



Windmill Hill Park Shoreline Rehabilitation

City Council
June 13, 2015

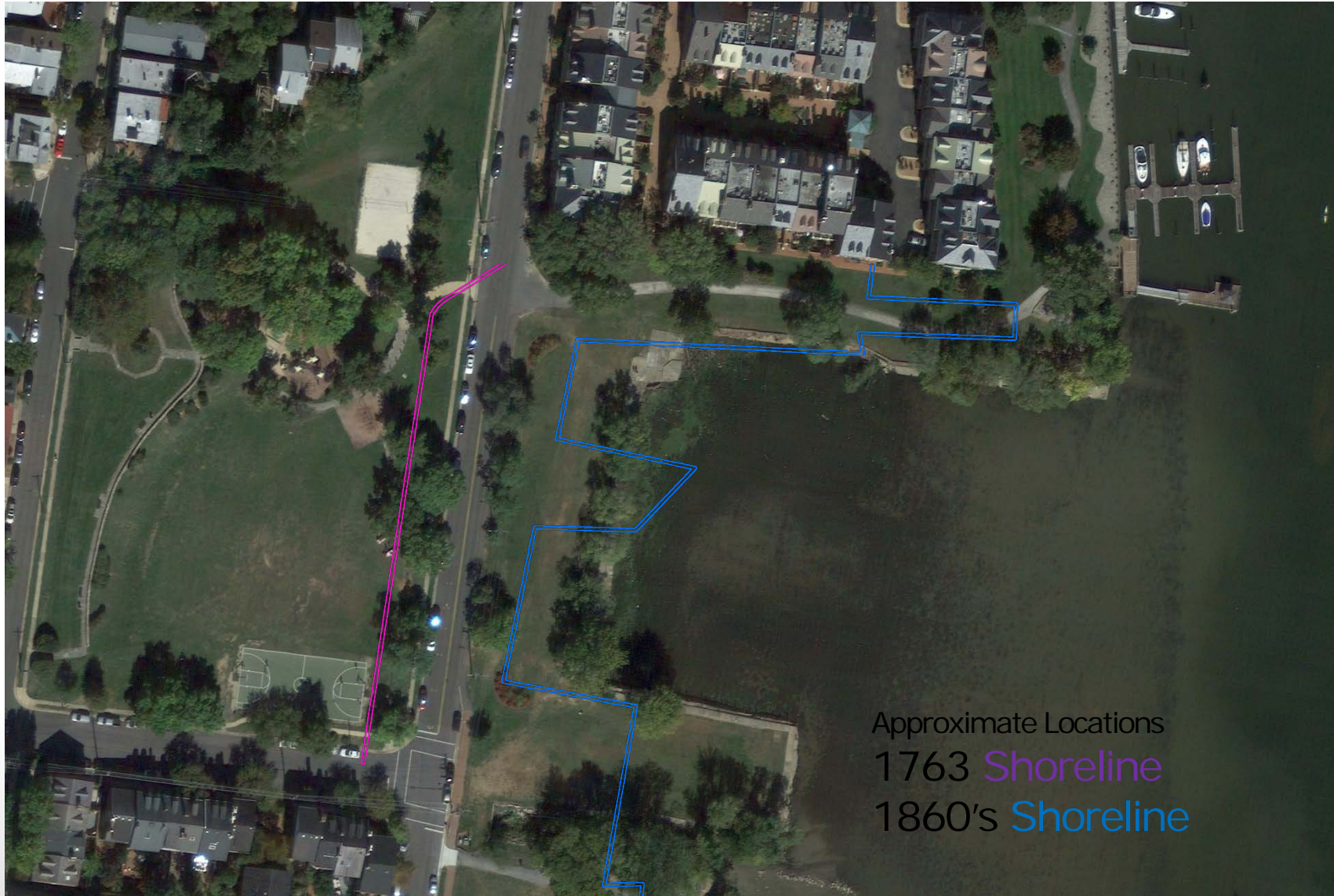
Project Area



Why We Are Here

- Changes in Best Practices
- Evolving permitting environment
- **Recommended Concept Plan**

Historic Shoreline



Approximate Locations
1763 Shoreline
1860's Shoreline

Community Feedback

Meeting #1 – February 12, 2015

Meeting #2 – April 13, 2015

Feedback:

- Safety important
- Move the project forward now
- Create a safe, stable, and manageable shoreline
- Respond to the changed environment of the basin
- Provide access along and to the water
- Be mindful of cost

Community Feedback

Environmental Policy Commission

May 18, 2015

Waterfront Commission

May 19, 2015

Parks and Recreation Commission

May 21, 2015

Feedback:

- All support the Living Shoreline Plan

Proposed Budget

- \$5.5 million for shoreline improvements (design & construction)
- \$500,000 for other planned park elements

Design Options - Examples



Structural Bulkhead



Living Shoreline



Rip-Rap/Armored Shoreline

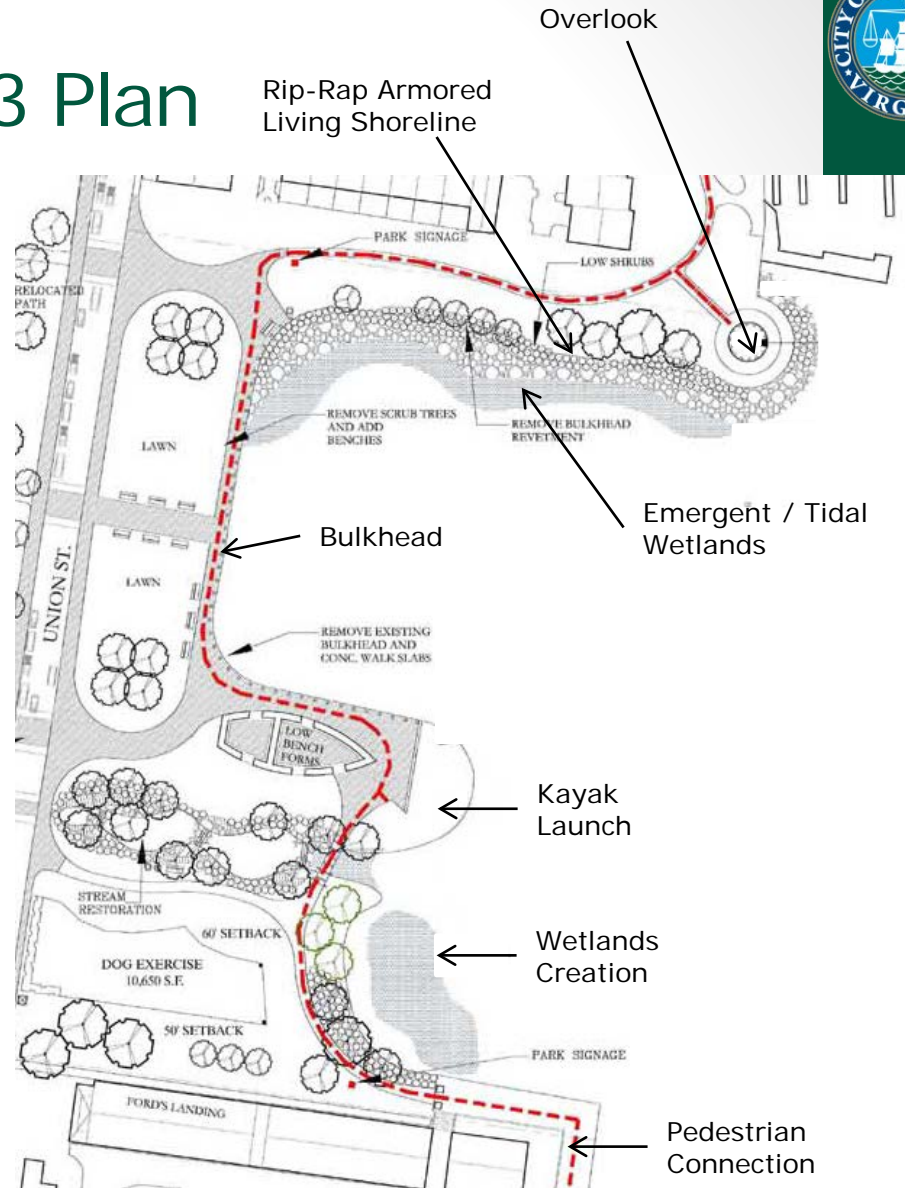


Bulkhead/Living Shoreline Hybrid

History: Approved 2003 Plan

City Council Approved Concept Plan (2003)

- Recommended combination approach
- Accommodation for canoes/kayaks and dogs
- Included overlook accommodation



Concept 1 Modernized 2003 Plan



- \$4.9 million
- Longer permitting timeline
- Greater construction complexity
- Most need for mitigation

Concept 2 Hybrid/Living Shoreline Plan



- \$5.9 million
- Moderate permitting timeline
- Complex construction
- Some need for mitigation

Concept 3 Living Shoreline Plan

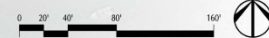


- \$3.8 million
- Shortest permitting timeline
- Least complex construction
- Least need for mitigation





ADDITIONAL DESIGN OPTIONS





EXISTING CONDITIONS



PROPOSED CONDITIONS RENDERING



TIDAL GRASSES



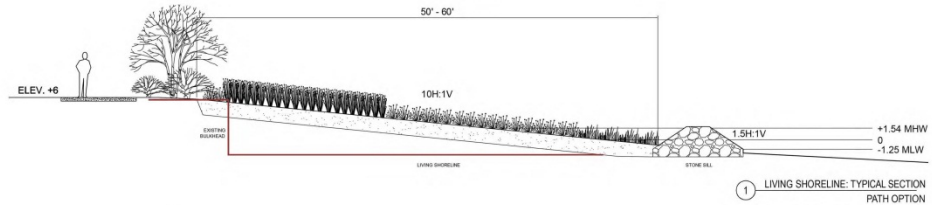
RIPARIAN PLANTINGS



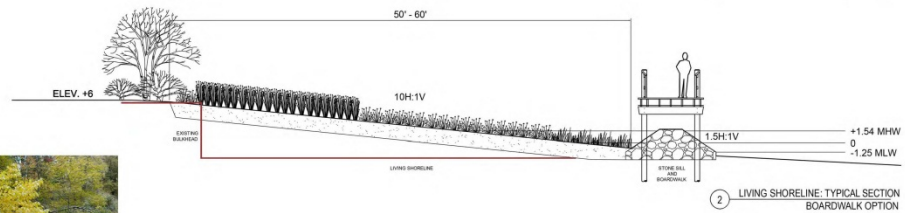
STONE SILL



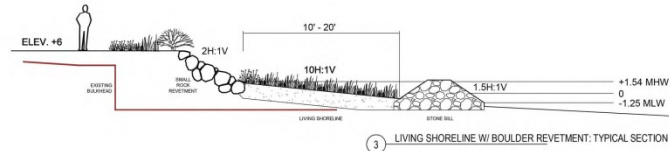
PEDESTRIAN BRIDGE



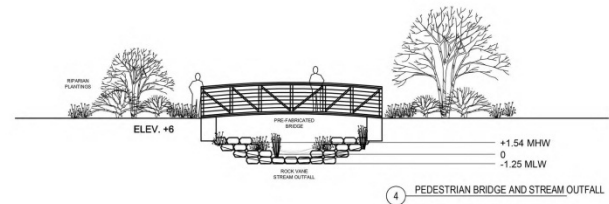
1 LIVING SHORELINE: TYPICAL SECTION PATH OPTION



2 LIVING SHORELINE: TYPICAL SECTION BOARDWALK OPTION



3 LIVING SHORELINE W/ BOULDER REVETMENT: TYPICAL SECTION



4 PEDESTRIAN BRIDGE AND STREAM OUTFALL



Kimley»Horn

Concept 3

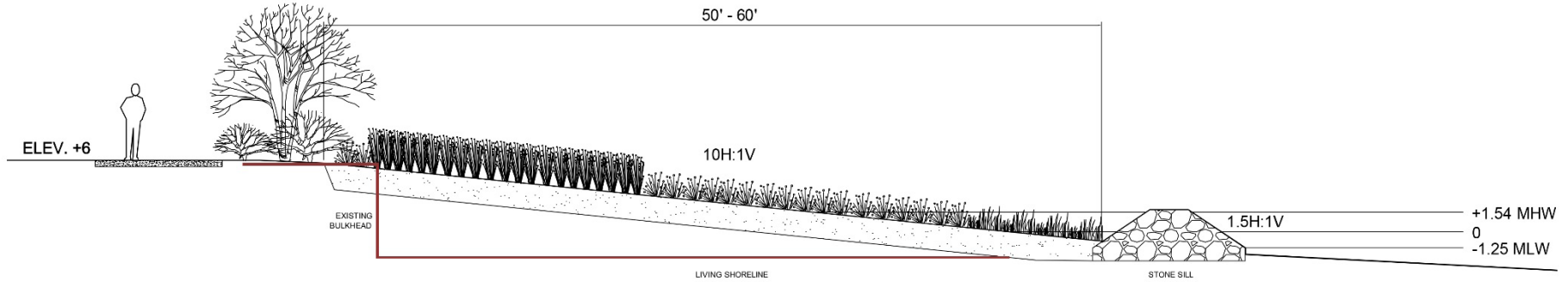
Living Shoreline



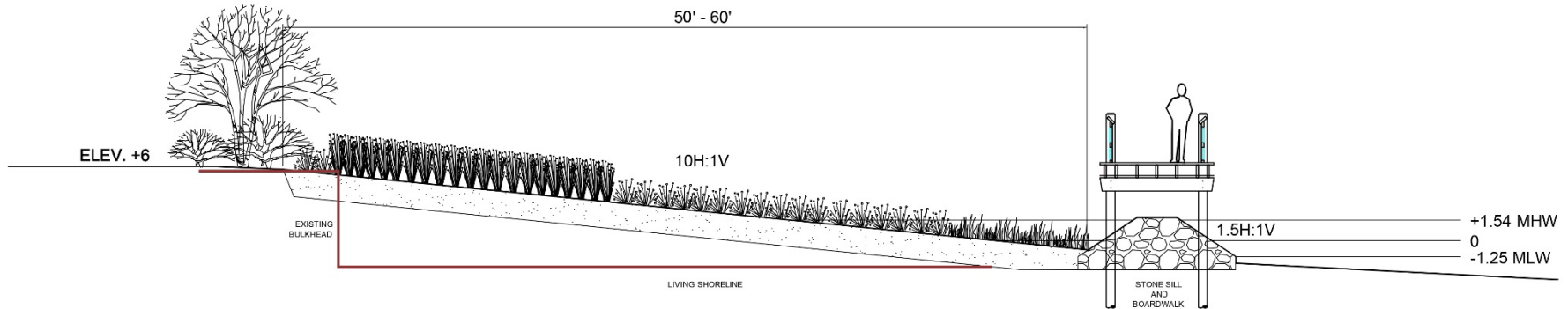




Concept 3 Sections

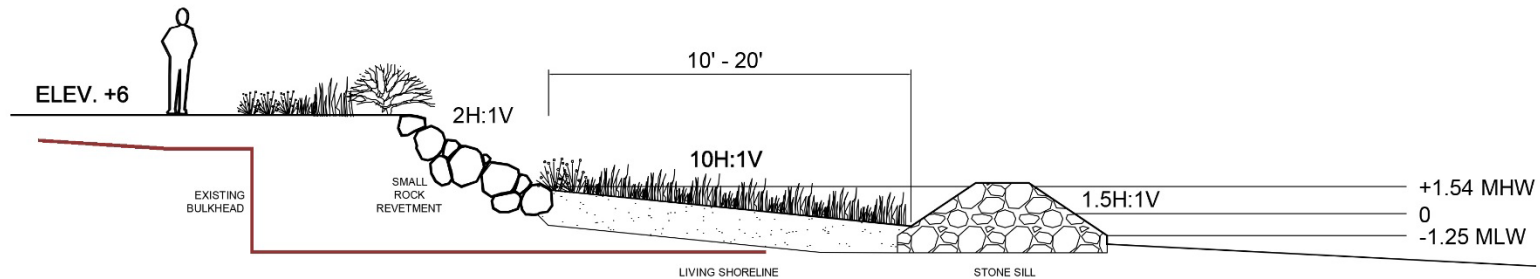


Section 1: Living Shoreline Typical – Path Option

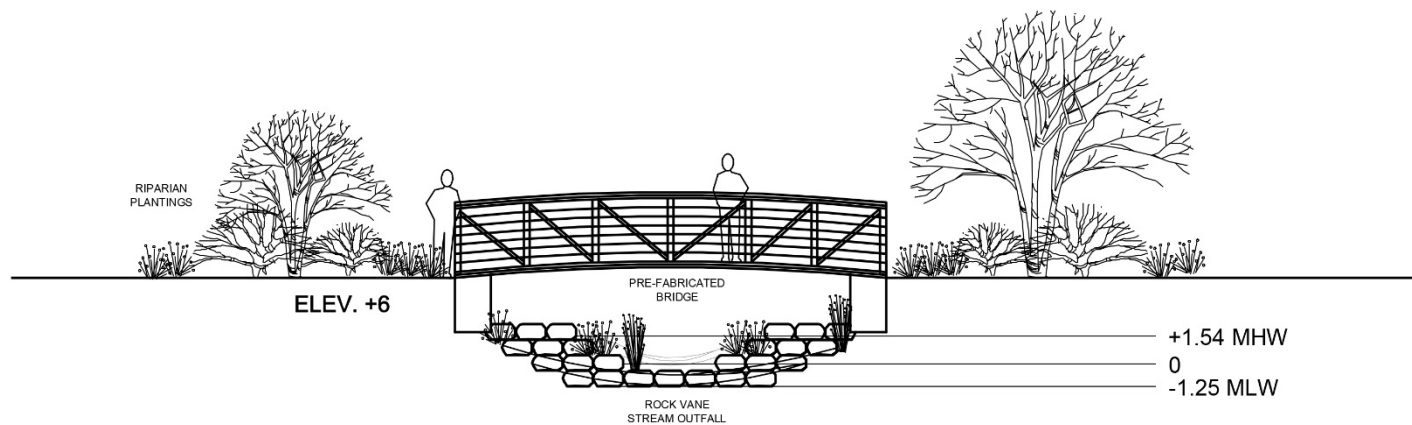


Section 2: Living Shoreline Typical – Boardwalk Option

Concept 3 Sections



Section 3: Living Shoreline w/ Boulder Revetment



Section 4: Pedestrian Bridge and Stream Outfall

Riparian and Tidal Plantings



Lower tidal grass:
Spartina alternifolia



Upper tidal grass:
Spartina patens



Typical Riparian plantings

Pre-fabricated Bridges



Implementation

- Final Design and Permitting
 - June 2015 – Spring 2016
- Construction
 - July 2016 – February 2017

Living Shoreline Construction

