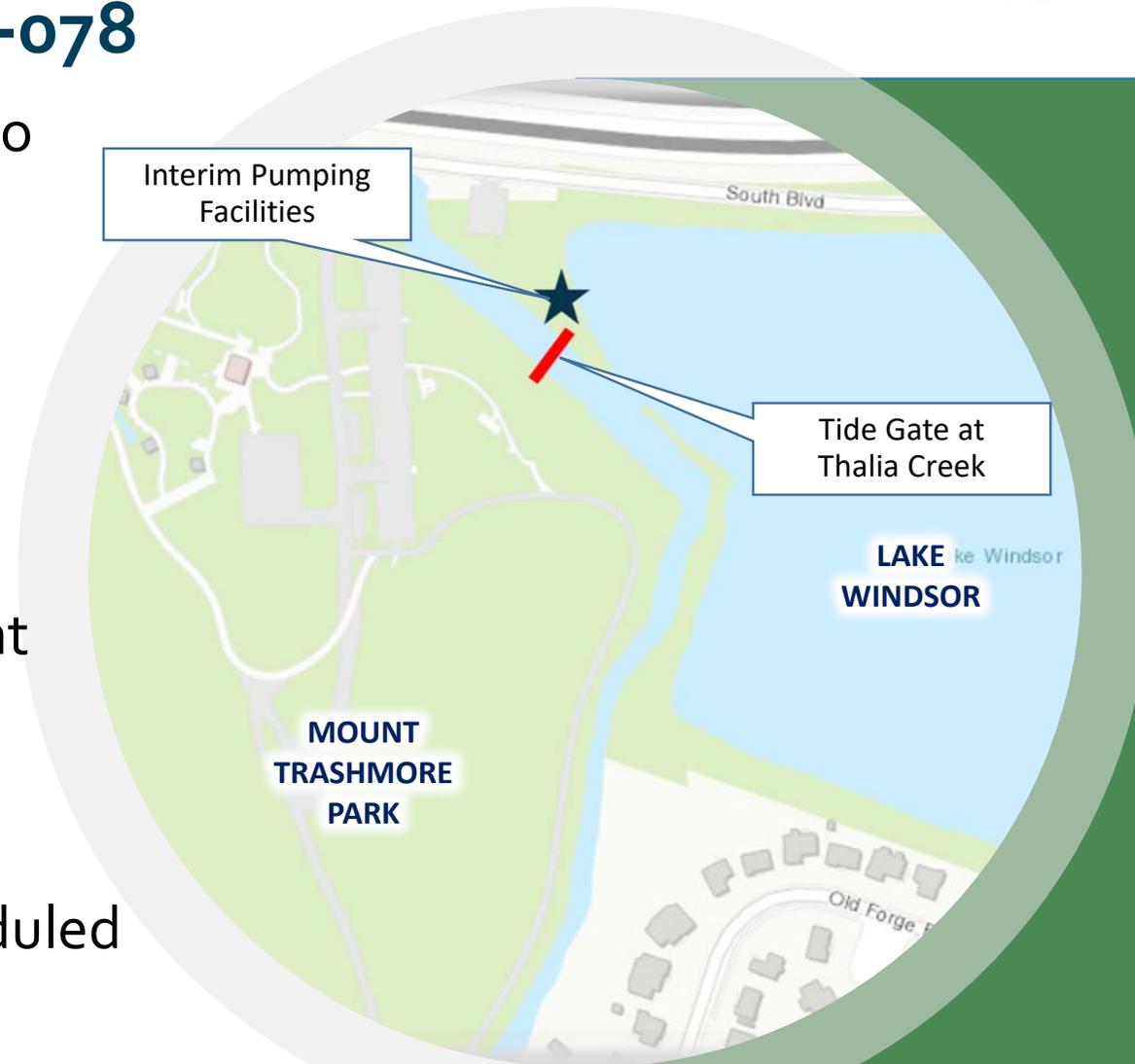
- Located on City Property, South of I-264 and Southern Boulevard
- Large Pump Station – 750 cfs
  - Pumps stormwater out of upstream channels and lakes before, during, and after moderate to severe rain storm events
- Six 54-inch Discharge Pipes
- Control Building
  - Generator
  - Fuel Tanks
- July 1, 2019 – Begin Design
- Summer 2024 – Construction Scheduled to Begin



| Total Project Cost | Appropriated to Date | FY20      | FY21        | FY22 | FY23 | FY24        | FY25         | Balance To Complete |
|--------------------|----------------------|-----------|-------------|------|------|-------------|--------------|---------------------|
| \$33,116,000       |                      | \$500,000 | \$4,300,000 |      |      | \$9,000,000 | \$19,316,000 | \$0                 |

# WINDSOR WOODS TIDE GATE, 7-078

- Located on City Property Adjacent to Mount Trashmore Park
- Protects Neighborhood from Tidal Influence of Thalia Creek
- Four Gates – Total Width 60 feet
- Includes Interim Pumping Facilities
- Preliminary Design funded by Parent Project, CIP 7-028, Windsor Woods Drainage
  - Approximately 30% Complete
- Summer 2020 – Construction Scheduled to begin



| Total Project Cost | Appropriated to Date | FY20        | FY21        | FY22 | FY23 | FY244 | FY25 | Balance To Complete |
|--------------------|----------------------|-------------|-------------|------|------|-------|------|---------------------|
| \$6,700,000        |                      | \$4,500,000 | \$2,200,000 |      |      |       |      | \$0                 |

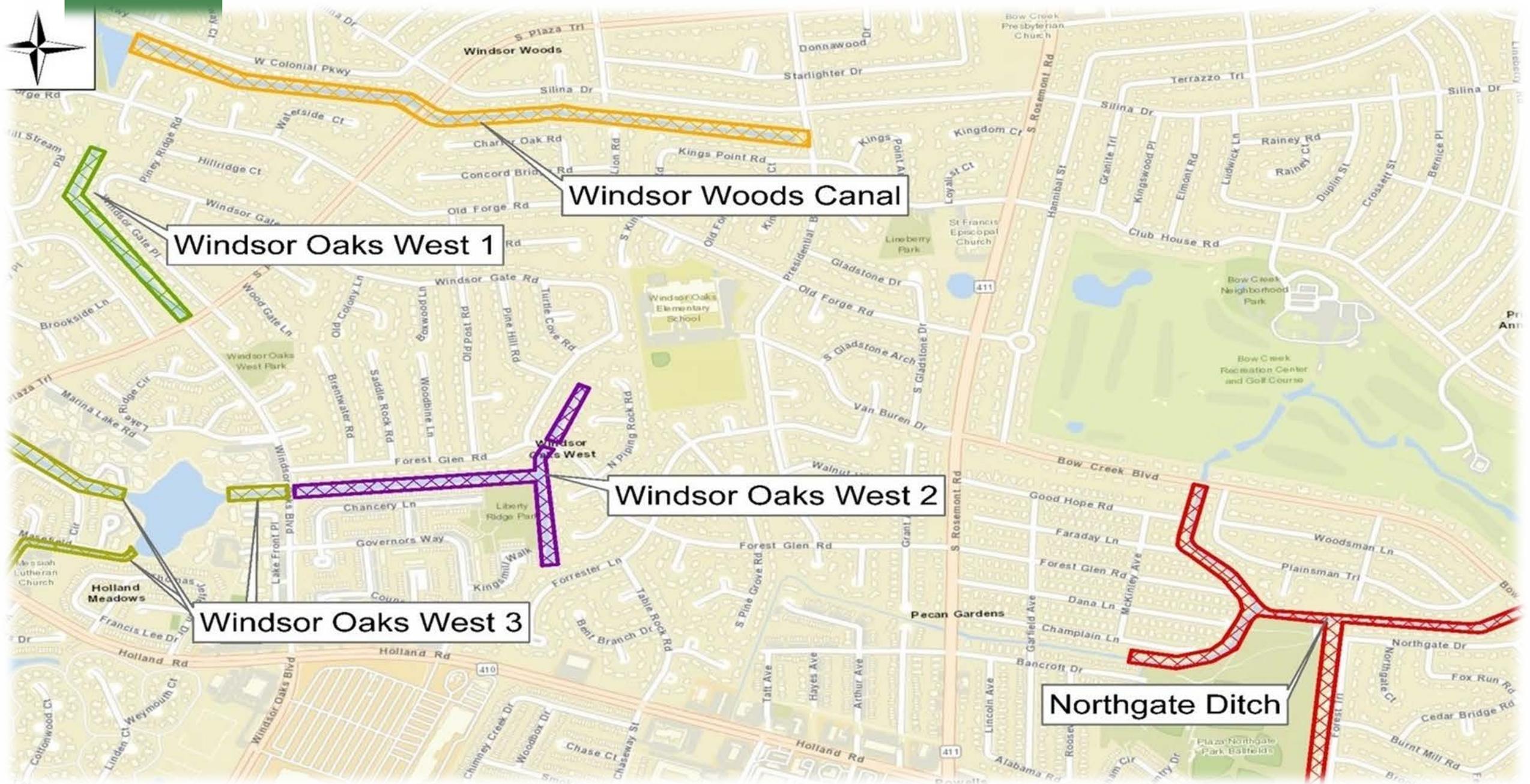
# WINDSOR WOODS, PRINCESS ANNE PLAZA & THE LAKES SECOND QUARTER 2019 ACTIVITIES

- Attended and Provided Program Update to Princess Anne Plaza Civic League
  - April 9th and May 14th
- Ongoing – Engineering Design for:
  - Club House Road Storm drain
  - The 3 FRP funded storm drain projects
  - Windsor Woods (Thalia Creek) Tide Gate
- Ongoing – Environmental Permitting for the Windsor Woods Tide Gate
- May 2019 – Received Final Draft Preliminary Engineering Report for Princess Anne Plaza & The Lakes
- May 28, 2019 – City Council Briefing



Web Page: [www.vbgov.com/windsor-woods](http://www.vbgov.com/windsor-woods)

Email Address: [papww@vbgov.com](mailto:papww@vbgov.com)



Windsor Oaks West 1

Windsor Woods Canal

Windsor Oaks West 2

Windsor Oaks West 3

Northgate Ditch

## WINDSOR OAKS WEST 3, CIP 7-415.039

- Dredge 2,100-ft canal to restore original drainage capacity
- Approximately 3,000 cubic yards of dredge material
- August 2019 – Begin Construction
- Construction Scheduled to be Complete – June 2020
- Estimated Total Construction Project Cost – \$600K



Avg. Pre-depth: 1.8'  
Avg. Post-depth: 4.95'



# DISCUSSION