



Lake Accotink – Managed Wetlands Discussion

Item Type: Information

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What is a wetland?

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season.

- Wetlands may support both aquatic and terrestrial species.
- Types of wetlands
 - Tidal vs Non-tidal
 - Estuary vs Freshwater
 - Forested Wetland (500 acres at HMP)
 - Coastal Plain Depression Swamps
 - Scrub/Shrub Wetland
 - Buttonbush wetlands
 - Emergent Wetlands
 - Hemi-marsh, emergent marsh etc.



Benefits of Wetlands

Wetlands act as sponges, temporarily storing flood waters and releasing them slowly, thus reducing flood damage.

Wetlands create tremendous recreational, research, and tourism opportunities.

Wetlands act as "nature's kidneys" by removing pollutants, such as nutrients and sediments, from water flowing through them.

Wetlands are considered "nature's nurseries" by providing critical habitat for fish, wildlife, and waterfowl.

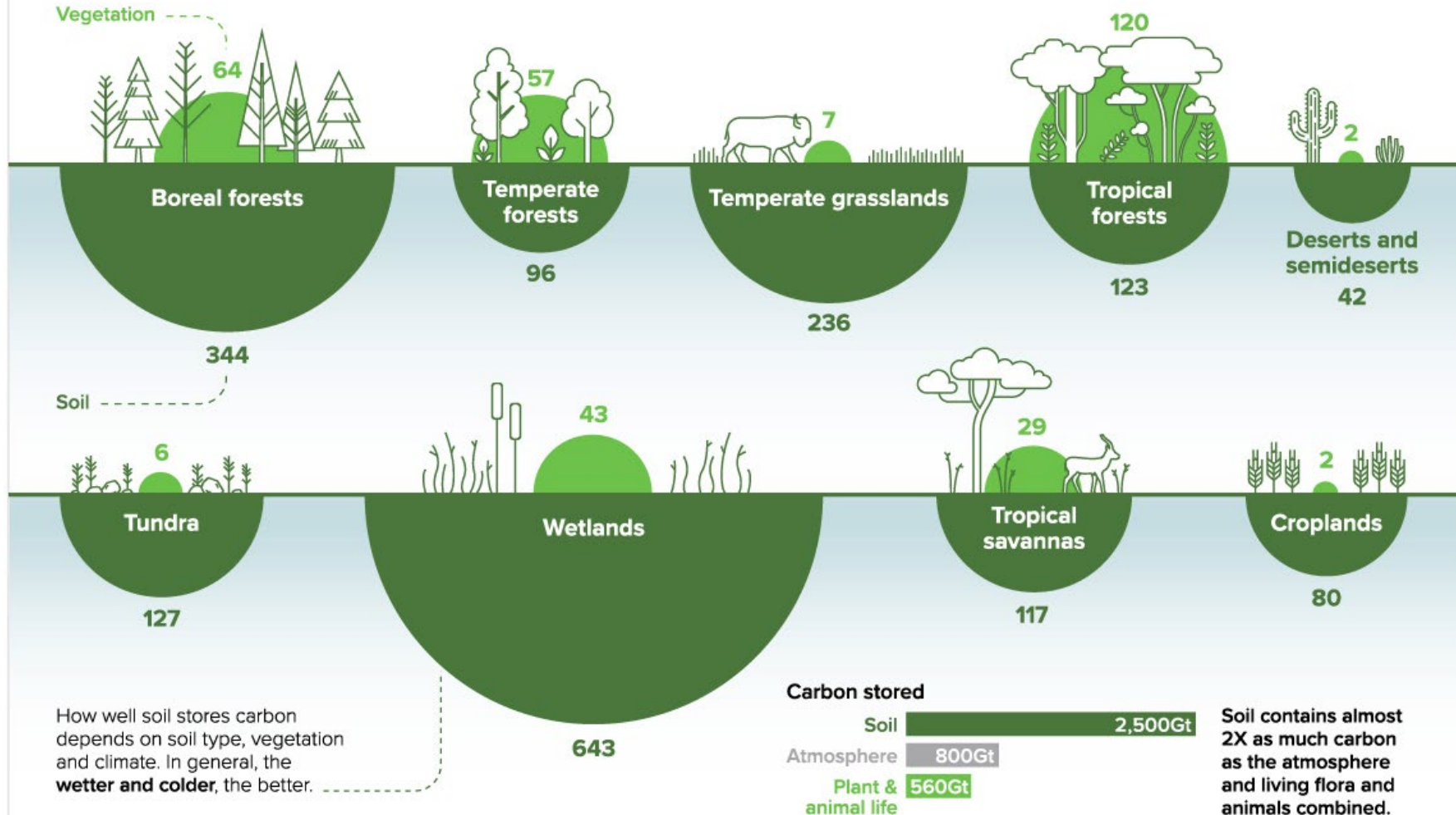
Wetlands provide protection from storms and ice by absorbing wave energy and buffering shorelines against erosion.

Carbon Storage

Tonnes of Carbon

The world's forests absorb around **15.6 gigatonnes** of CO₂ each year. That's around 3X the annual CO₂ emissions of the United States.

However, around **8.1 gigatonnes of CO₂** leaks back into the atmosphere due to deforestation, fires and other disturbances.

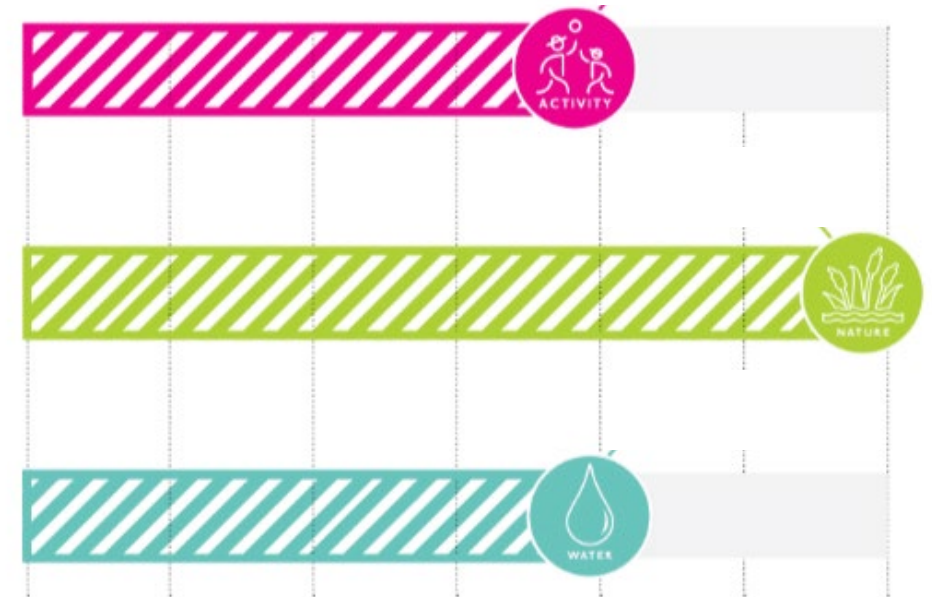


Average stored carbon in tonnes per hectare at a ground depth of one meter
Sources: IPCC; NASA

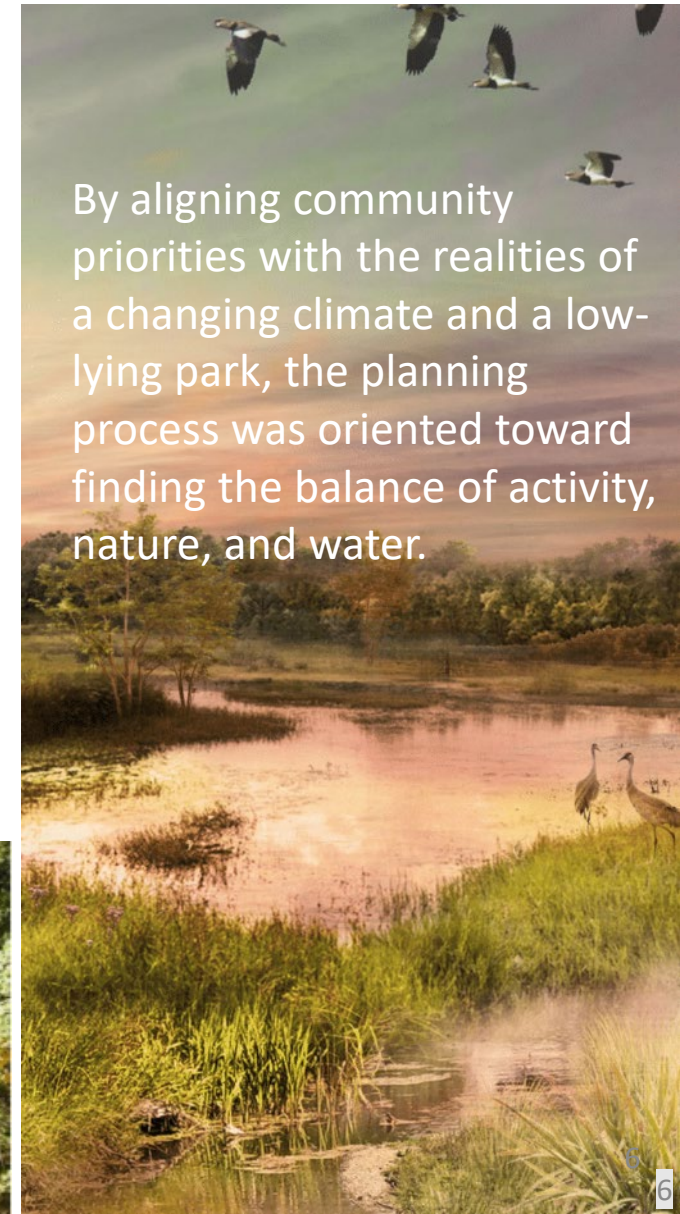
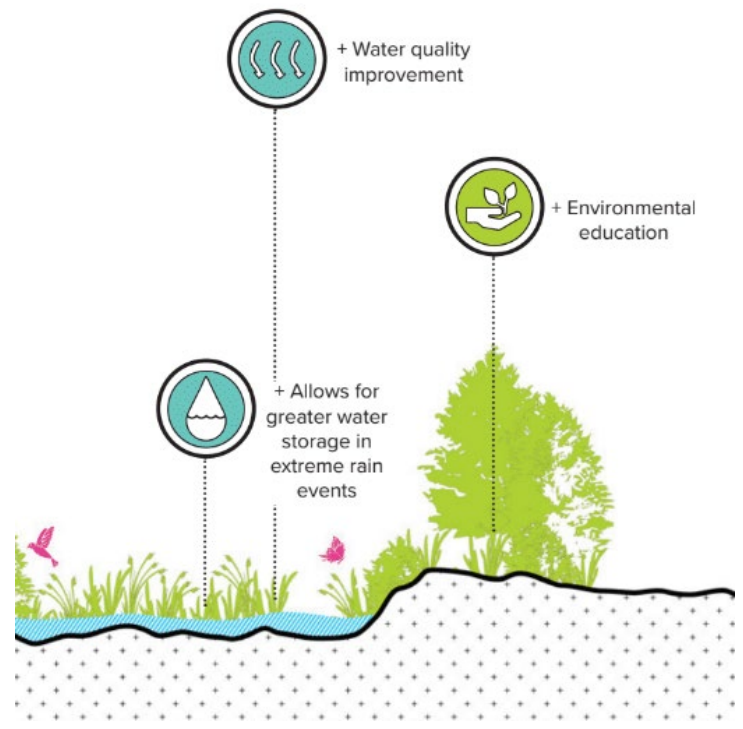
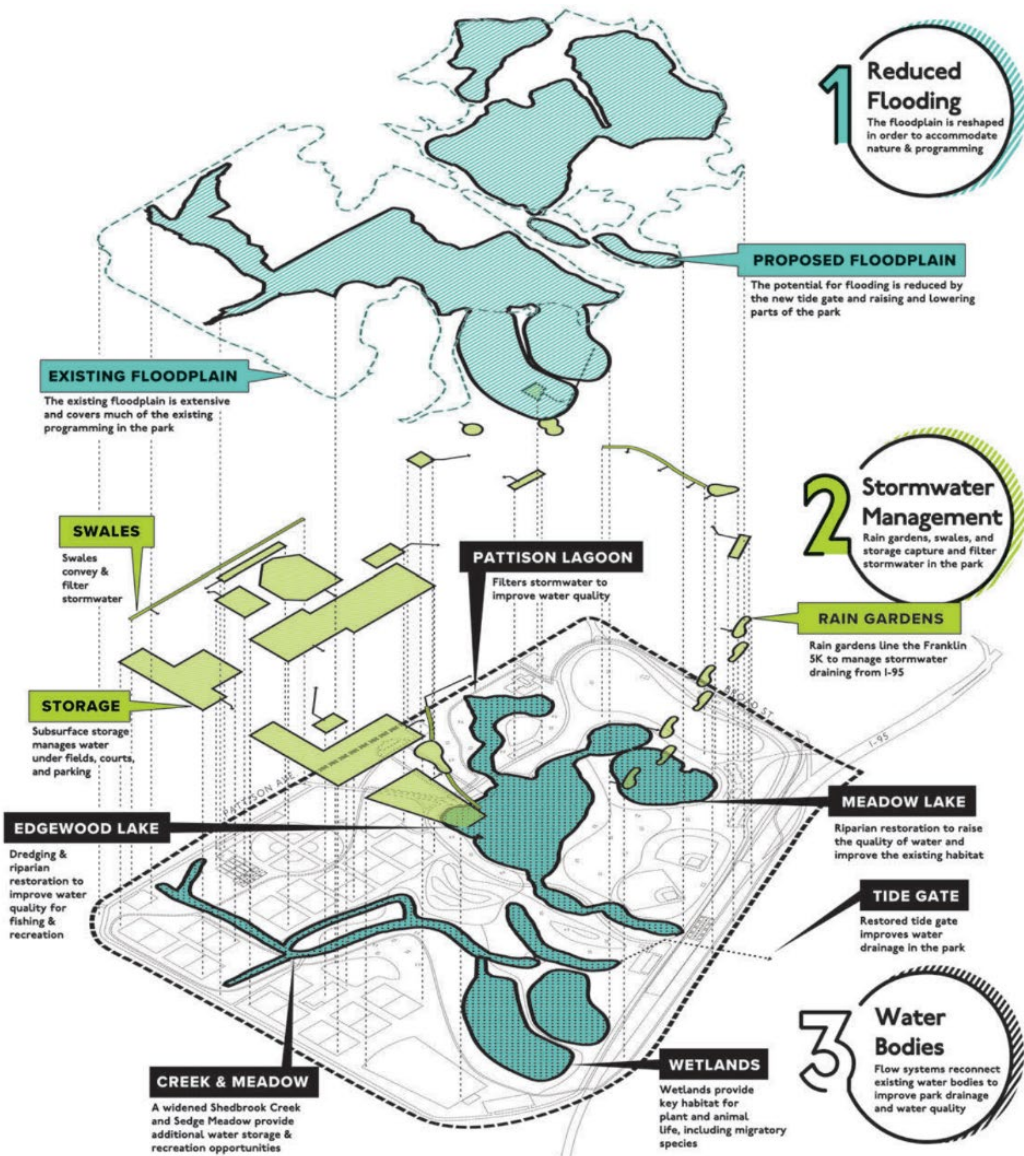
Wetland Park Precedents

- Most seek a balance of **water**, **nature**, **activity** to create a holistic park that meets the needs of its users and the environment.
- Improve Stormwater Management
- Enhanced connectivity and trails
- Create and enhance habitat areas
- Increase access to nature and programming for an immersive nature experience

FINDING THE BALANCE

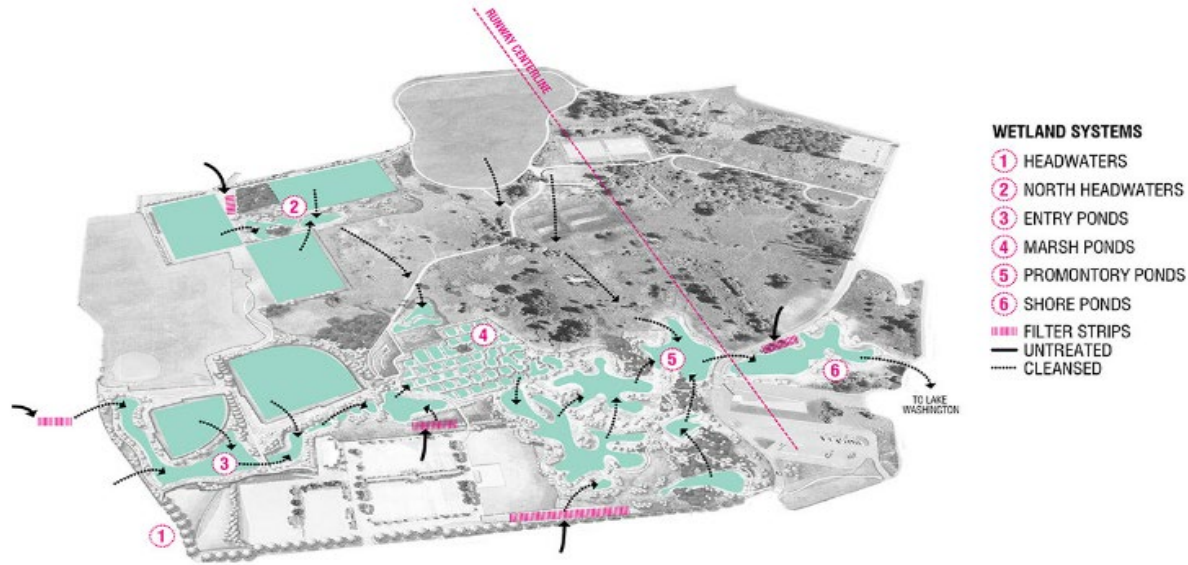


Examples: FDR Park, Philadelphia

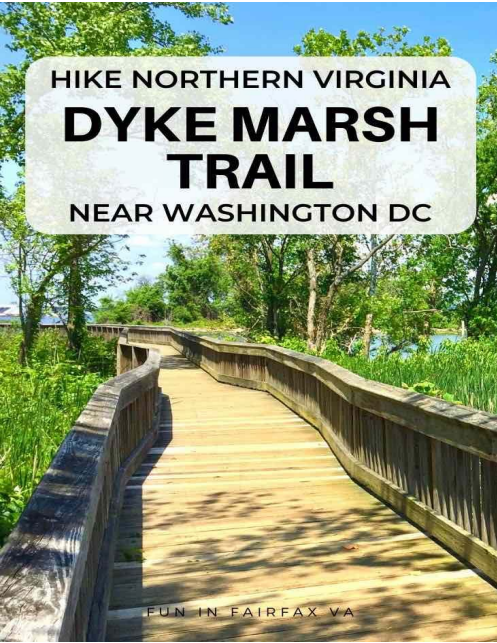


By aligning community priorities with the realities of a changing climate and a low-lying park, the planning process was oriented toward finding the balance of activity, nature, and water.

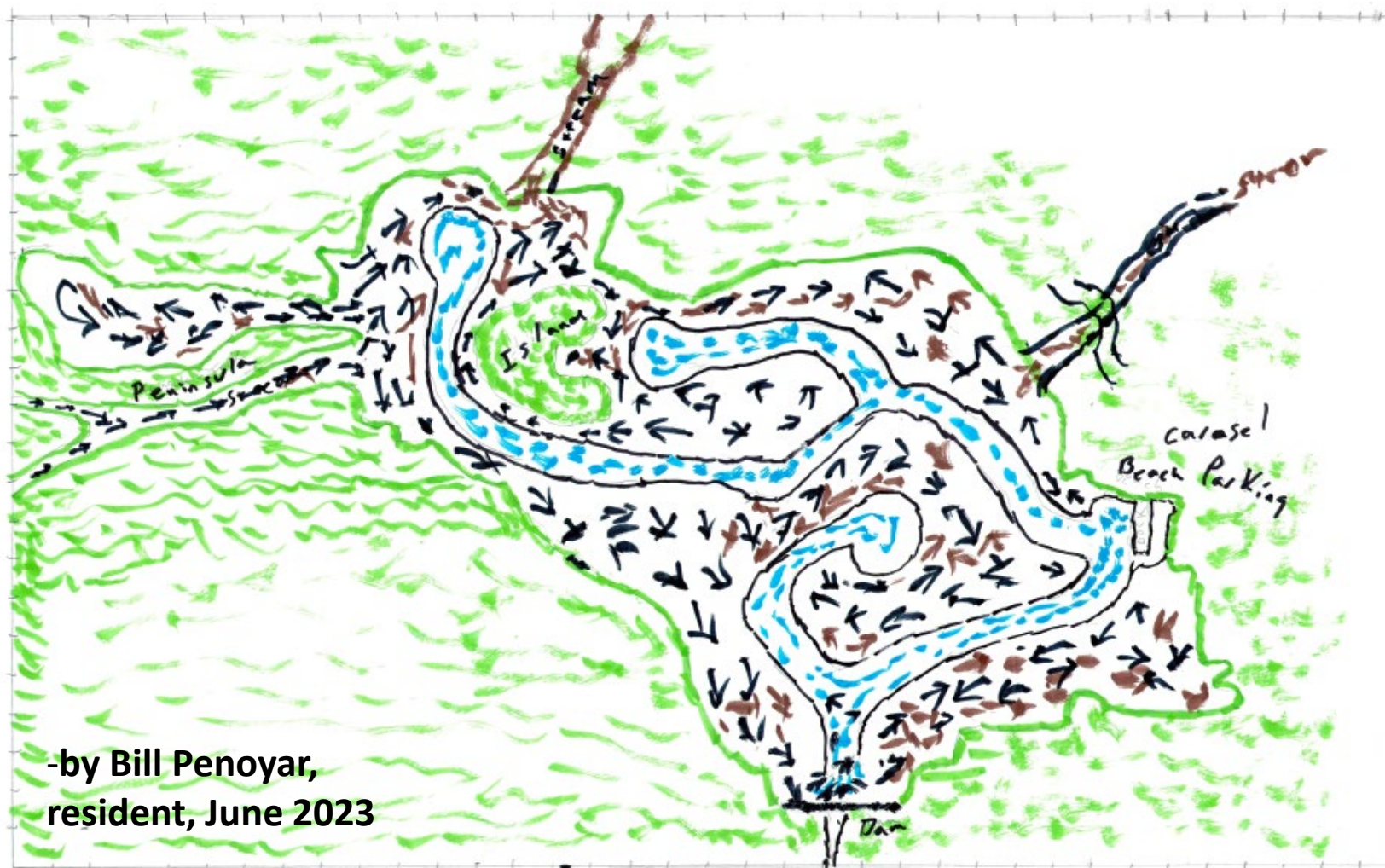
Examples: Magnuson Park, Seattle



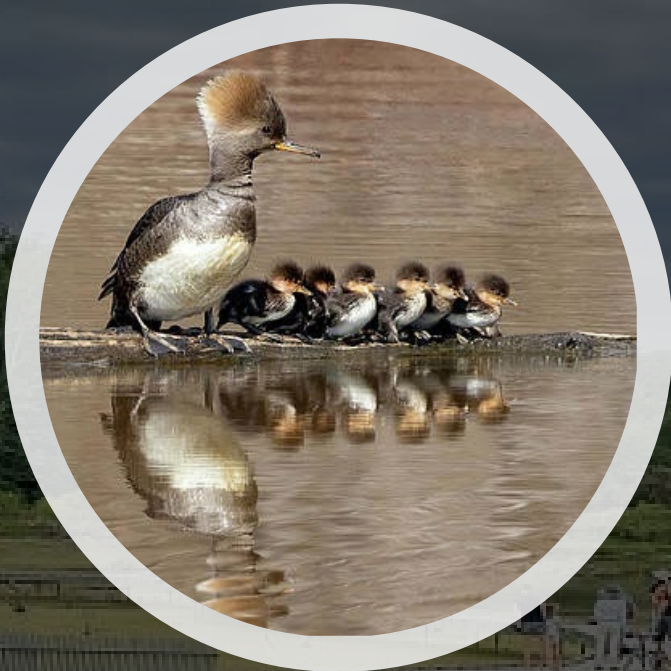
Examples: Dyke Marsh, Fairfax County, VA



Concept Drawing – Potential Kayaking Trails in a Managed Wetland at Lake Accotink Park



-by Bill Penoyar,
resident, June 2023



Examples:
Huntley Meadows Park



Huntley Meadows Park

- ▶ 1,556 acres (forests, freshwater wetlands, meadows)
- ▶ Over 200,000 visitors a year
- ▶ The Central Wetland is the largest non-tidal freshwater wetland in Northern Virginia
- ▶ State Rare Plants, Animals and Natural Communities



Huntley Meadows Park is Managed for Natural Resource Protection and Recreation

- Park split into 2 separate sides of the park
- Northwestern side focuses on active recreation along the Hike/Bike trail
 - Hiking
 - Biking
 - Jogging
- Southeastern side focuses on passive recreation (includes the Central Wetland)
 - Birding
 - Wildlife photography
 - Environmental Education
 - Over 400 programs and 10,000 students/year



Huntley's Hydrology

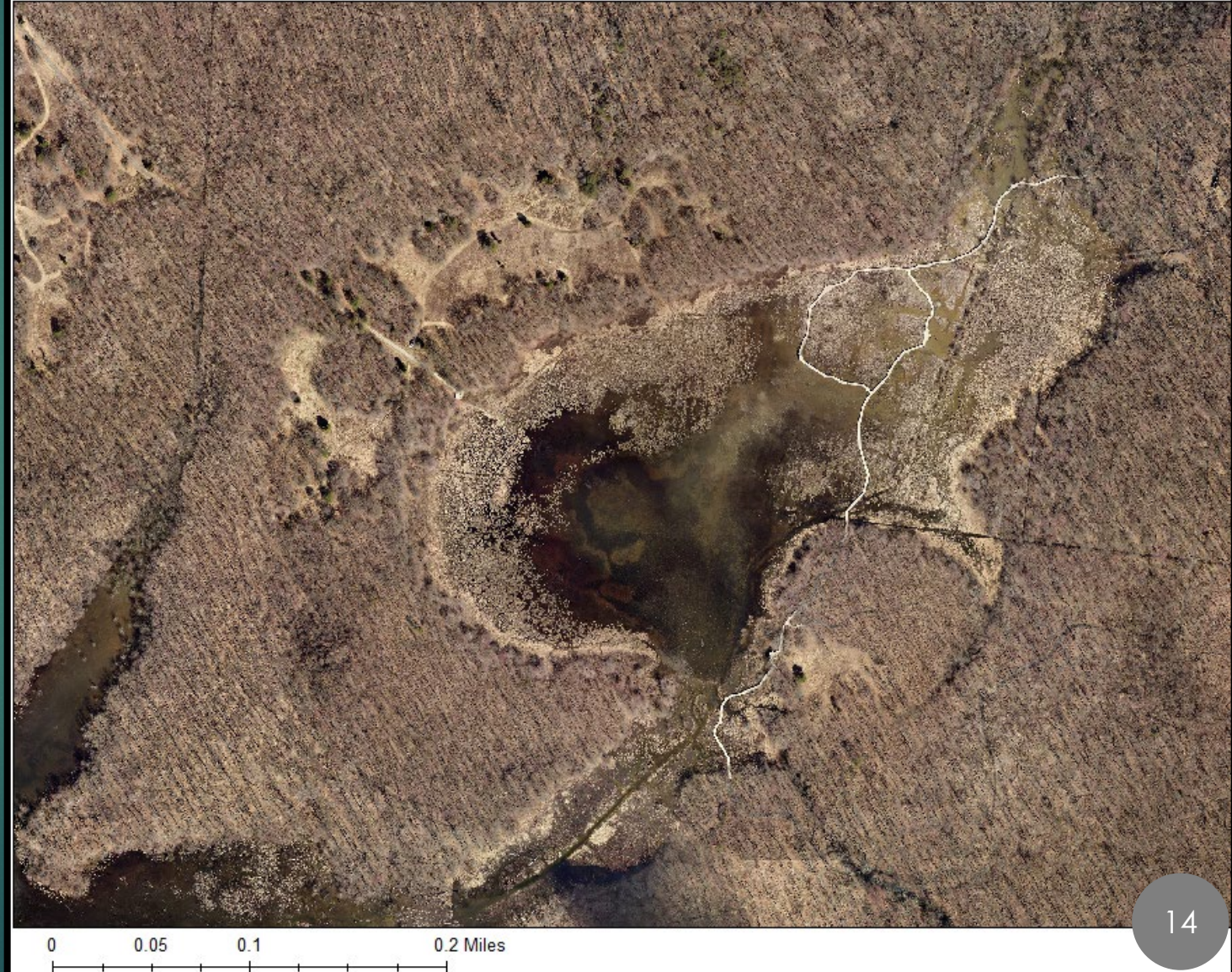
- ▶ Huntley is very flat
 - ▶ < 15' change in elevation from north to south boundaries - over 1 mile distance
 - ▶ Small berm used to inundate a large area
- ▶ Dogue creek creates the western boundary
- ▶ Barnyard run runs through the middle of the park
- ▶ Over 700 acres of wetlands (almost ½ of the park)



Huntley Meadows Central Wetland

- ▶ The Central Wetland was originally 25 acres with a watershed of ~ 1 mi²
- ▶ In the 1980's water quality was pristine
 - ▶ Mayflies, stoneflies etc.
- ▶ Rare marsh birds bred annually
- ▶ Degradation occurred in 1987
- ▶ Construction in 2013

Huntley Meadows Central Wetland 2013



Why Did The Central Wetland Need a Restoration Project?

In 1987, 4" - 20" of silt deposited in the wetland from a construction project

1985



2005

Following silt deposition conditions deteriorated:

- Plant diversity decreased
- Aquatic diversity decreased
- Wildlife diversity

Breeding History for Rare Birds at Huntley Meadows Park 1985 – 2000

(except for '09, none of these birds have bred in the central wetland since '99 – this project should bring them back)

	State Rank	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Pied-billed Grebe	S2	X	X	X	X	X	X	X	X								
American Bittern	S1					X	X		X						X		
Least Bittern	S3	X	X	X	X	X	X	X	X								
Yellow-Crowned Night Heron	S3	X	X	X	X	X	X	X	X	P				X			
King Rail	S2	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Common Moorhen	S1			X													



Virginia Natural Heritage Program Ranking System

S1 – Critically imperiled

S2 – Imperiled

S3 – Rare

“Huntley Meadows Park is the Middle Atlantic Coast Region’s ranking freshwater marsh.”

American Bird Magazine, 1989, volume 43

Considering Design Goals

To be successful, this project must:



* The final site and management plans will strive to connect all four goals *

Increase Biodiversity – Primary Goal

Target Wildlife Species – Secondary Goal

BUILDERS (year-round):

BREEDERS (spring/summer):

FEEDERS (fall/winter):

Keystone species needed to build a wetland ecosystem

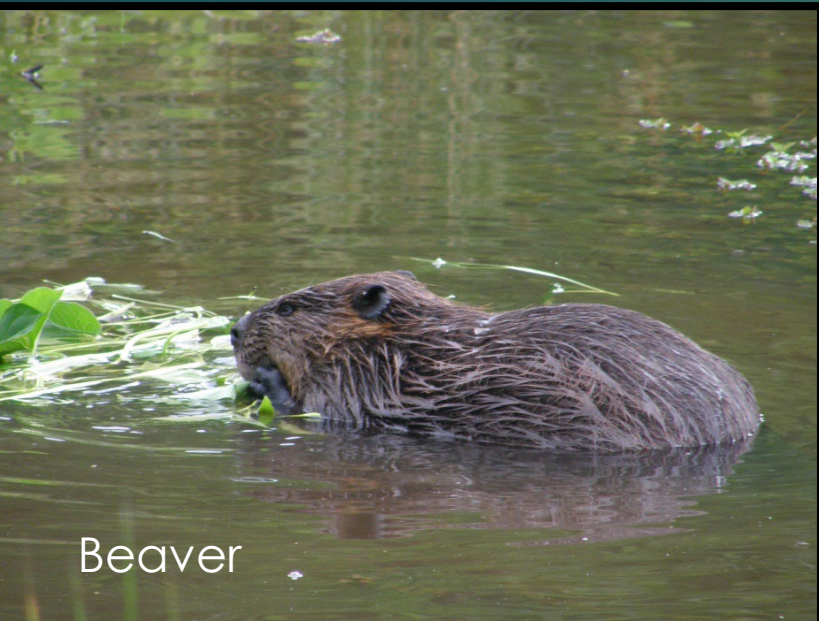
Locally imperiled/vulnerable species with breeding habitat that Huntley could provide

Locally imperiled/vulnerable species with feeding habitat that Huntley could provide

- Beaver
- Muskrat
- Frogs
- Fish
- Crayfish
- Aquatic Insects
- Mollusks

- Waders
(Rails, Bitterns, Night Heron)
- Waterfowl
(Grebe, Black Duck)
- Reptiles & Amphibians
(Spotted Turtle, Green Tree Frog)

- Dabbling Ducks
(Teal, Pintail, Shoveler, Gadwall, Wigeon)



Beaver



King Rail



Wood Ducks

Huntley Meadows Wetlands Restoration



Huntley Meadows Wetlands Restoration



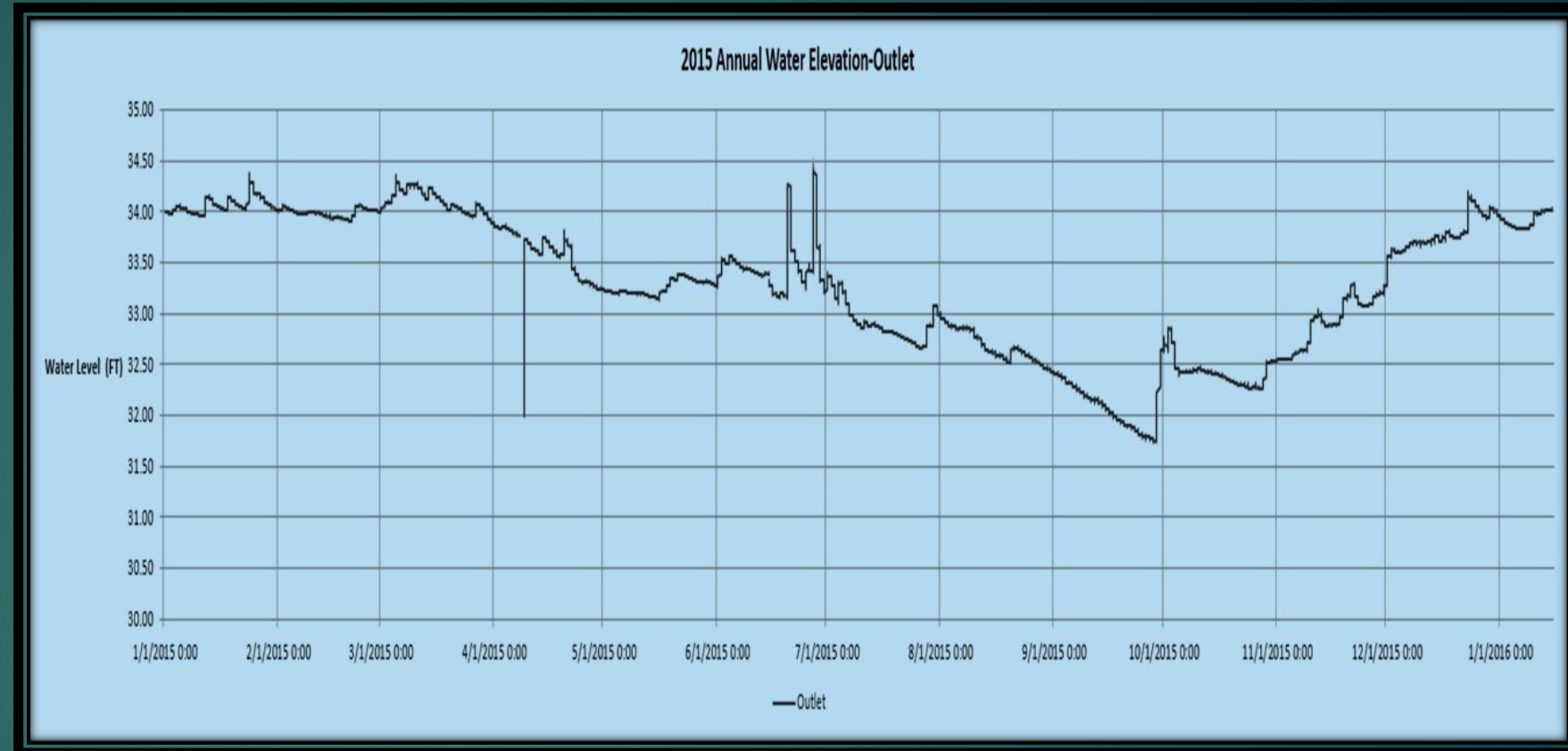
Managing Wetlands

- Create and follow an annual Wetland Management Plan
- Adaptability is important
- Assess annually and adjust following years plan
- Water level management (amount and timing) influences vegetation to create Wildlife Habitat
 - Slow drawdowns increase plant diversity
 - Fast drawdowns favor a few plant species
- Low water during growing season will increase vegetation –cover & diversity
- High water during growing season will suppress annual and woody vegetation



Annual Hydrologic Regime

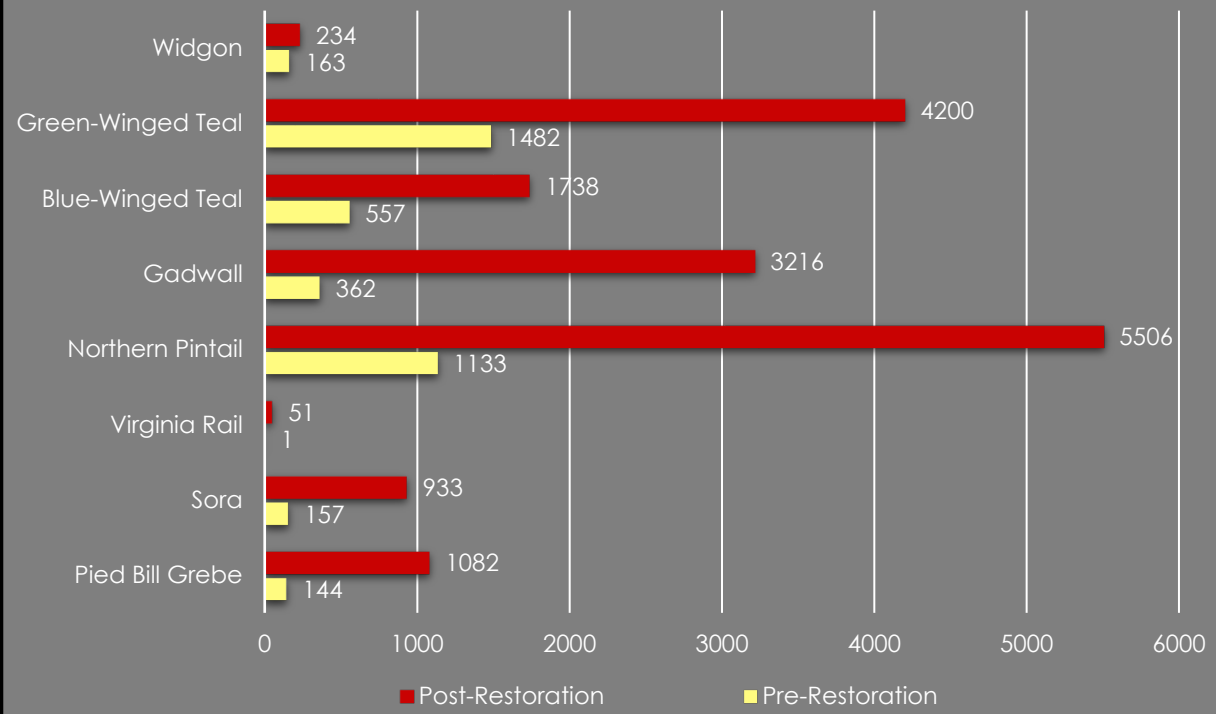
- Follow the natural hydrologic cycle for region
- High water Winter/early Spring, dropping spring through summer, rising in Fall
- All hydrology regimes will have positive and negative collations for different species
- E.g. High water regimes:
 - Positive for fish, muskrats, beavers, otters, amphibians and macroinvertebrates
 - Negative for vegetation, wintering waterfowl and marsh birds.



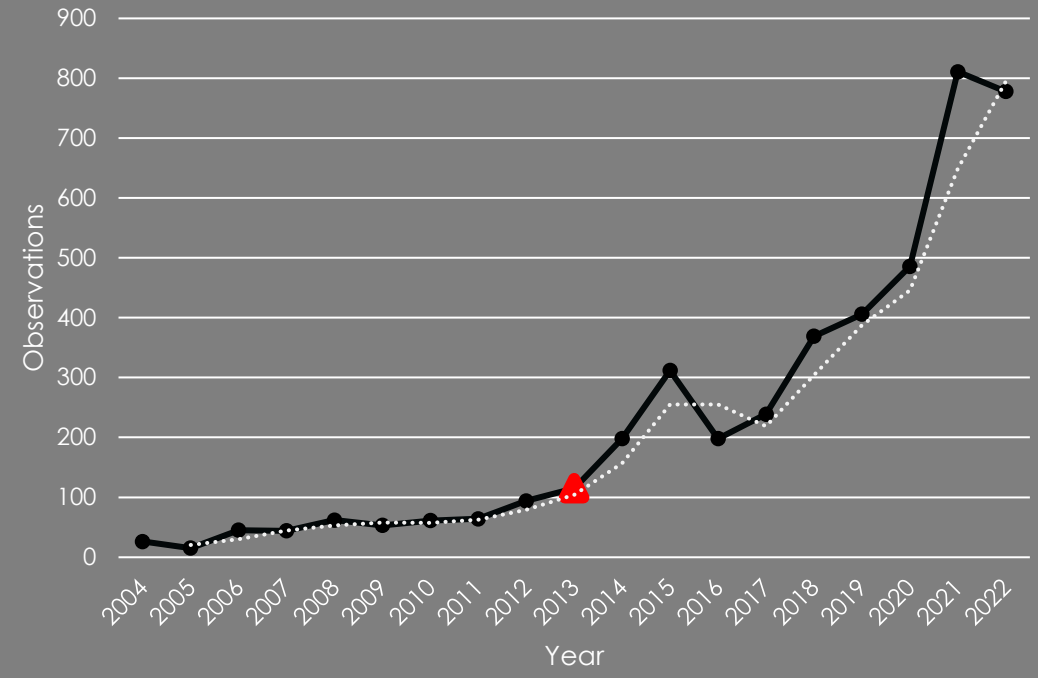
- Droughts can be beneficial:
 - Consolidating soils
 - Breaking down nutrients
 - Promoting seed germination
 - Oxygenating the soil

Bird Use Data Before vs After Construction

eBird Observations Restoration

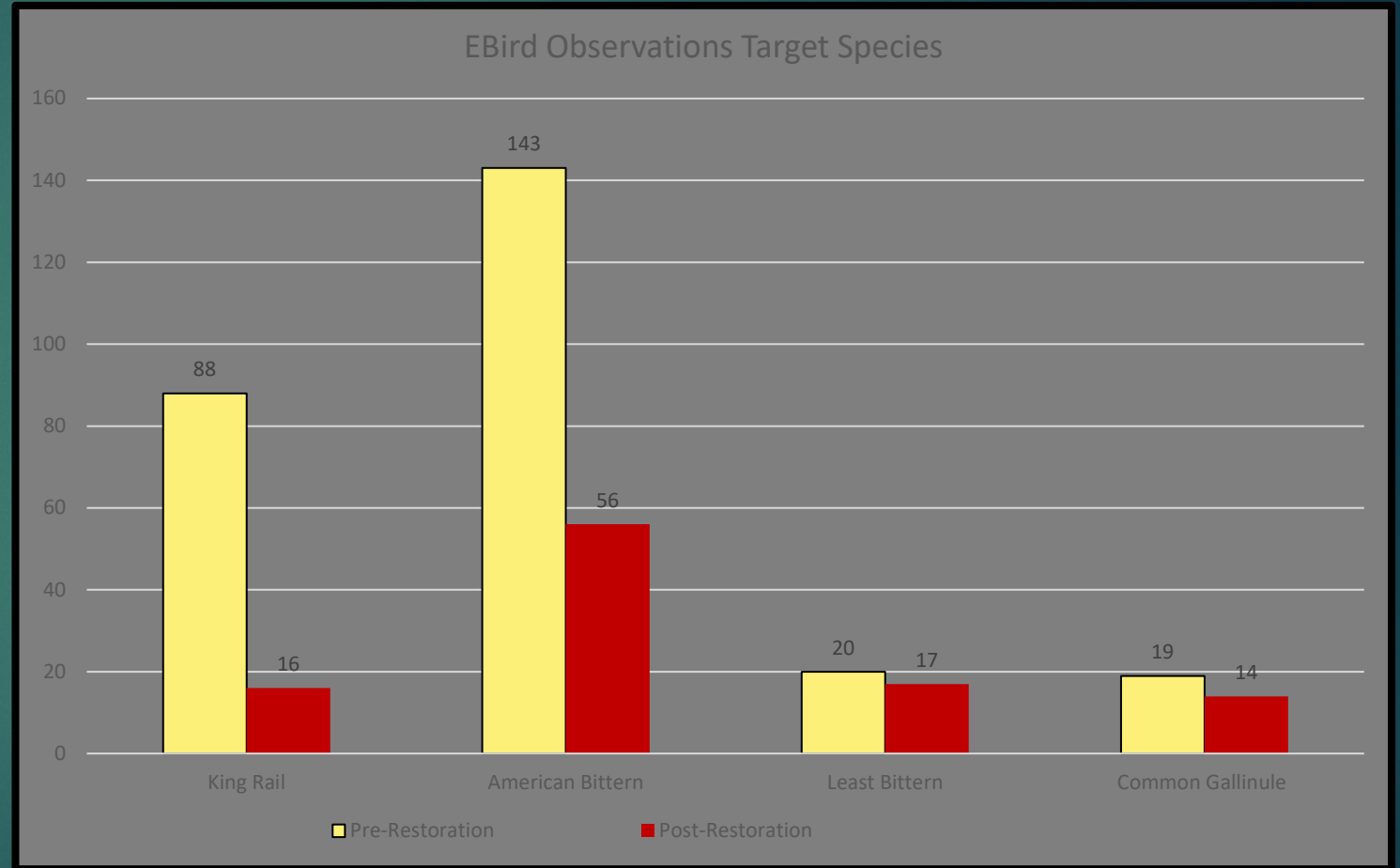


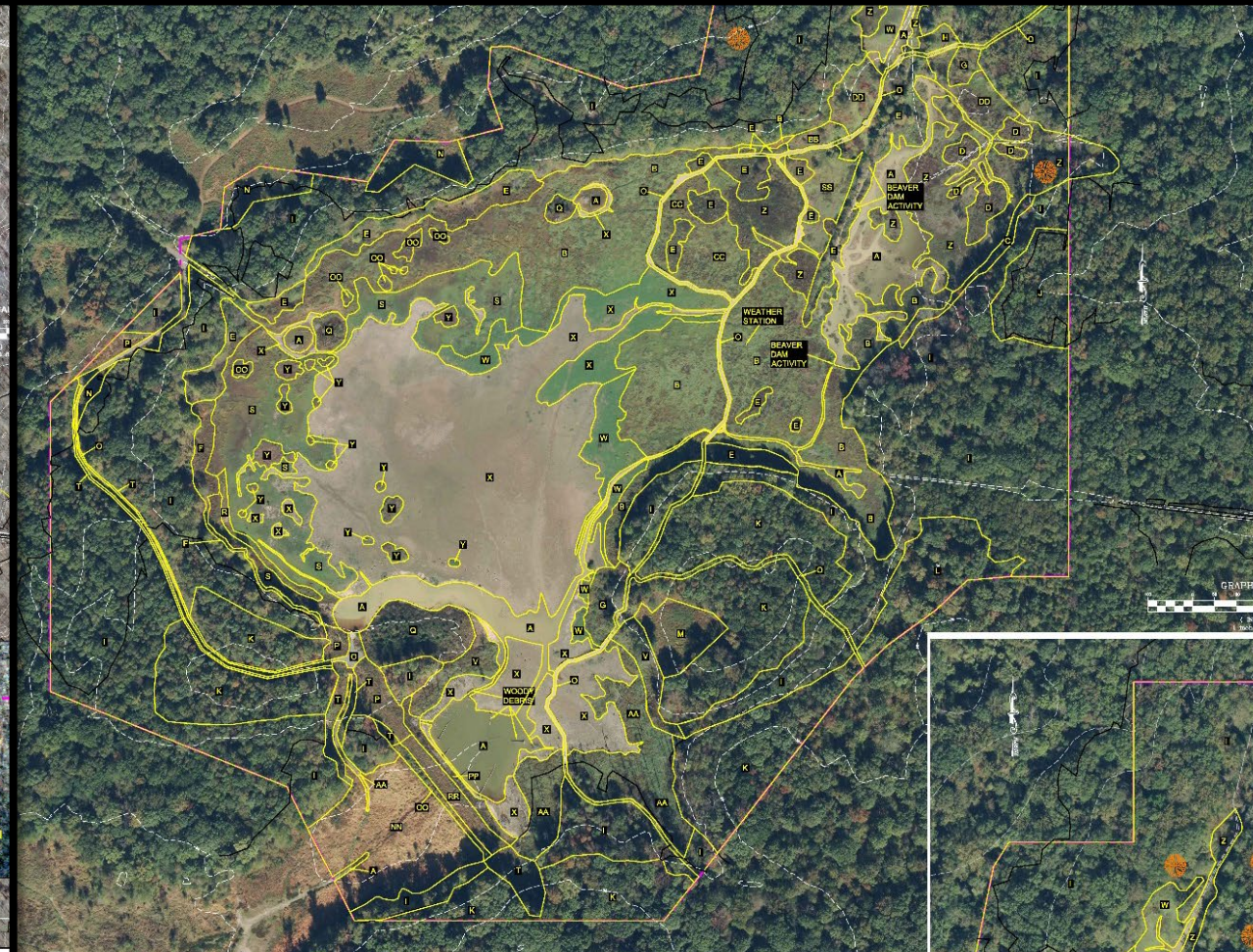
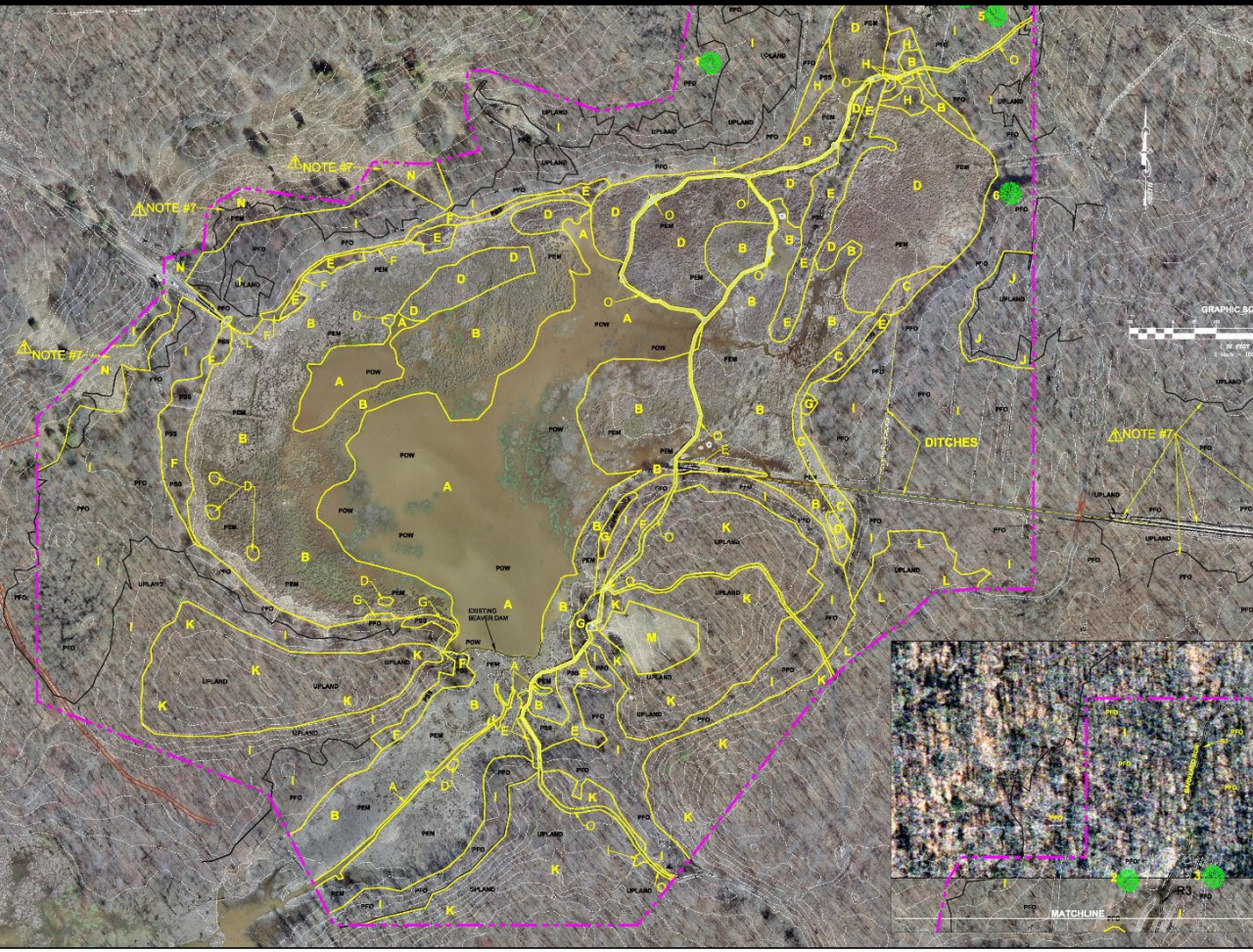
Bald Eagle eBird Observations



Bird Data Con't

- ▶ Four target species had lower observations after the project
- ▶ All Breeder Species
- ▶ Numbers before vs after close for two species
- ▶ Rare secretive species, difficult to spot





Vegetation Monitoring Report

Managing water levels allows managers to influence wetland vegetation to create high quality wetland habitat

Post Construction Photos



Maintenance and Monitoring

- ▶ Annual maintenance on gates and chambers
- ▶ Remove mud/branches from riser
- ▶ Mow/bush-hog berms
- ▶ Invasive species management
 - ▶ Snakeheads
 - ▶ Phragmites, Murdania, Trapa etc.
- ▶ Annual Wetland Management Plan
- ▶ ~\$50,000 including staff time
- ▶ Weather station/water level monitoring station
 - ▶ Quarterly checks and repairs
 - ▶ Visitor Center display 15 minute delay
 - ▶ Track water levels and annual rainfall to





Questions