

Lake Accotink Task Force: Wetland Management Option Questions and Areas of Discovery

WSP-LimnoTech Deliverable Dates

September 11

October 2

November 7

November 27

1. What will happen to the lake if nothing is done?

a. Mud Flats:

- i. Will the lake fill in and become a mudflat and how long would that take?
- ii. Will "mud flats" dry and become windborne?
- iii. Under a managed wetland option, would mud flats ever develop?

- b. Will there be quicksand that poses a risk to park users?
- c. Will there be nuisances such as mosquitos, odors, etc.?
- d. Will it become overrun with invasive species?
- e. Will flood risk increase?

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2. Is managing the lake as a wetland a viable or potentially desirable option?

- a. What is a stream/wetland complex? How is it different than what we typically think of as wetlands?
- b. What is required to develop a plan to manage the lake footprint as a wetland?
- c. What might it look like?
- d. How long will it take to create a managed wetland that is a community asset providing environmental and recreational benefits?
- e. Will a managed wetland be "overcome" by storm pulses and sediment loading with emphasis on extreme events?
- f. Will a wetland have a less cooling effect on the environment than an eight-foot or more depth lake? Will a wetland create a heat island?
- g. Would managed wetlands have different regulatory requirements than a lake, and if so, summarize them?
- h. What is the cost to design, permit, and construct and maintain a managed wetland?

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3. Could a managed wetland option include open water areas?

- a. Where might open water be located?
- b. What type of open water could be maintained?
- c. How large and deep could an open water feature be?
- d. Would an open water feature need to be dredged periodically?
- e. How could an open water ("lake") area be sized to maximize the open water but minimize impacts from any necessary maintenance dredging operations to include:

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- i. Eliminate or reduce the need for pipelines and offsite processing areas,
- ii. Utilize existing open spaces in Lake Accotink Park for operations,
- iii. Maximizing the extent to which dredged sediment can be kept and used onsite, and
- iv. Minimize impacts from trucking materials out?

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- f. What would it take to maintain an open water area and how much would it cost?

4. How would Lake Accotink Dam be incorporated into a managed wetland option?

- a. Could the dam remain as is?
- b. Could the dam be modified to improve wetland function and maintenance?
- c. Would management options be improved by removal of any portion of the dam?
- d. How could fish passage be incorporated into dam/lake management options?
- e. How much would it cost to modify the dam under the scenarios in items b. and c. above?

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- f. Describe the regulatory requirements for Lake Accotink Dam and potential impacts on sediment fate and transport downstream in Accotink Creek for the following scenarios:

- i. No action is taken and the dam is left as is.
- ii. A managed wetland is created and the dam is left as is.
- iii. A managed wetland is created and the dam is modified.
- iv. The dam is partially or wholly removed and Accotink Creek returned to a flowing stream.

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5. What features/amenities/benefits/impacts will a managed wetland provide/have?

- a. Aesthetic resource
- b. Water trails, pedestrian access/trails
- c. Will a managed wetland change the usefulness/value of amenities (playground, picnicking, carousel, marina, etc.) in Lake Accotink Park as compared to having a lake?
- d. What would the community value of a managed wetland have as compared to having a lake?
- e. Education
- f. Recreation
 - i. Boating
 - ii. Fishing:
 - 1. Would the fishery improve/worsen?
 - 2. Would there be restrictions on fishing in any area?
- g. Water quality
- h. Wildlife habitat
 - i. Would a wetland support the family of nesting eagles and other birds of prey native to the Lake Accotink watershed ecosystem?
 - ii. Would a managed wetland positively or negatively impact other aquatic and terrestrial wildlife in comparison to maintaining a lake? Would these impacts displace wildlife?

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6. What maintenance would be necessary for a managed wetland?

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- a. What would be required to manage a wetland complex?
- b. What would maintenance cycles look like?
- c. How much would maintenance cost?

7. What are the sediment loads within Accotink Creek and how will they change?

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- a. What are the current sediment loads in Accotink Creek and what are the likely trends for sediment generation in the future?
- b. What loads are leaving the lake in its current condition?
- c. How will these loads change if no action were taken?
- d. What would the loads leaving the lake be like if the lake were managed as a wetland?
- e. What would the sediment loads be in Accotink Creek if the dam were removed?
- f. How will these loads affect downstream resources:
 - i. How will they impact instream fauna? (Mussels)
 - ii. How much sediment could be expected to be captured by the floodplains?
 - iii. How might these loads affect Gunston Cove?
 - iv. How could these effects be mitigated?
- g. What regulatory implications are there for Fairfax County due to increased sediment loads downstream of Lake Accotink and how much could mitigating these increased loads cost?

8. Other:

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- a. Account for climate change in modeling and analysis of options.
- b. Conduct differential carbon footprint analysis of managed wetland, hybrid wetland – open water, and full dredge options.