



City of
Virginia Beach



theRippleEffect

VIRGINIA BEACH FLOOD PROTECTION PROGRAM

Windsor Woods, Princess Anne Plaza, and The Lakes





- 1A** Princess Anne Plaza –
- North London Bridge Creek Tide Gate, Pump Station, and Barriers

- 1B** The Lakes –
- South London Bridge Creek Channels and Gate
 - Flood Barriers
 - Holland Road Gate

- 1C** Windsor Woods –
- Pump Station
 - Flood Barriers
 - Thalia Creek/Lake Trashmore Improvements

-
- 2** Bow Creek Stormwater Park

LOCATION MAP



1C

Windsor Woods –
Flood Barriers, Pump
Station, and Thalia
Creek/Lake Trashmore
Improvements

1A

Princess Anne Plaza –
North London Bridge
Creek Tide Gate, Pump
Station, and Barriers

2

Bow Creek
Stormwater Park

1B

The Lakes –
Holland
Road Gate

1B

The Lakes –
South London
Bridge Creek
Channels and
Gate, and
Flood Barriers

2D

Princess Anne Plaza, The Lakes, Windsor Woods Procurement Overview



Princess Anne Plaza

- North London Bridge Creek Tide Gate, Pump Station, and Barriers

The Lakes

- South London Bridge Creek Channels and Gate
- Flood Barriers
- Holland Road Gate

Windsor Woods

- Pump Station
- Flood Barriers
- Thalia Creek/Lake Trashmore Improvements

TOTAL PROJECTS:
7 Projects

TOTAL ESTIMATED
COST PROJECTS:
\$158.7M

CONTRACT TYPE:
**One
Design-Build***

* Planned delivery method as of 4/21/2022 but subject to change. See www.VBGov.com/RippleEffect for updates.

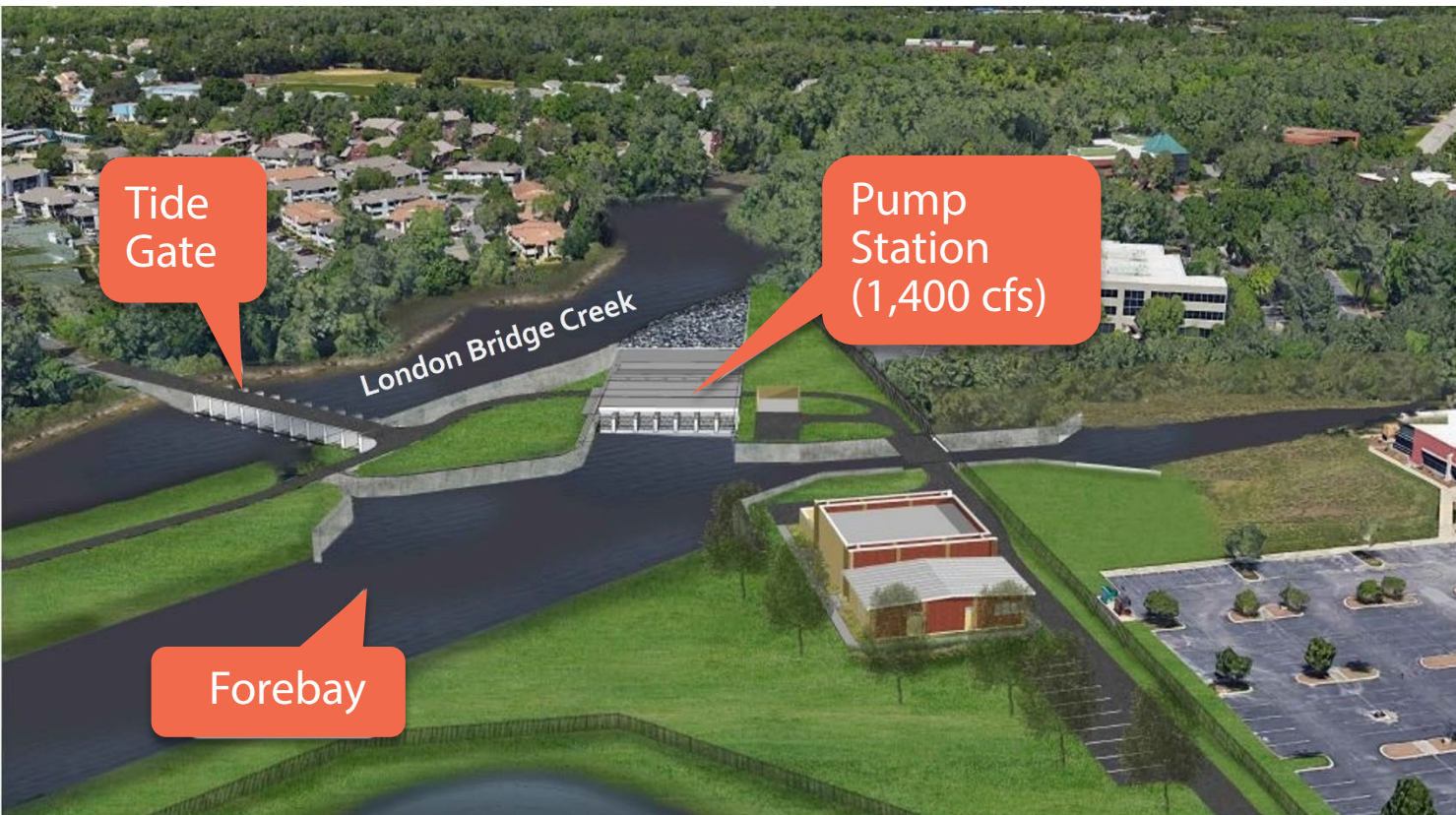
Princess Anne Plaza



Pump Station

North London Bridge Creek Tide Gate

Flood Barriers



1A Pump Station

- Large pump station (1,400 cfs)
- Property acquisition underway

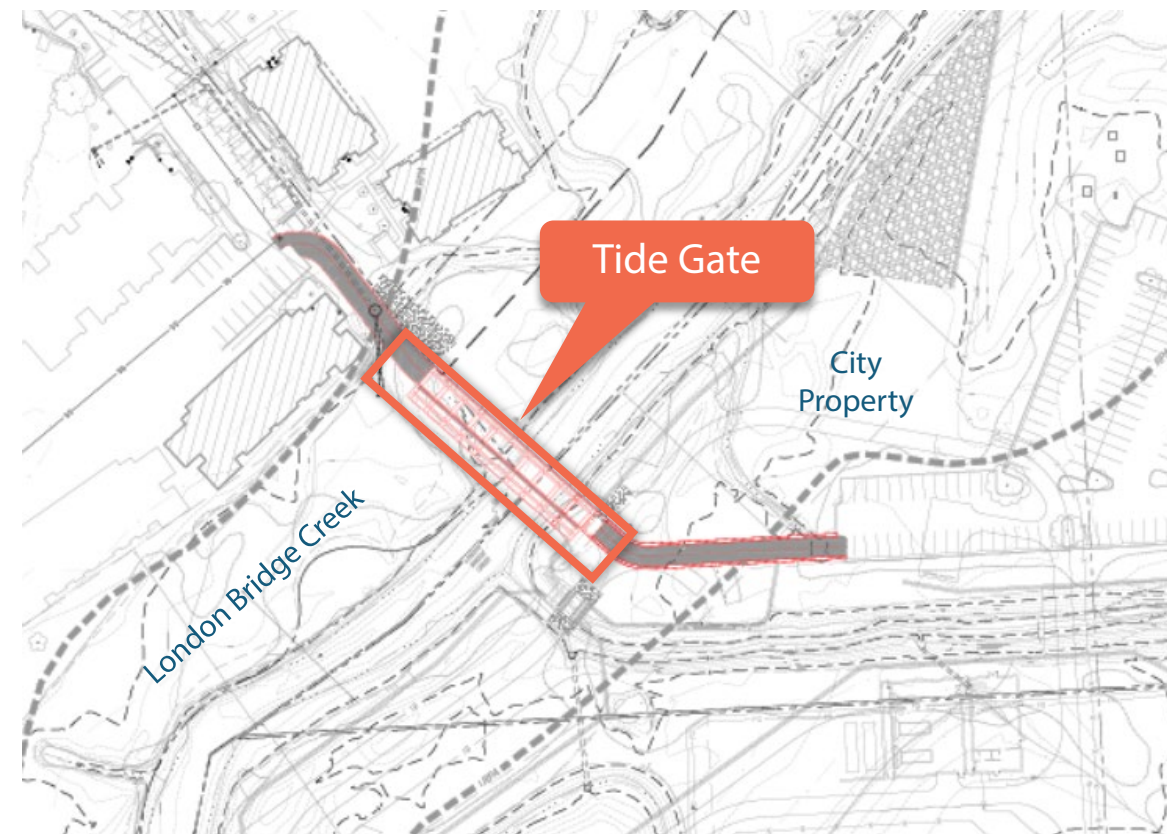
Princess Anne Plaza



Pump Station

North London Bridge Creek Tide Gate

Flood Barriers



1A Tide Gate Structure

- Access drives
- Ingress/egress required for West Side Gate access
- Sensors upstream and downstream to monitor water levels
- North and South London Bridge Creek Tide Gates must be permitted together

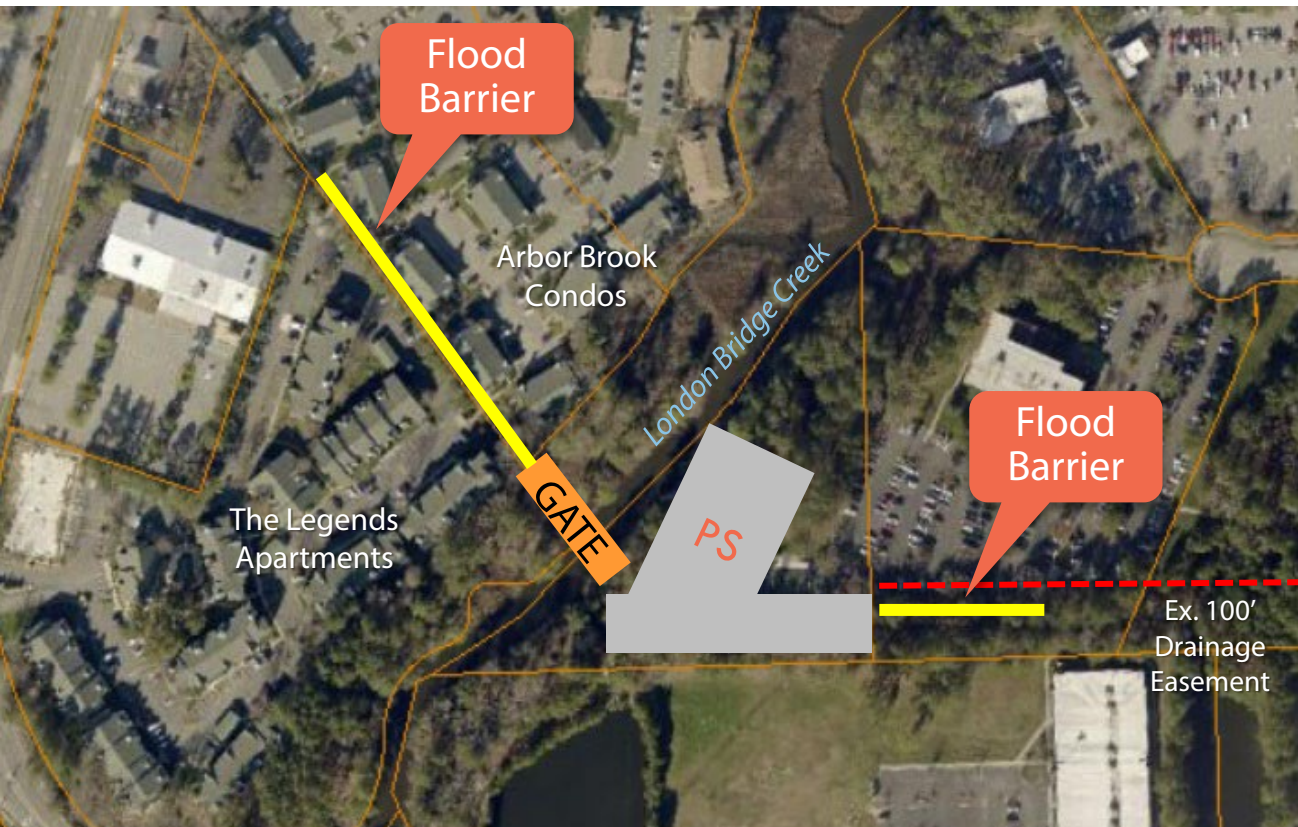
Princess Anne Plaza



Pump Station

North London Bridge Creek Tide Gate

Flood Barriers



1A Flood Barriers

- Low height wall/berm (average 1.5 to 2 feet high)
- Western barrier requires easements
- Eastern barrier—work to be completed within existing easement

The Lakes



South LB Creek Channels and Gate

Holland Road Gate

Flood Barriers



1B Channels and Gate

- Property acquisition underway
- North and South London Bridge Creek Tide Gates to be permitted together

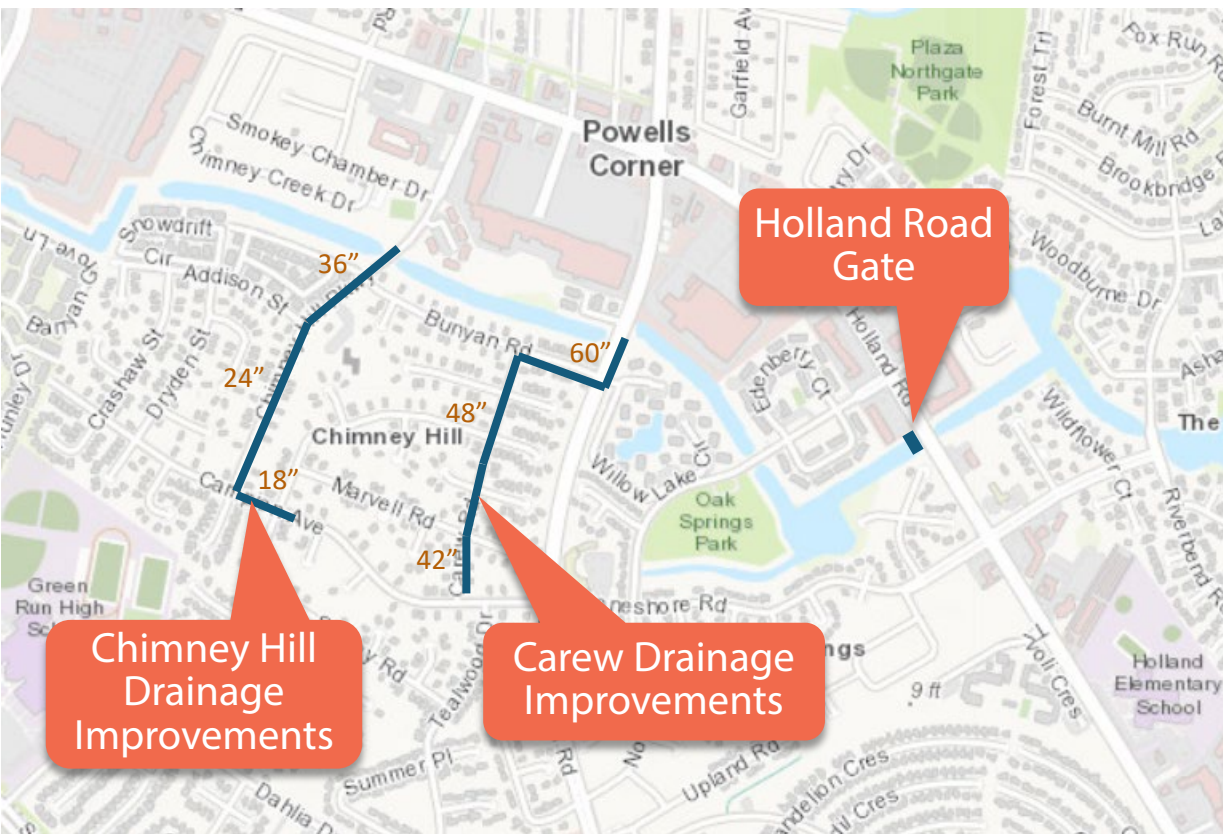
The Lakes



South LB Creek Channels and Gate

Holland Road Gate

Flood Barriers



1B Holland Road Gate

- Elevations on west higher than east
- Provides 40-60 ac-ft storage (depending on max water level 6-7 ft)
- Storm drain improvements
- Extensive public outreach required – perception of increased water levels a concern

The Lakes



South LB Creek Channels and Gate

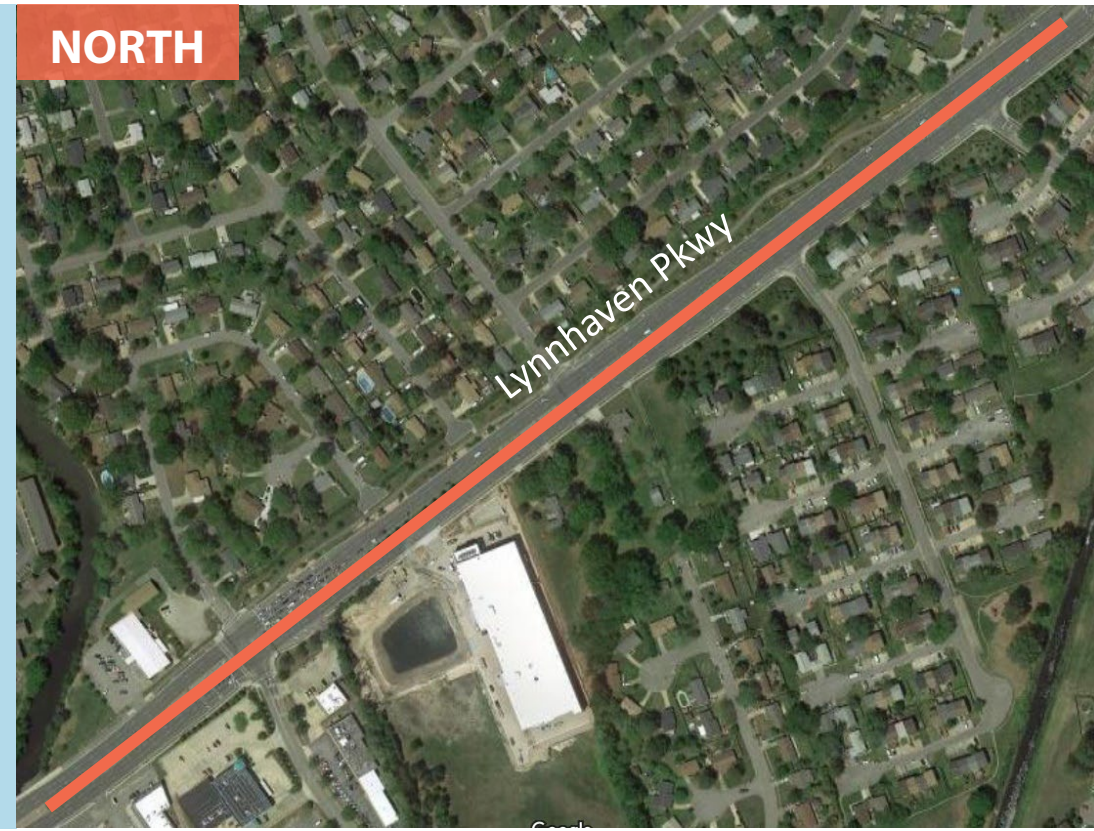
Holland Road Gate

Flood Barriers

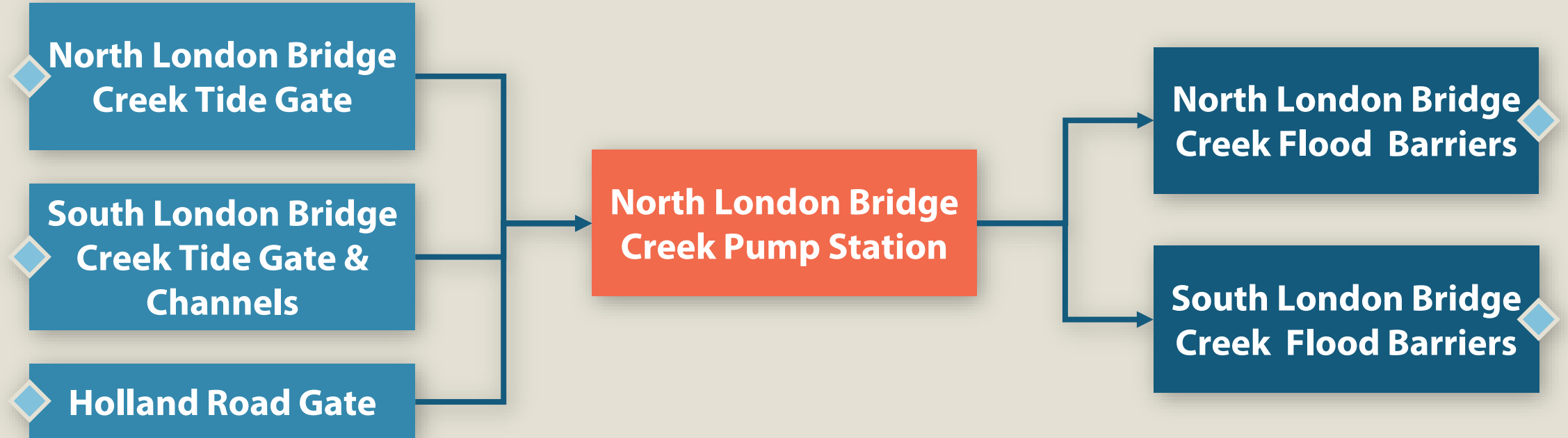


1B Flood Barriers

- Barriers along Lynnhaven Parkway
- Refined flood barrier analysis underway



Princess Anne Plaza/The Lakes Construction Sequence



Windsor Woods



Pump Station

Flood Barriers

Thalia Creek/Lake Trashmore Improvements



1C Pump Station

- 750 cfs pump station
- City-owned property
- Physical model complete
- Tide gate construction to begin summer 2022

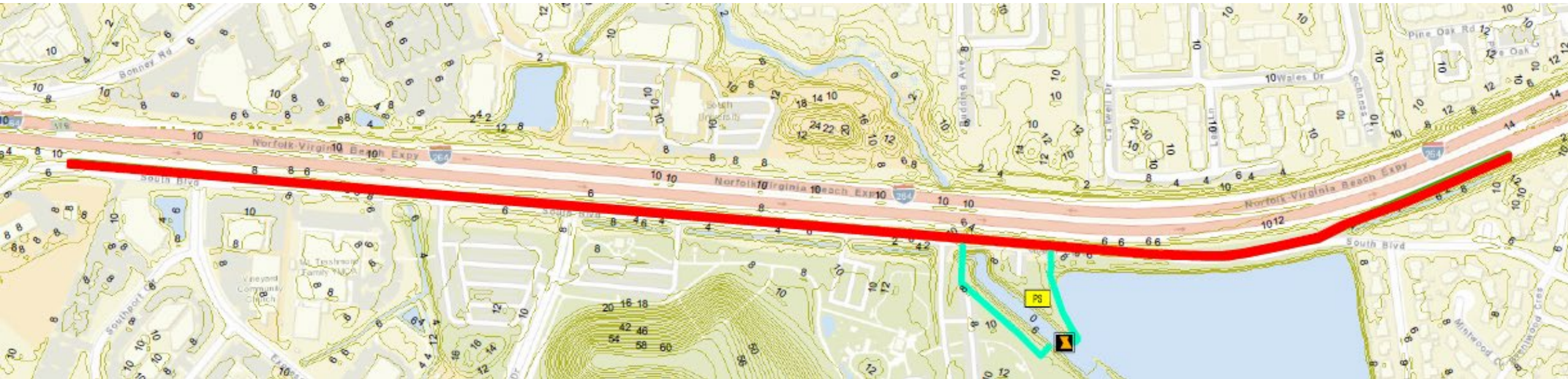
Windsor Woods



Pump Station

Flood Barriers

Thalia Creek/Lake Trashmore Improvements



1C Flood Barriers

- 4,000 LF
- Top elevation = 10.5 feet NAVD88 at pump station; 9.5 feet elsewhere
- Max barrier height ~ 3 feet (average height 1 to 2 feet)

Windsor Woods



Pump Station

Flood Barriers

Thalia Creek/Lake Trashmore Improvements



1C Thalia Creek/Lake Trashmore Improvements

- Two 12'x10' box culverts
- ~2,000 linear feet of dredging

Windsor Woods Construction Sequence



Princess Anne Plaza, The Lakes, Windsor Woods Procurement Summary



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Anticipated Procurement Timeline*

Princess Anne Plaza, The Lakes, Windsor Woods



DESIGN-BUILD RFQ
ADVERTISEMENT

December 2022



DESIGN-BUILDER
SELECTED

December 2023



CONSTRUCTION
START

Mid 2026



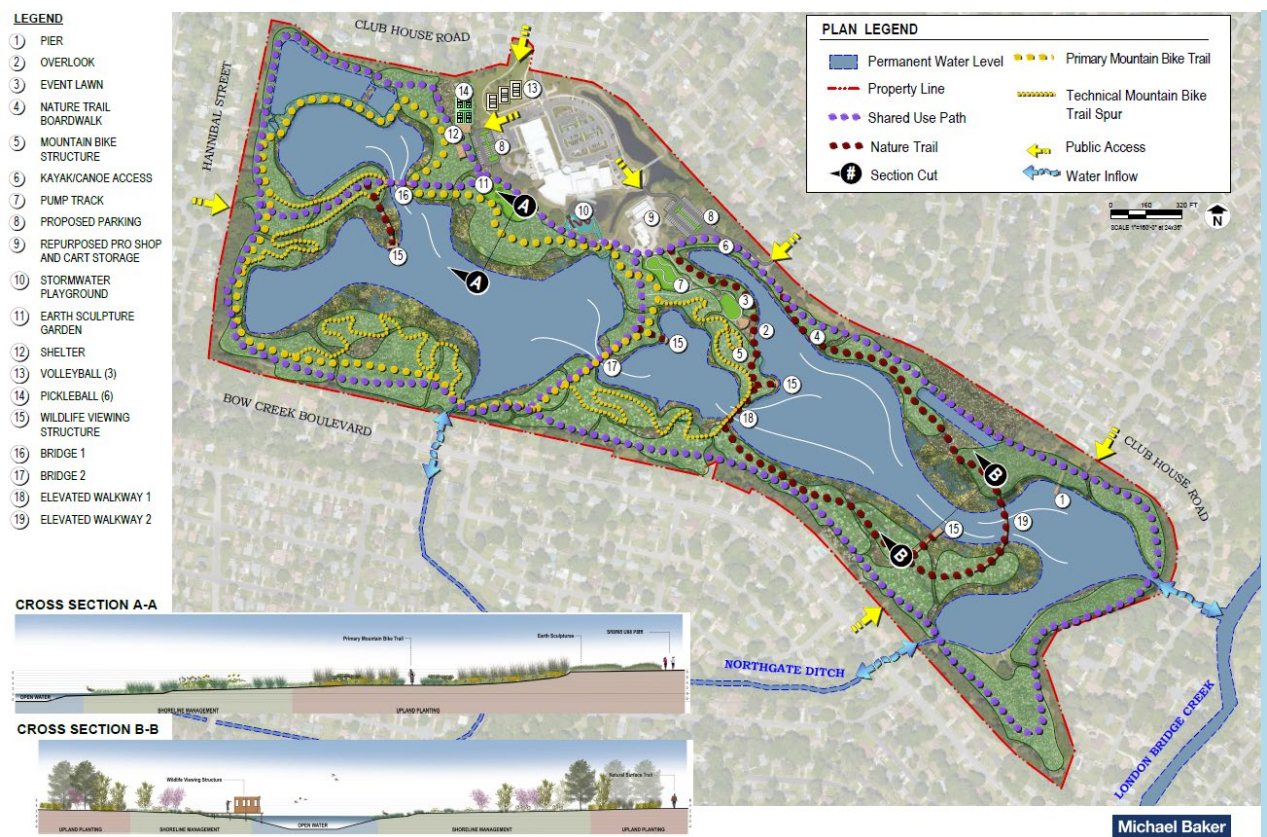
CONSTRUCTION
COMPLETION

Early 2031

* Anticipated timeline as of 4/21/2022 but subject to change. See www.VBGov.com/RippleEffect for updates.

2

Bow Creek Stormwater Park



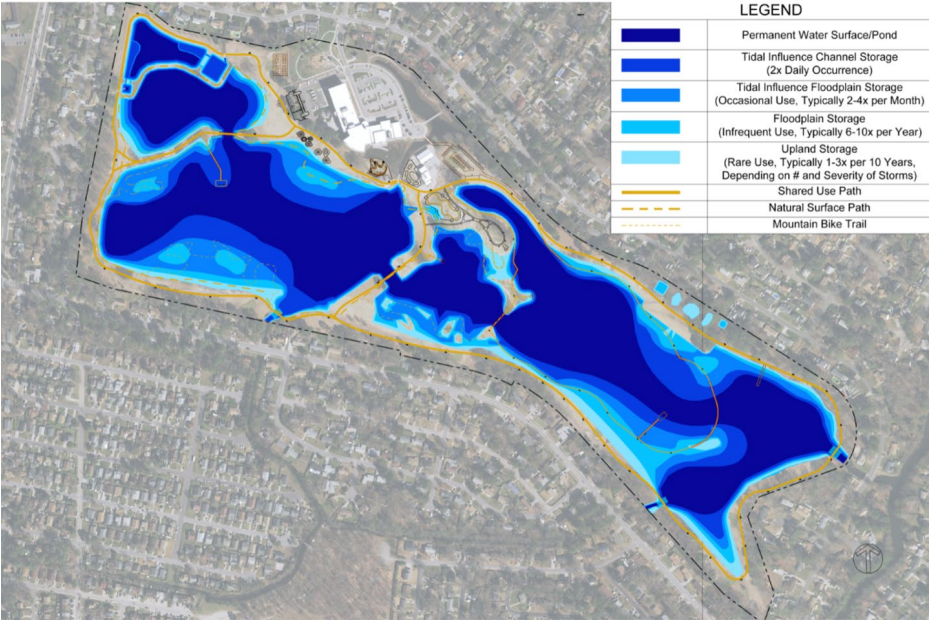
- Overall storage ~300 ac-ft
- 1.1 million cubic yards of excavation
- Multitiered storage
- Recreational amenities
- Constructed in two sections
- Maintain public access during construction

TOTAL ESTIMATED PROJECT COST:
\$83.6M

CONTRACT TYPE:
Design-Bid-Build*
 Designer Selected

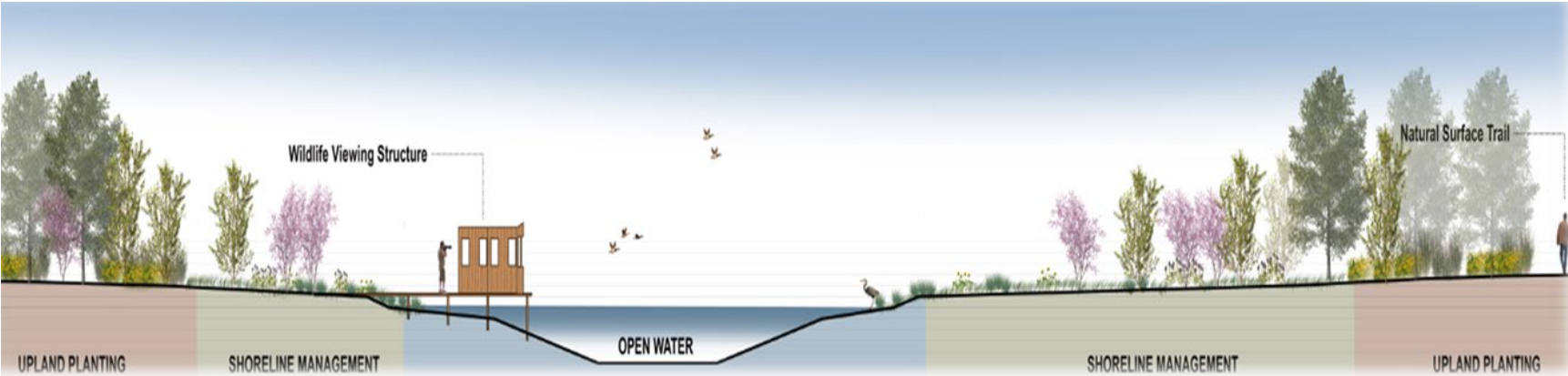
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Bow Creek Stormwater Park



2

- Multitiered storage
- Channel, floodplain, and upland



Bow Creek Stormwater Park



2 Construction Phasing (Sections I & II)

- 120 acres total (~60 acres each section)
- Work east to west
- Maintain existing drainage along Bow Creek
- Section I storage needed for North London Bridge Creek pump station operation
- Section I ~130 ac-ft
- Section II ~170 ac-ft

Anticipated Procurement Timeline*

Bow Creek Stormwater Park Section I



SECTION I
DESIGN START

Underway



ADVERTISE INVITATION
TO BID

April 2023



CONSTRUCTION
COMPLETION

Mid 2026

* Anticipated timeline as of 4/21/2022 but subject to change. See www.VBGov.com/RippleEffect for updates.

Anticipated Procurement Timeline*

Bow Creek Stormwater Park Section II



SECTION II
DESIGN START

Mid 2024



ADVERTISE INVITATION
TO BID

Early 2026



CONSTRUCTION
COMPLETION

Mid 2030

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