

# LAKE ACCOTINK PARK MASTER PLAN REVISION

LAKE MANAGEMENT MEETING

January 22, 2018



FAIRFAX COUNTY PARK AUTHORITY

# WELCOME

- INTRODUCTIONS
- PROJECT STATUS UPDATE
- INFORMATION STATIONS





# ***LAKE ACCOTINK MASTER PLAN TEAM***

## **PARK AUTHORITY STAFF**

**GAYLE HOOPER** ▪ LANDSCAPE ARCHITECT III

**ANDI DORLESTER** ▪ PARK PLANNING, MANAGER

**JULIE TAHAN** ▪ LAKE ACCOTINK PARK MANAGER

**CHRIS GOLDBECKER** ▪ LAKEFRONT PARK MANAGER

**ED RICHARDSON** ▪ AREA 4 MANAGER

**LIZ CRONAUER** ▪ PROJECT MANAGER II

**KRISTEN SINCLAIR** ▪ ECOLOGIST III

**JOHN RUTHERFORD** ▪ HERITAGE RESOURCE SPECIALIST

## **STORMWATER PLANNING**

**SAJAN POKHAREL** ▪ SENIOR ENGINEER III

**DANIELLE WYNNE** ▪ ECOLOGIST III



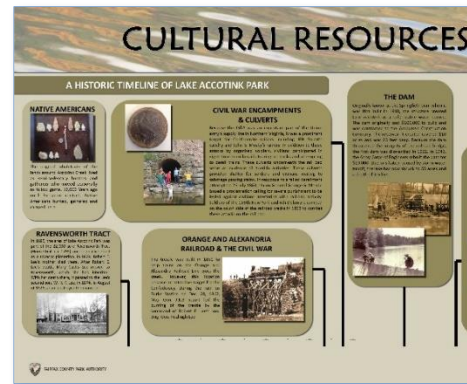
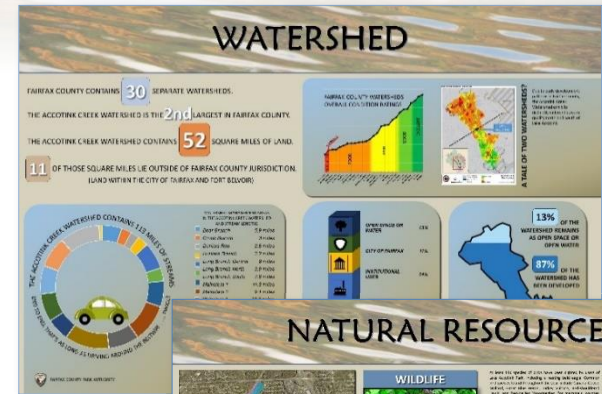
# LAKE ACCOTINK MASTER PLAN



## PUBLIC INFORMATION MEETING/ OPEN HOUSE

MARCH 14, 2016

- KICK OFF OF PUBLIC PARTICIPATION
- SHARED BACKGROUND ON PARK, EXPLAINED PLANNING PROCESS, AND HAD OPEN DISCUSSION
- MORE THAN 100 PEOPLE ATTENDED



Seeking input from the community has been a critical part of the process.





# LAKE ACCOTINK MASTER PLAN

## LAKE SUSTAINABILITY WORKSHOP

MAY 16, 2016



- SHARED ISSUES CONCERNING MAINTENANCE OF LAKE
- PRESENTED RANGE OF ALTERNATIVES
- GROUP DISCUSSION OF ALTERNATIVES AND OTHER POSSIBLE SOLUTIONS
- MORE THAN 100 PEOPLE ATTENDED



### Single Channel with Smaller Lake ALTERNATIVE E

**Establishment**  
Establishment efforts focus on proper sizing and alignment of stream channel and the succession of a healthy vegetative habitat.

**Initial Full Dredge of Lake:**  
X No initial dredge required

**Offsite Disposal of Sediment:**  
X None required as there is no dredging

**Management Approach**  
Management efforts focus on stream channel stability and the succession of a healthy vegetative habitat.

**Maintenance Dredge Interval:**  
✓ No maintenance dredge required

**Offsite Disposal of Sediment:**  
✓ None required as there is no maintenance dredging

**Recreation**  
**Recreational Use of the Lake:**  
✓ Maintained

**Interruption of Recreational Use During Dredging Operations:**  
X No interruption of lake usage for 12 years every major dredge cycle  
✓ Interruption of lake usage for several months annually/biennially with in-lake forebay maintenance

**Environmental**  
**Sediment Capture Relative to Current Level:**  
X Effectively eliminates any sediment capture.  
(Requires further evaluation of parking/storm regulations and streambank stability)

### Sediment Forebay (upstream or in-lake) ALTERNATIVE B

**Full-Lake Dredge**  
**Initial Full Dredge of Lake:**  
✓ Required, 1,500,000/cy

**Dredging Lifecycle:**  
1 every 30-40 years

**Offsite Disposal of Sediment:**  
✓ None (Additional cost and likely impacts from trucking activities)

**Management Approach**  
**Maintenance Dredge Interval:**  
✓ Annual/Biennial dredge of forebay

**Offsite Disposal of Sediment:**  
✓ Required

**Note:** - Additional cost and likely impacts from trucking activities

**Recreation**  
**Recreational Use of the Lake:**  
✓ Maintained

**Interruption of Recreational Use During Dredging Operations:**  
✓ Interruption of lake usage for 12 years every major dredge cycle  
X No interruption during annual/biennial maintenance dredge of up stream forebay  
✓ Interruption of lake usage for several months annually/biennially with in-lake forebay maintenance

**Environmental**  
**Sediment Capture Relative to Current Level:**  
✓ Enhanced (isolated to facilitate removal)

### Continued Dredging ALTERNATIVE A

**Full-Lake Dredge**  
**Initial Full Dredge of Lake:**  
✓ Required, 1,500,000/cy

**Dredging Lifecycle:**  
1 every 10 years

**Offsite Disposal of Sediment:**  
✓ Required (Note: Additional cost and likely impacts from trucking activities)

**Management Approach**  
**Maintenance Dredge Interval:**  
X No maintenance dredging is done with this alternative

**Offsite Disposal of Sediment:**  
X Not applicable as maintenance dredging is not performed

**Recreation**  
**Recreational Use of the Lake:**  
✓ Maintained

**Interruption of Recreational Use During Dredging Operations:**  
✓ Interruption of lake usage for 12 years every dredge cycle

**Environmental**  
**Sediment Capture Relative to Current Level:**  
✓ Maintained



# LAKE ACCOTINK MASTER PLAN

## FACILITIES AND PROGRAMMING WORKSHOP

OCTOBER 27, 2016

- TO BETTER UNDERSTAND HOW PEOPLE USE THE PARK AND WHAT FACILITIES AND PROGRAMMING THEY WOULD LIKE TO SEE
- ABOUT 50 PEOPLE ATTENDED



**NEW FACILITIES**

The survey of park usage and preferences showed that a lot of people are interested in having an off-leash dog area at Lake Accotink Park.

**If an appropriate location could be found, would you like to see a dog park at Lake Accotink Park?**

**PROGRAMMING PREFERENCES**

Many people come to Lake Accotink Park to enjoy the many types of programming offered. Some programs need facilities or spaces to support them. Knowing what types of programs you would like to have available will help us understand space needs in the park.

**WHAT TYPES OF PROGRAMMING WOULD YOU BE MOST INTERESTED IN?**

COLOR IN A CIRCLE TO INDICATE YOUR PROGRAMMING PREFERENCES:  
 ● I WOULD BE INTERESTED AND WILLING TO PAY A SMALL FEE TO PARTICIPATE  
 ● I WOULD NOT WANT TO PAY FOR THIS PROGRAMMING AT LAKE ACCOTINK PARK

**AGE IS JUST A NUMBER**

PLACE A STICKER IN THE BOX THAT MOST CLOSELY REPRESENTS THE AGE OF YOUR GROUP WHEN YOU COME TO LAKE ACCOTINK PARK

UNDER 18	18 - 35	36 - 64
65 OR BETTER	MULTIGENERATIONAL	

**WHAT WOULD ENCOURAGE YOU TO COME TO LAKE ACCOTINK PARK MORE OFTEN?**

WRITE YOUR THOUGHTS ON A STICKY NOTE AND ADD IT TO THE POSTER

**WHERE DO YOU LIVE AND HOW DO YOU USUALLY COME TO LAKE ACCOTINK PARK?**

PLACE A DOT ON THE MAP TO SHOW APPROXIMATELY WHERE YOU LIVE:

- USE A GREEN DOT IF YOU WALK TO THE PARK
- USE A YELLOW DOT IF YOU RIDE A BIKE TO THE PARK
- USE A PURPLE DOT IF YOU DRIVE TO THE PARK
- USE A RED DOT IF YOU COME BY SOME OTHER MEANS AND DOT IT DOWN ON THE FEET OF THE PAGE



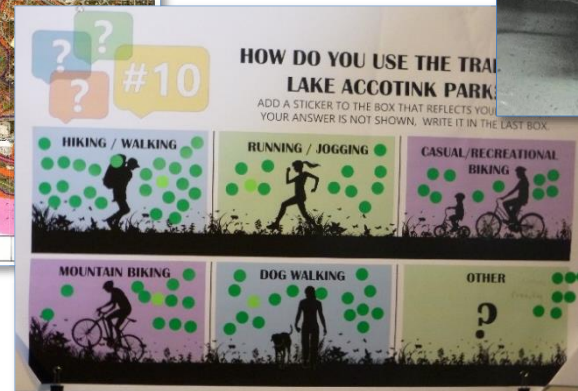
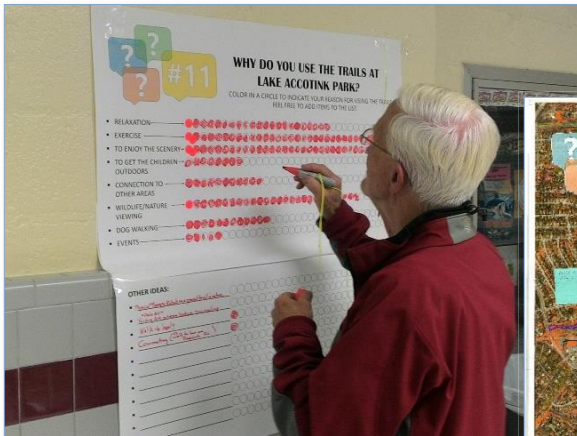
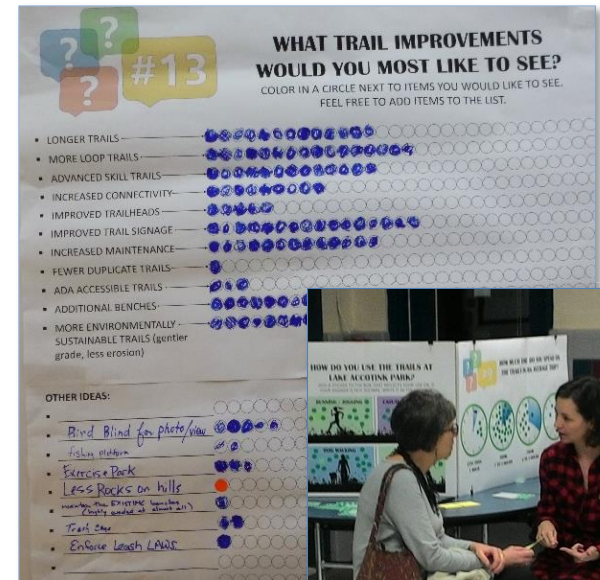


# LAKE ACCOTINK MASTER PLAN

## TRAILS WORKSHOP

DECEMBER 5, 2016

- AS THE MOST USED PARK FACILITY, WORKSHOP TO BETTER UNDERSTAND HOW PEOPLE USE THE PARK TRAILS AND WHAT WOULD MOST IMPROVE THEIR EXPERIENCE
- NEARLY 100 PEOPLE ATTENDED





# LAKE ACCOTINK MASTER PLAN

## RESOURCES WORKSHOP

APRIL 24, 2017

- MEETING PROVIDED AN OPPORTUNITY TO SHARE IN GREATER DETAIL SOME OF THE BACKGROUND INFORMATION ABOUT THE PARK
- ATTENDED BY APPROXIMATELY 50 PEOPLE



### CULTURAL RESOURCES

## CONTEMPORARY HISTORY

#### THE DAM

IN 1914, THE ACCOTINK COUNTRY CLUB... THE DAM WAS BUILT TO PROVIDE WATER TO THE CLUB AND TO PROTECT THE AREA FROM FLOODING...

#### CIVILIAN CONSERVATION CORPS

During the Depression, in 1937, President Franklin D. Roosevelt established the Civilian Conservation Corps (CCC) to help unemployed young men...

#### LAKE ACCOTINK BECOMES A PARK

In 1930, the lake was transformed into a public park by the U.S. Government... The lake was transformed into a public park by the U.S. Government...

#### CAROUSEL

The carousel was installed in 1937... It is the only carousel in the state of Virginia...

#### JOVITE

An historic structure that dates back to the 18th century... It is a rare example of a Jovite structure...

### NATURAL RESOURCES

## WILDLIFE

#### e-BIRD INVENTORY

A list of bird species observed at the park...

#### MAMMALS

A list of mammal species observed at the park...

#### REPTILES

A list of reptile species observed at the park...

#### AMPHIBIANS

A list of amphibian species observed at the park...

#### AQUATIC SPEC

A list of aquatic species observed at the park...

WATER RESOURCES

## STORMWATER PROJECTS

#### STREAM RESTORATION EXAMPLE

Streams that have degraded may need to be restored to support the stream and the riparian habitat...

#### STORMWATER MANAGEMENT POND RETROFIT EXAMPLE

Stormwater ponds are designed to detain stormwater runoff during rain events and slowly release it over a long period of time to the receiving waterway...

#### BEST MANAGEMENT PRACTICE (BMP) EXAMPLE

Best Management Practices (BMPs) include a variety of structural practices which are installed as close to possible to the stormwater runoff source...

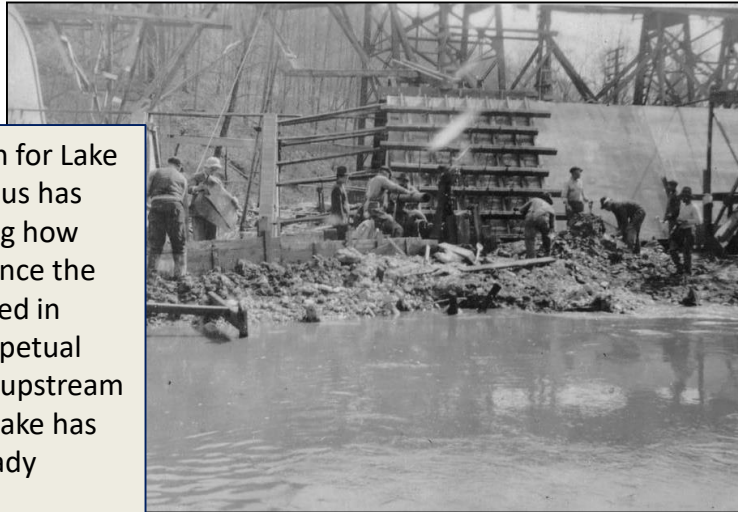




# LAKE ACCOTINK SUSTAINABILITY

*From the time the dam was constructed . . .*

Construction of the dam in 1943



In updating the master plan for Lake Accotink Park, a central focus has been placed on determining how best to manage the lake. Since the current dam was constructed in 1943, there has been a perpetual problem of sediment from upstream flowing into the lake. The lake has been dredged 3 times already (1960s, 1984, and 2007).

In 2014, the Board of Supervisors allocated funds to the Park Authority to study the issue and evaluate how best to deal with this long standing problem.



During the 1984 dredging



*. . . sediment has been a problem*



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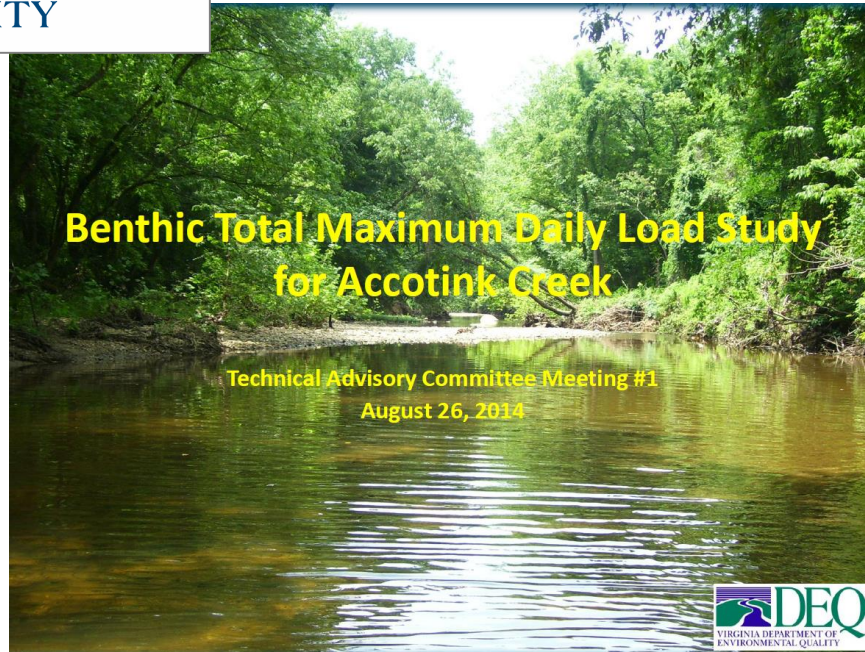


# Virginia Department of Environmental Quality

## SEDIMENT TOTAL MAXIMUM DAILY LOAD



- ❑ Chloride and sediment are the most impactful stressors to aquatic life in the Accotink Creek Watershed
- ❑ Recommendations are anticipated to be approved by the EPA this spring



Over much of the same time that we've been discussing the Lake Accotink Park Master Plan, the Virginia Department of Environmental Quality has been analyzing the Accotink Creek Watershed with the intent of developing a regulatory standard to improve the quality of this waterway.

As the standard that will be implemented based on this process could influence the management options for Lake Accotink, Park Authority staff participated with the Technical Advisory Group and shared the data that we had pulled together as part of our analysis of the lake.





# Virginia Department of Environmental Quality

## **SEDIMENT TOTAL MAXIMUM DAILY LOAD**

If the Stormwater Planning Division were to devote its *entire* funding solely to improve the waterways upstream of Lake Accotink, it would take **20 years** to complete the project . . . well after the lake would be filled in with sediment.

But there are many waterways around the county in need of restoration so it will take many more years to actually complete this project.

### ***Where is the sediment coming from?***

- Stream bank erosion is biggest contributor to sediment load

### ***How can we stop the sediment?***

- Restore all upstream water ways
- This is a long process, exceedingly expensive, and complicated by multiple land ownerships

### ***Are there regulatory implications?***

- Improvements/adjustments made to Lake Accotink would not be attributed towards meeting our regulatory requirements due to its establishment to provide a drinking water source rather than stormwater management.



# LAKE ACCOTINK MANAGEMENT OPTIONS



## ***Tonight:***

- Briefly revisit the management options
- Take time to consider each option, ask questions
- Share comments and thoughts
- Vote on your preferred management approach





# ***LAKE MANAGEMENT OPTIONS***

**\*\*The following provides a brief synopsis of the lake management alternatives that have been evaluated. Please see the meeting's Display Boards for additional detail.\*\***



# Lake Accotink Management Option “A”

## ***NO DIRECT MANAGEMENT***

### **Description**

- No specific action taken to address the influx of silt within the lake (although Stormwater Planning will continue to work to improve upstream conditions)
- Allow lake to continue to fill with silt
- Anticipated loss of recreational value of the lake by 2025***

### **Primary Cost Elements**

- Existing dam structure would require yearly maintenance and repair
- Existing dam structure would likely require significant repair and upgrades on an estimated 30-year cycle





# Lake Accotink Management Option "B"

## CONTINUE CURRENT DREDGING METHOD

### Description

- ❑ This approach would continue to provide major dredging of the main body of the lake at roughly 15-year intervals
- ❑ Sediment removed from the lake would need to be hauled from the park, requiring approx. 35,000 truck trips routed through adjacent neighborhoods
- ❑ Retains recreational value of the lake

### Primary Cost Elements

- ❑ Removal of approx. 350,000 cubic yards of sediment with each dredge
- ❑ Trucking of dredge material offsite for disposal
- ❑ Existing dam structure would require yearly maintenance and repair
- ❑ Existing dam structure would likely require significant repair and upgrades on an estimated 30-year cycle



Repeated Dredging  
\$ 29,275,000+  
Every 15 years

Dam Maintenance  
\$13,000 annually  
\$4,700,000 / 30 years

**REPEAT  
EVERY ±15  
YEARS**



# Lake Accotink Management Option “C”

## ANNUAL DREDGING WITH FOREBAY

### Description

- ❑ This approach would initially provide a major dredge of the lake, removing 350,000 cubic yards of sediment, plus an additional 150,000 cubic yards of sediment to create a forebay at the upper end of the lake
- ❑ All 500,000 cubic yards of sediment removed from the lake would need to be hauled from the park, requiring approx. 50,000 truck trips routed through adjacent neighborhoods
- ❑ After the initial dredge and forebay construction, smaller dredges would remove approx. 12,000 cubic yards of sediment from the forebay every year or two, routing an additional 1,200 truck trips through the community
- ❑ The existing dam structure would remain in place





# Lake Accotink Management Option "C"

## ANNUAL DREDGING WITH FOREBAY

### Primary Cost Elements

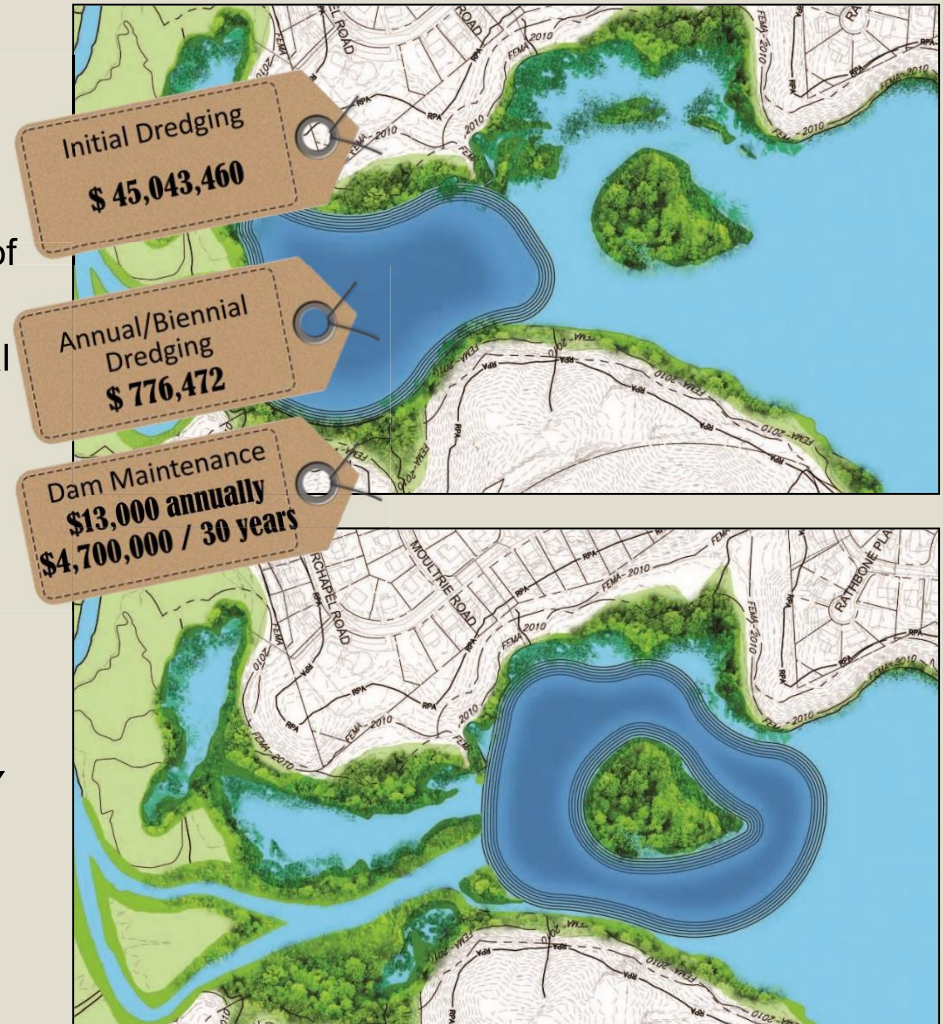
- ❑ Removal of approx. 500,000 cubic yards of sediment with the initial dredging operation
- ❑ Biennial removal of approx. 12,000 cubic yards of sediment material
- ❑ Trucking of all dredge material offsite for disposal
- ❑ Existing dam structure would require yearly maintenance and repair
- ❑ Existing dam structure would likely require significant repair and upgrades on an estimated 30-year cycle

**SMALL  
DREDGE  
EVERY YEAR  
OR TWO**

**REPEAT FULL  
DREDGE EVERY  
±35 YEARS**



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# ***TRUCKING IMPACTS***

- ❑ Alternatives “B” and “C” will all require a full dredge of the lake with the initial phase of the project.
- ❑ Alternative “C” will require annual/biennial maintenance dredging and the ability to process dredge material on-site.
- ❑ Alternatives “B” and “C” will all require repeat dredging of the full lake at extended intervals of  $\pm 15$  and  $\pm 35$  years respectively.

***It is anticipated that ultimate disposal of dredge material will require **trucking** to off-site location for any of the dredge options.***





**500,000 cubic yards**



**350,000 cubic yards**



Visualization using FedEx Field to help understand the volume of sediment to be removed from the lake.

Option B would seek to remove 350,000 cubic yards of sediment or enough to cover FedEx Field (including the end zones) 164' deep.

Option C would seek to remove 500,000 cubic yards of sediment or enough to cover FedEx Field 234' deep in sediment.

# Lake Accotink Management Option “D”

## INSTALLATION OF UPSTREAM “BEAVER DAMS”

### Description

- ❑ Installation of sheet pile “walls” within the channel to encourage sediment deposition.
- ❑ Will convert the existing forested wetland areas to “beaver swamps” over time
- ❑ This features are not accessible for maintenance
- ❑ This approach provides only short term benefit to sediment reduction and, ultimately does not serve to resolve the overall condition of Lake Accotink
- ❑ This approach would entail significant disturbance of relatively stable upstream areas.



Although included in the study, this option has been removed from consideration due to the extent of impacts with only limited benefit. It may be utilized in combination with other management options – but, on its own, would not make any significant impact on sediment within Lake Accotink.





# Lake Accotink Management Option "E"

## SINGLE CHANNEL WITH RECLAIMED LAND

*(Elimination of Existing Dam)*

### Description

- ❑ This management approach would seek to restore Accotink Creek to a condition reflective of the original stream that existed prior to the stream being dammed.
- ❑ The recreated stream channel would be sized to accommodate future storm flows
- ❑ Surrounding land area would be reforested to create wetland habitat to support area wildlife and increase biodiversity
- ❑ Recreational value of the lake would be eliminated; however, opportunities for trails and nature observation areas would be increased
- ❑ Eliminates concern for dam safety and potential downstream impacts if the dam were to be breached.



Project Establishment  
**\$11,176,815**

Annual Maintenance of Vegetation  
**\$26,000**



# Lake Accotink Management Option “F”

## **SINGLE CHANNEL WITH SMALLER LAKE**

*(Modification of Existing Dam)*

### Description

- ❑ Similar to Option E, this management approach would modify the existing dam to allow creation of a single thread stream channel through “sculpting” of the existing sediment.
- ❑ Sediment would be sculpted to create a rise on the north side of the stream channel, creating a space to retain a smaller lake for recreational purposes.
- ❑ Reclaimed land area would be revegetated, creating new habitat areas
- ❑ Trails might be expanded into the vegetated area for nature observation
- ❑ Recreational value of the lake would be retained but within a reduced footprint (Approximately 20 acres, about 8 feet deep)
- ❑ Smaller lake will be off-line from the main flow of water. Flag Run, the primary tributary of the smaller lake, is being restored, minimizing the influx of sediment to the new, smaller lake





# Lake Accotink Management Option “F”

## SINGLE CHANNEL WITH SMALLER LAKE

(Modification of Existing Dam)

### Primary Cost Elements

- ❑ The primary cost factor is the initial establishment of the management plan (revision to the dam structure, “sculpting” of sediment to establish the stream channel, reforestation)
- ❑ Annual maintenance would focus on insuring the vegetation is established well and addressing any invasive species that seek to infill. This cost would reduce some over the years as the vegetation becomes better established.



Project  
Establishment  
**\$12,932,706**

Annual Maintenance  
of Vegetation  
**\$26,000**



# COST COMPARISON

MANAGEMENT ALTERNATIVES COST COMPARISON								
ALTERNATIVE			IMPLEMENTATION	ON-GOING MANAGEMENT				\$
ALTERNATIVE	DESCRIPTION OF ALTERNATIVE	ASSUMED LIFESPAN	COST OF INITIAL IMPLEMENTATION OF MANAGEMENT PLAN	ANNUAL DREDGING	ANNUAL DAM MAINTENANCE	LONG-TERM DAM MAINTENANCE AND REPAIR	ANNUAL STABILIZATION	ESTIMATED ANNUALIZED COST
<b>A</b>	NO MANAGEMENT	30	N/A	N/A	\$13,000	\$4,700,000	N/A	<b>\$237,000</b>
<b>B</b>	CONTINUE WITH CURRENT DREDGING MODEL	15	\$29,276,000	N/A	\$13,000	\$4,700,000	N/A	<b>\$2,691,000</b>
<b>C</b>	DREDGING WITH FOREBAY	30	\$45,044,000	\$776,472	\$13,000	\$4,700,000	N/A	<b>\$4,695,000</b>
<b>D</b>	INSTALL "BEAVER DAM" STRUCTURES	60	\$933,000	N/A	\$13,000	\$4,700,000	\$19,500	<b>\$291,000</b>
<b>E</b>	SINGLE CHANNEL WITH RECLAIMED LAND	60	\$11,463,000	N/A	N/A	N/A	\$26,000	<b>\$440,000</b>
<b>F</b>	SINGLE CHANNEL WITH SMALLER LAKE	60	\$13,218,000	N/A	N/A	N/A	\$26,000	<b>\$503,000</b>



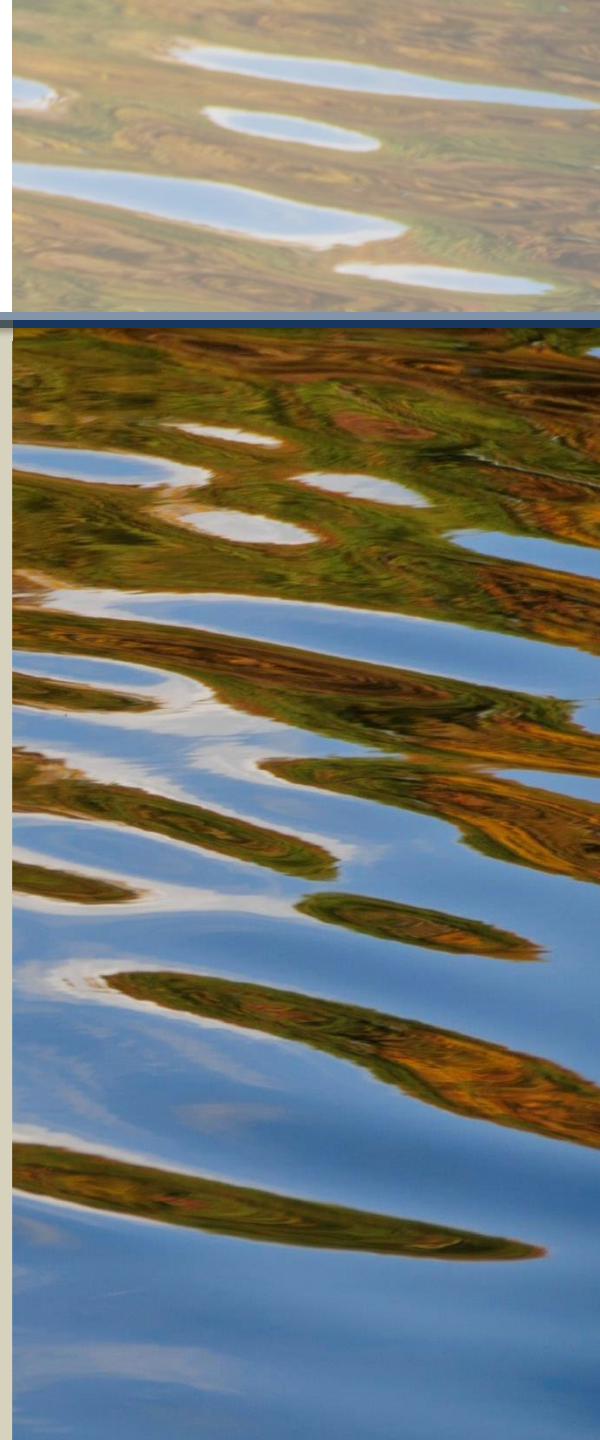
\*The Estimated Annualized Cost includes initial construction as well as annual and long-term maintenance costs over a 60-year time period.



# ***CONNECTIVITY***

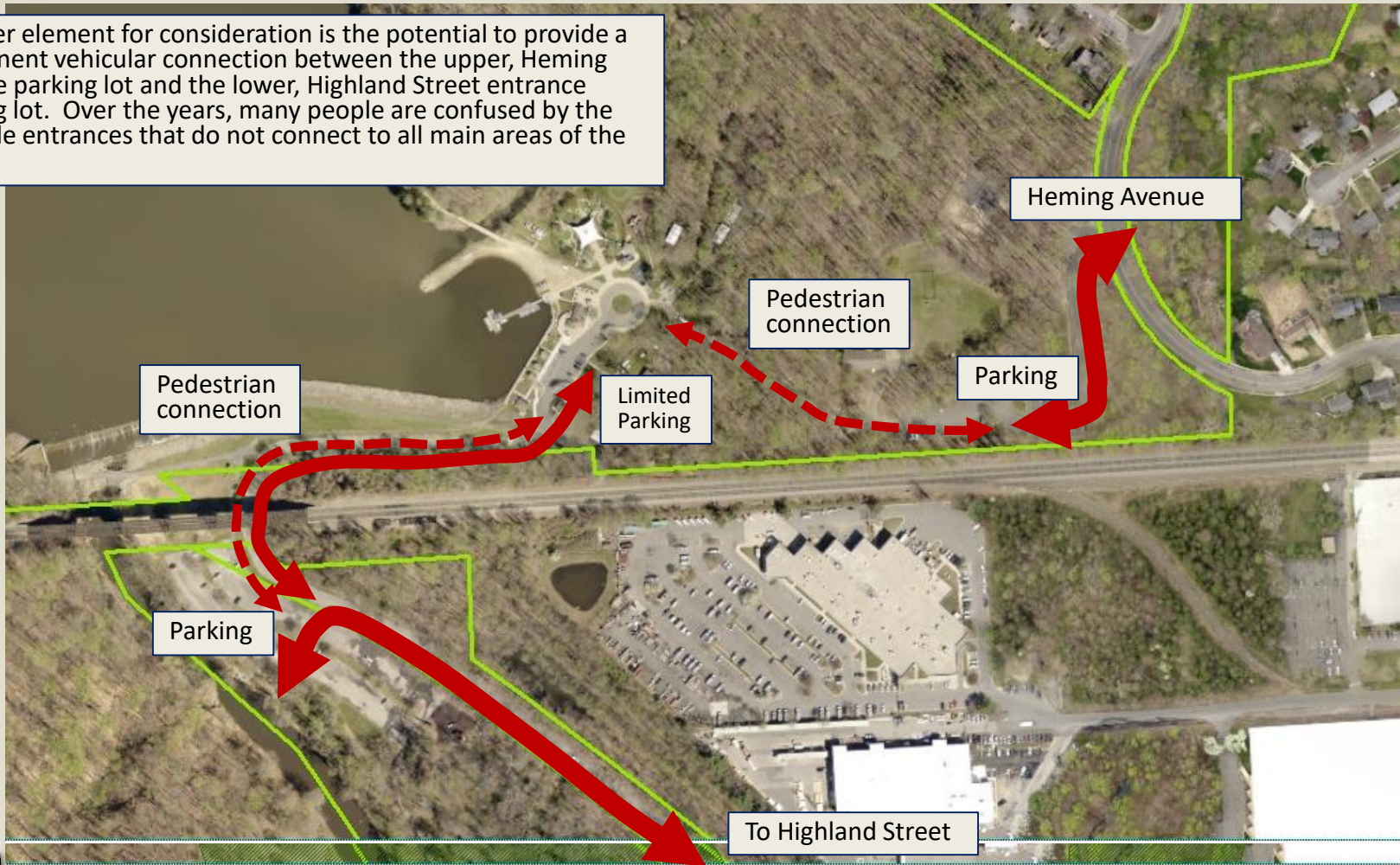


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# CONNECTIVITY

Another element for consideration is the potential to provide a permanent vehicular connection between the upper, Heming Avenue parking lot and the lower, Highland Street entrance parking lot. Over the years, many people are confused by the multiple entrances that do not connect to all main areas of the park.

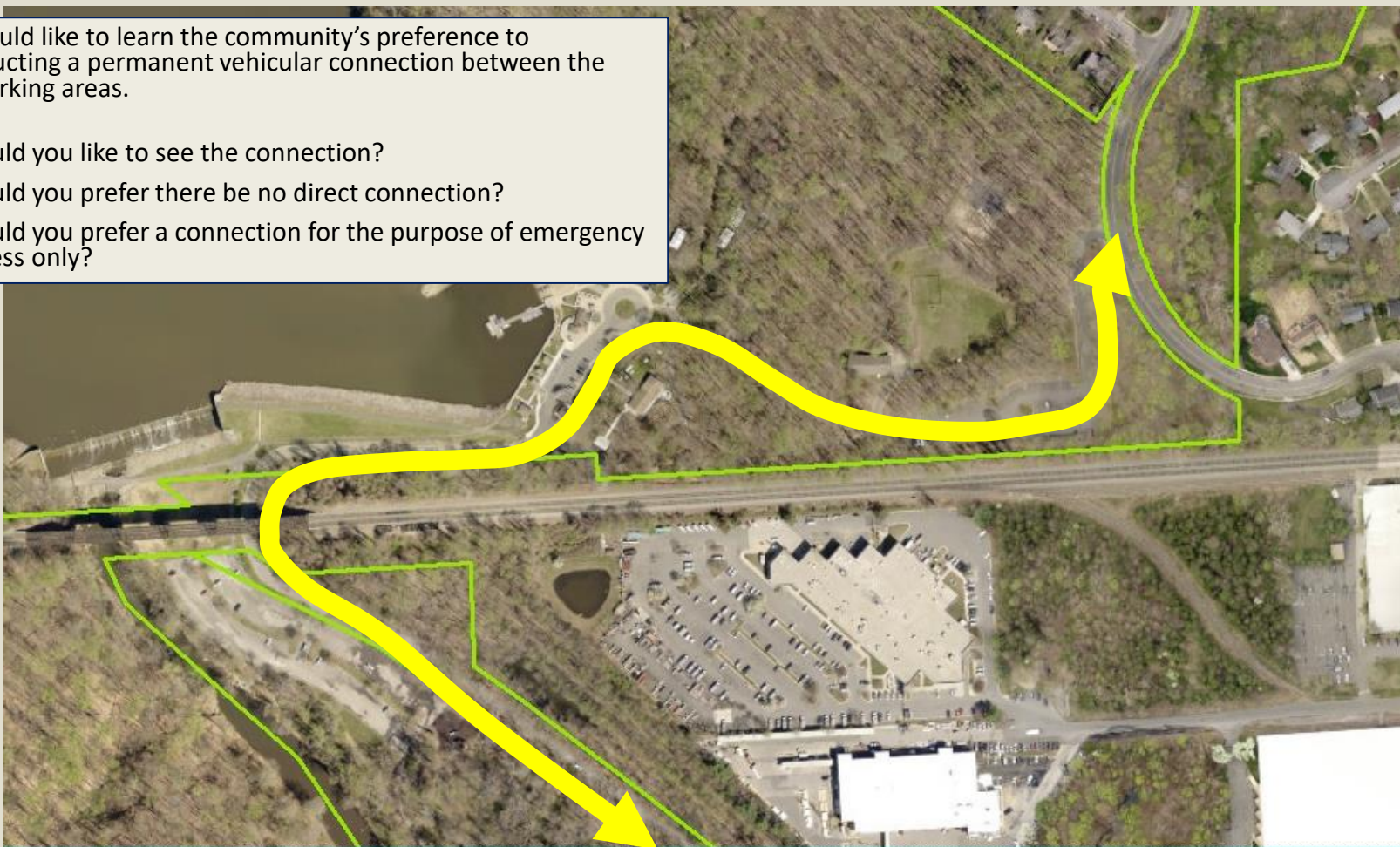


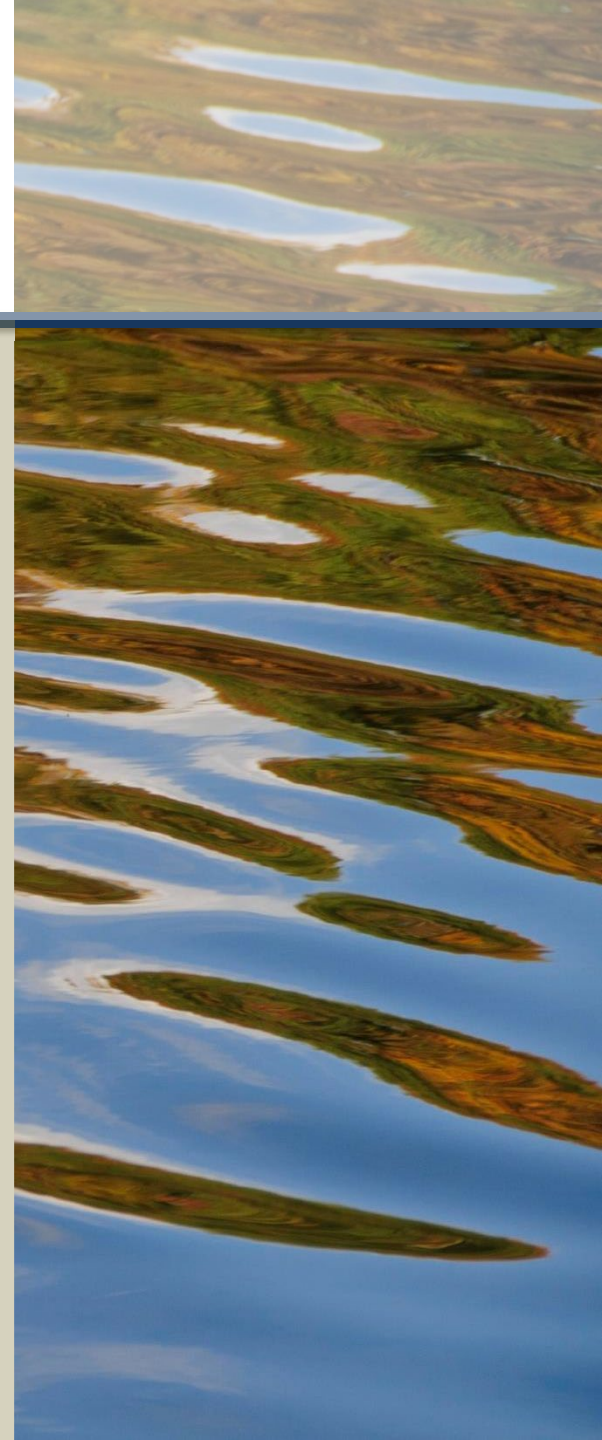


# CONNECTIVITY

We would like to learn the community's preference to constructing a permanent vehicular connection between the two parking areas.

- Would you like to see the connection?
- Would you prefer there be no direct connection?
- Would you prefer a connection for the purpose of emergency access only?





# ***ASK THE EXPERTS***

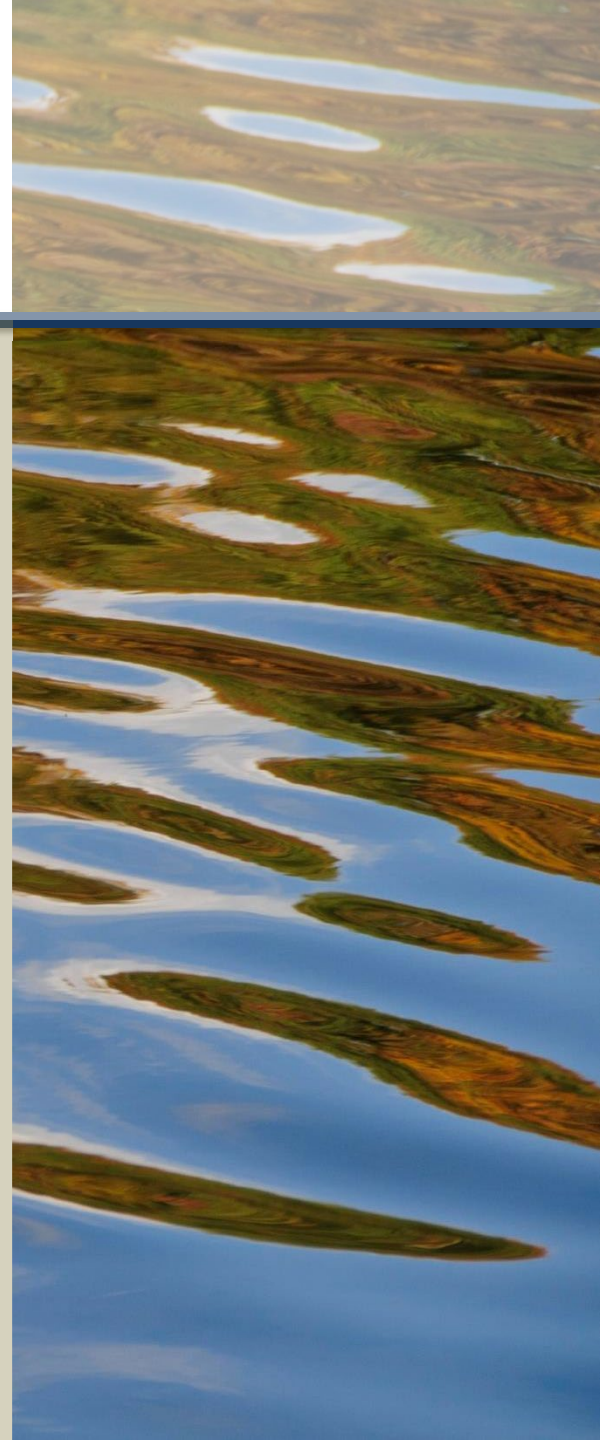
***Frank Graziano – Wetland Studies & Solutions***

***Charles Smith – Stormwater Planning***



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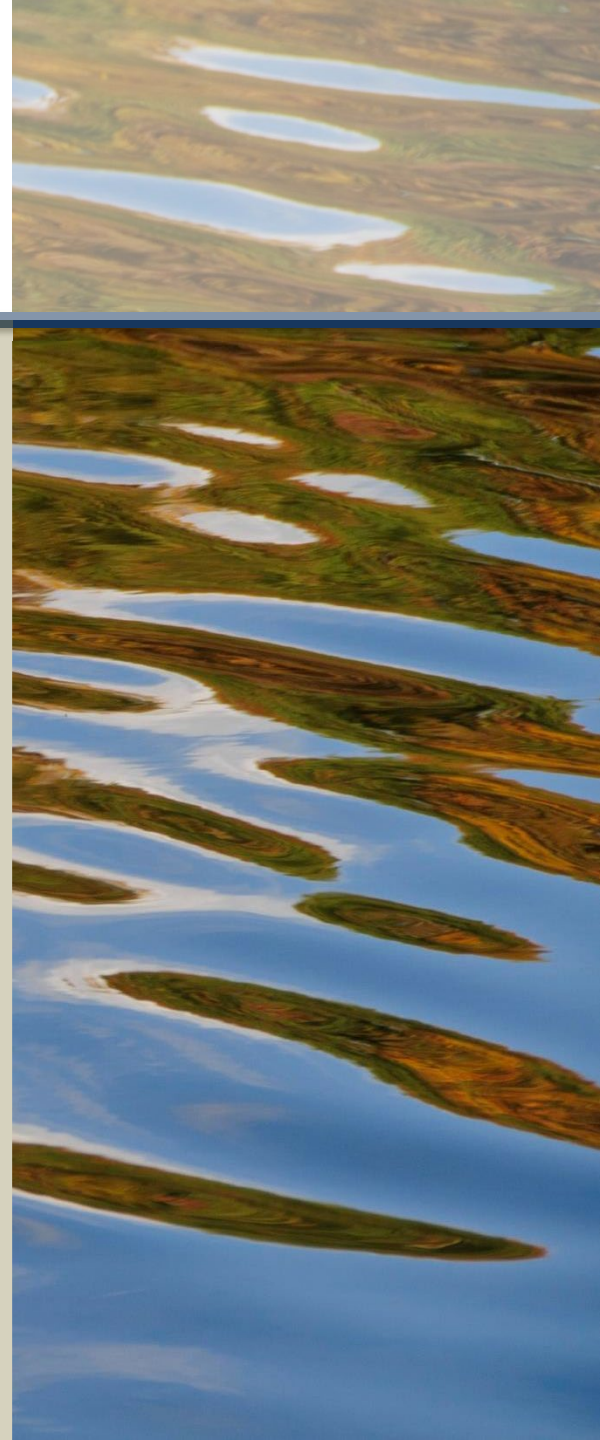
# ***OTHER THOUGHTS TO SHARE?***



***VOTE BEFORE YOU  
LEAVE!***



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# CONTACT INFORMATION



parkmail@fairfaxcounty.gov



Gayle Hooper, Project Manager  
Planning & Development Division, FCPA  
12055 Government Center Parkway, Suite 406  
Fairfax, Virginia 22035



703-324-8725

Please visit the project website:  
<https://www.fairfaxcounty.gov/parks/planning-development/lakeaccotink>

***Comments on management of the lake  
are welcomed through February 28!***



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***This information  
is provided on the  
handout!***

**“Great things are not done by impulse,  
but by a series of small things brought together.”**

Vincent van Gogh

