The Lakes, Princess Anne Plaza, and Windsor Woods Combined Drainage Project

Bow Creek Stormwater Park

October 3, 2019
Project Purpose – The Why?

- Repurpose golf course to provide flood mitigation and recreation
- Create stormwater storage areas to capture and maintain drainage/runoff
- Additional stormwater storage results in fewer flooded homes and streets
- Public open-space and park amenities for the community
- Provides a “Win-Win” for the community (flood mitigation and park facilities)
Stormwater Storage in TL-PAP

- Existing Storage is Inadequate
- Few Locations Available
- City Owned Property
  - Bow Creek Golf Course
  - Plaza Northgate Park Ball Fields, etc.
- Private Property
  - 376 parcels
  - $120M
- Off-Site Storage
A Collaborative Process

- Initially, six schematic concepts were developed involving Public Works, Parks & Recreation, and Planning Departments.

Six Schematics → Three Initial Concepts → Concept Summary
Preliminary Concept Characteristics

- Excavated and elevated storage
- Greenway
- Multi-purpose playing field
- Mountain bike trails
- Skatepark features
- Pickleball courts
- Sand volleyball courts
- Overlooks and wildlife viewing blinds
- Interpretive stormwater playground
- Sculptures
- Shade shelter
- Nature/interpretive trails

“Its goal is to establish a unique identity for the entire Virginia Beach park system, where individual park components relate to each other as well as to the City’s park system as a whole.”

Virginia Beach Parks and Recreation Design Standards Manual 2016
Public Works, Parks & Recreation are Seeking Citizen Input and Comments on the Bow Creek Stormwater Park

Table 1  Concept Plan, Active Recreation & Passive Recreation
Table 2  Before and After Views of the Park
Table 3  Shared Use Paths, Nature Trails & Mountain Biking
Table 4  Buffer Landscapes, Stormwater Storage, & Project Phasing
Table 5  The Combined Drainage Project Flood Mitigation Infrastructure
Table 6  Project Area Maps
Table 1 Bow Creek Stormwater Park Concept

Concept Summary
- Storage Volume (Excavated+Elevated): 319 Ac/ft
- Shared Use Path / Greenway Length: 3.1 miles (sk)
- Mountain Bike Single Track: 2.9 Miles
Table 1 Active Recreation

**SHARED USE PATH/GREENWAY**

- 10’-12’ width to accommodate multiple user types
- Circuit within and around perimeter of site
- Goal to accommodate 5K events with limited intersections
- Paved, accessible surfaces with water crossings

**NATURE TRAILS**

- 3’ - 5’ natural surface, boardwalks, or rustic structures
- Located in both dryer upland meadows and within wetlands
- Integrated into berms and overlooks

**MOUNTAIN BIKE FACILITY**

- Will parallel greenway in constrained locations
- Will be single track, involving both natural surfaces and structures
- Challenge to maintain trail segregation—will involve some crossing locations

**SKATE PLAZA**

- Includes skate spots
- Spectator seating
- Zoned by varying user skillset

**COURTS AND FIELDS**

- Pickleball
- Volleyball
- Stormwater Playground
- Multi-Purpose Field
Table 1 Passive Recreation

**OVERLOOKS**
- Primary overlook placed at high point within park
- Long range views beyond site
- Secondary overlooks will be integrated into boardwalks

**BLINDS AND VIEWING STATIONS**
- Opportunity for wildlife viewing
- Incorporation into nature-based education
- Place of rest along trail system

**EDUCATIONAL**
- Location for nature-based education
- Destination for schools or camps
- Informative and interpretive signage opportunities

**SHELTERS**
- Location for events
- Provides shade for resting
- May incorporate picnic tables
Table 2 Before and After Views

1. BEFORE - VIEW FROM PRO SHOP LOOKING NORTHWEST
   AFTER

2. BEFORE - VIEW FROM MAINTENANCE SHEDS LOOKING SOUTHEAST
   AFTER

3. BEFORE - VIEW FROM DRIVING RANGE LOOKING NORTHWEST
   AFTER

LOCATION MAP
Table 3 Mountain Biking

- Mountain Bike Single Track
  2.9 Mile Loop
- Mountain Bike Pump Track
- Overlook
Table 3 Shared Use Paths and Nature Trails
# Table 4 Stormwater Storage Characteristics

## Site Character

### Accommodating Flooding

[Images of Trinity River Park in Dallas, Texas before and during storm event]

## Flood Storage Frequency

### Channel Storage

The "Channel Storage Zone" will accommodate tidal influences and smaller storm events.

- Water elevation here fluctuates between 1 and 2 feet daily.

### Floodplain Storage

The "Floodplain Storage Zone" will vary in grade and shallowness, between 50 and 100 feet horizontally from the top of bank and will accommodate larger storm events.

- Water elevation here may reach up to 2 - 4 feet bi-monthly.

### Upland Storage

The "Upland Storage Zone" is intended to remain dry a majority of the time. A combination of elevated natural surface trails and structures (boardwalks, punchcons, etc.) are suggested here. Because the area does not remain saturated with water, trees can be planted within the perimeter areas of this zone.

- Water elevation here may reach up to 4 - 5 feet once every 10 years.

### Legend

- Tidal Influence Channel Storage (1'-3' depth)
- Upland Storage
- Floodplain Storage (2'-3' depth)
- Natural Tidal Influence Floodplain Storage (1'-2' depth)
- Natural Tidal Influence Channel Storage (1'-2' depth)

### Concept Plan with Varying Levels of Stormwater Storage

[Map with legend and varying storage levels]

- Boardwalk
- BreachWall: 4' Earthen Berm
- Bow Creek Floodplain Expansion (width varies)
- Excavated Storage
- Shared Use Path: Existing Grade
- Base Flow: Average Water Level
Table 4 Landscape Buffers

SITE LANDFORMS

- Landscape berms define waterways, delineate space, and create visual interest along trails and within use areas
- Differences in elevation offer variety to mountain bikers

LANDSCAPE BUFFER ENHANCEMENTS

- Existing landscape buffer between residences and park will be enhanced with additional plantings.

CASE STUDY: HUDSON LONG DOCK PARK (BEACON, NEW YORK)
CASE STUDY: HUNTER POINT OVERLOOK (QUEENS, NEW YORK)
CASE STUDY: CHICAGO BOTANICAL GARDENS (CHICAGO, ILLINOIS)
A sequenced period of time working is phased by “Section”

**Why Phase the Construction?**

- Significant construction project
- Costly/expensive if entire site is worked on at one time
- Minimize impacts to adjacent neighborhood
- Allows for a manageable work area, material balance, and timely site stabilization
- Intended to provide park users with partial access to recreation amenities during construction
Implementation

- **Schedule**
  - Begin design in FY20
  - Initiate construction in FY23
  - Close golf course in FY23

- **Construction to begin on east side and work west**
  - Work to be phased based on available funding
  - Passive recreation opportunities in non-construction areas

- **Buffer zone (around perimeter) is approximately 80 feet**
Table 5 The Combined Drainage Project
Flood Mitigation Infrastructure

Recommended Infrastructure Improvements
(Phase I – $225M)
Public Works, Parks & Recreation, and Michael Baker staff are available to further discuss the Combined Drainage Project & the Bow Creek Stormwater Park

**Table 1** Concept Plan, Active Recreation & Passive Recreation

**Table 2** Before and After Views of the Park

**Table 3** Shared Use Paths, Nature Trails & Mountain Biking

**Table 4** Buffer Landscapes, Stormwater Storage, & Project Phasing

**Table 5** The Combined Drainage Project Flood Mitigation Infrastructure

**Table 6** Project Area Maps
THANK YOU
General Contract Considerations

- Work Hours: 9 am - 4 pm
- Dust Suppression & Noise Attenuation
- Construction Access to Rosemont Road via Country Club Circle
- City Contract (Public Bid)