

Rabbit Branch @ Collingham Drive Stream Restoration Project

Information Meeting: Concept Review

Department of Public Works and Environmental Services
Working for You!



A Fairfax County, VA, publication
July 16, 2019

Shanes Creek @ Royal Lake Park Stream Restoration Project

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Meeting Outline

1. Why?

- Goals
- Drivers
- Environmental Benefits

2. How?

- Stream Restoration
- Approaches – Natural Channel Design
- Examples
- Design Development

3. When?

- Timeline/Next Steps



Goals

1. Maintain open dialog and share information.
2. Coordinate with all the stakeholders and the community.
3. Build on the partnerships with local organizations, such as Homeowners Associations and Invasive Management Area (IMA) program.
4. Design Team – Community representatives, Wetland Studies and Solutions, Stormwater Planning Division, Urban Forest Management Division, Park Authority, Wastewater, and Utilities Design and Construction Division.
5. Build an ecologically sound restoration that **balances** water quality benefits with riparian function and park user experience. Pages 81 & 82 of the concept plan.



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Program Drivers

1. State and Federal Regulations
 1. Chesapeake Bay Agreement
 1. Partnering states (VA, MD, DC, DE, PA, WV) signed the agreement to restore the bay health and ecosystem.
 2. Municipal Separate Storm Sewer Permit (MS-4)
 1. Easements rights and responsibility to maintain/upgrade
 3. Local TMDLs (Total Maximum Daily Loads – sediment, bacteria, PCBs)
 1. Regulates amounts of pollutants in waterways
2. Public Safety
 1. Erosion control
 2. Flooding
3. Maintenance of existing facilities



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Water Quality Benefits

Improve watershed conditions and reduce downstream impacts through....

1. Controlling *quantity*
 1. Mitigate flooding where possible
2. Controlling *velocity*
 1. Reduce erosion
 2. Protect infrastructure and properties (private and public)
3. *Preventing sediment*
4. *Improving nutrient retention*



Environmental Benefits



Non-native
invasive species

Severely eroding and
undercut banks



Exposed sanitary sewer

Watershed Condition

Watersheds/Drainage Areas

Pohick Creek > The Potomac River > The Chesapeake Bay...

1. ~ 36.5 square miles
2. ~ 180 miles of stream

Stream Assessment

1. **Physical Assessment:** Conducted in 2005.

Results:

- Poor condition with severely incised stream and significant
- Portion with unstable banks – 75% channels
- Most of watershed's tributaries in widening stage

2. **Habitat Assessment:** Conducted in 2001

3. DEQ listed portions of the Pohick Creek Watershed as impaired waters (impairments: aquatic plants, PBC in fish and pathogens)

4. TMDLs: E. Coli, Benzo[k]fluoranthene

Results: ~ 0% excellent, ~15% Good, ~54% Fair, ~28% Poor, ~3% Very poor



For details: <https://www.fairfaxcounty.gov/publicworks/pohick-creek-watershed>

Watershed Condition

Watersheds/Drainage Areas

Shanes Creek> Pohick Creek

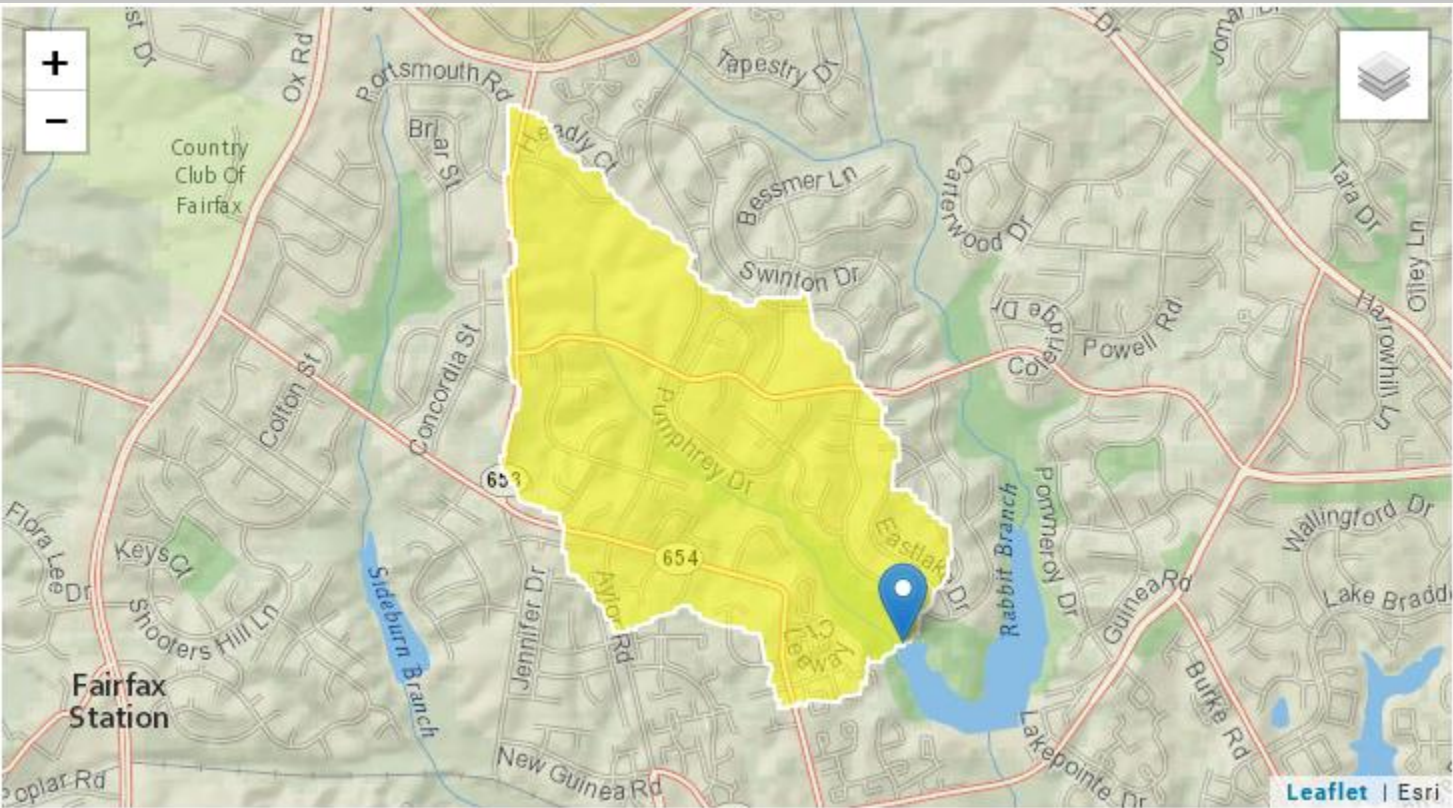
~ 0.8 square miles

~ 5600 linear feet of stream

~ 32% of land use in impervious category

*stream health begins to be impacted at 8-12% developed

1. WATERSHED ASSESSMENT		
An assessment of the overall watershed was based		
Overall Watershed Condition	Poor	
Category / Parameter / Measurement Method	Good	
1 Hydrology / Runoff / Watershed Impoundments	No impoundment upstream of project area	



StreamStats



Proposed Project Site- Shanes Creek



Current Condition:

- Incised channel
- Eroded bed and banks
- Unstable slopes
- Exposed utilities *sanitary sewer

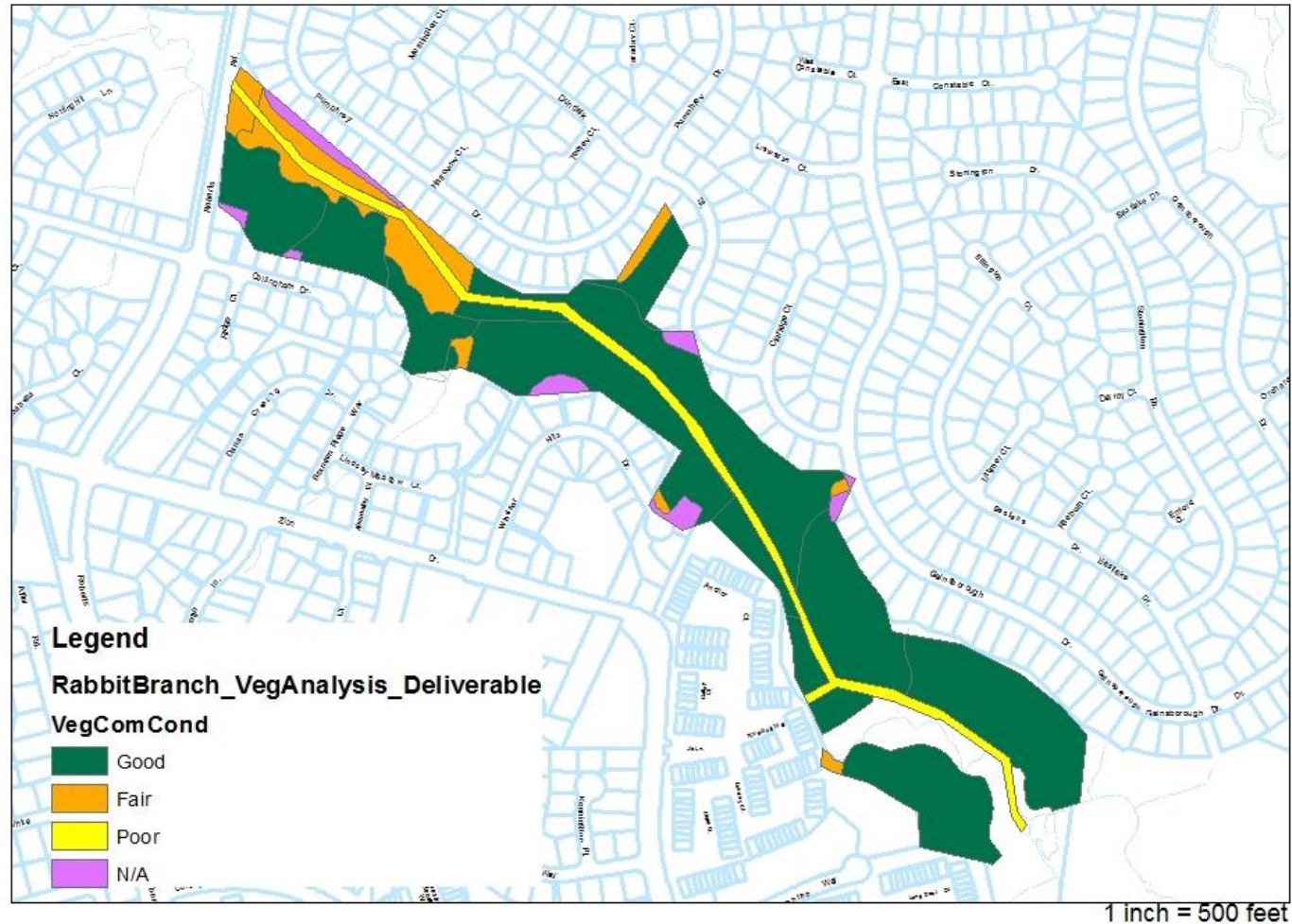
Existing Conditions



Unstable banks, incised channel, and tree loss.

Vegetation Inventory Survey

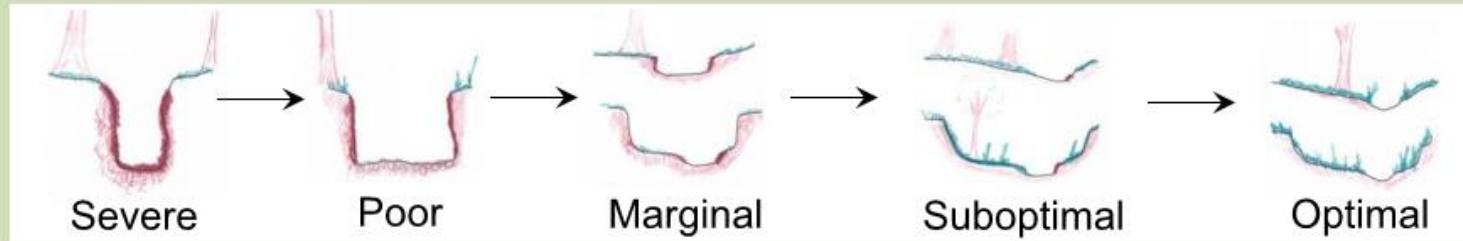
Rabbit Branch @ Collingham Drive - Vegetation Inventory



Restoration Approach – Natural Channel Design

DESIGN METHODOLOGY FOR URBAN STREAMS - NATURAL CHANNEL EVOLUTION -

Evolutionary process considers the channel's incision, bank stability, & sedimentation load (aggrading or degrading)



Restoration Approach – Natural Channel Design

Step Pools



Cross Vanes



Reinforced Bed



Native Vegetation

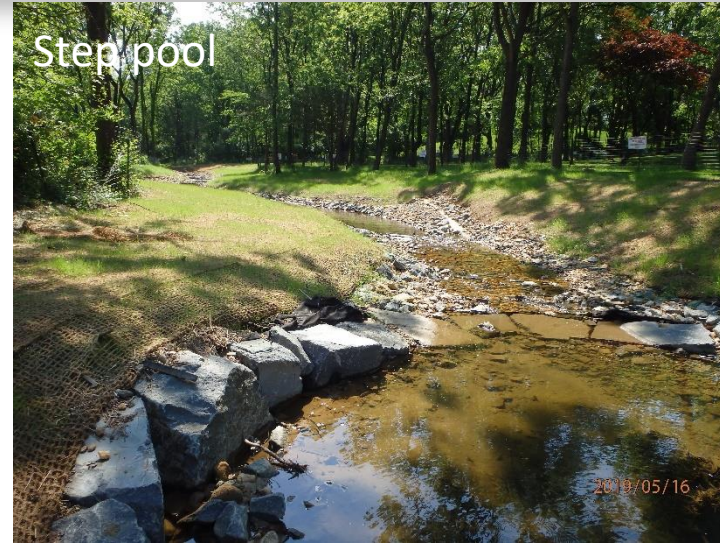


Restoration Approach – Natural Channel Design

Log Structures



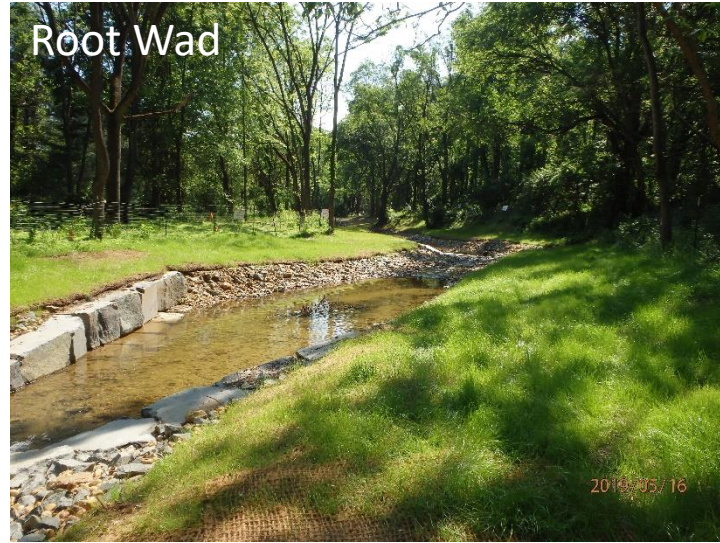
Step pool



Tributary Connection



Root Wad



Construction



Post-Construction, Examples



Immediately After Construction



Growing Season Following Construction Completion

Post-Construction, Examples



One Year After Construction



Three Years After Construction

Post-Construction, Examples



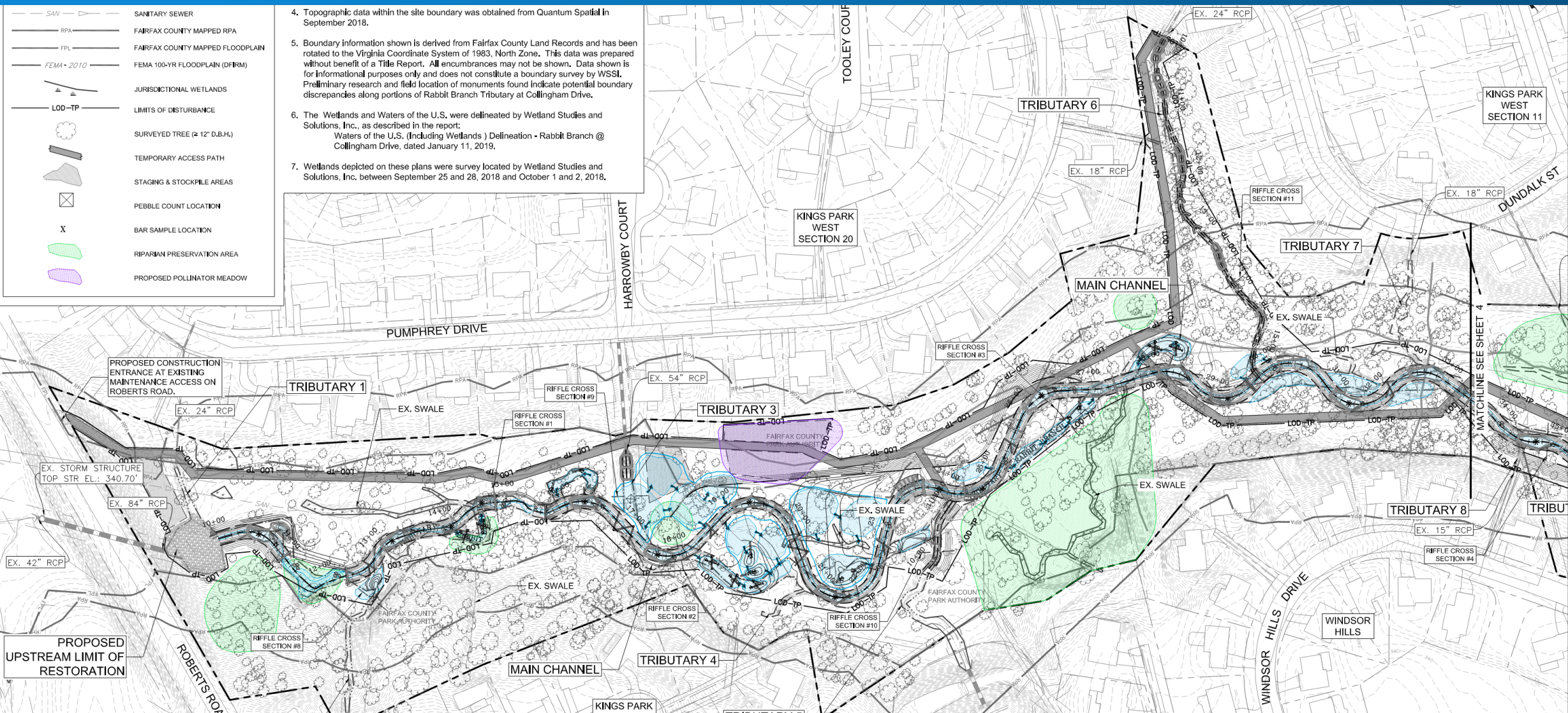
Before



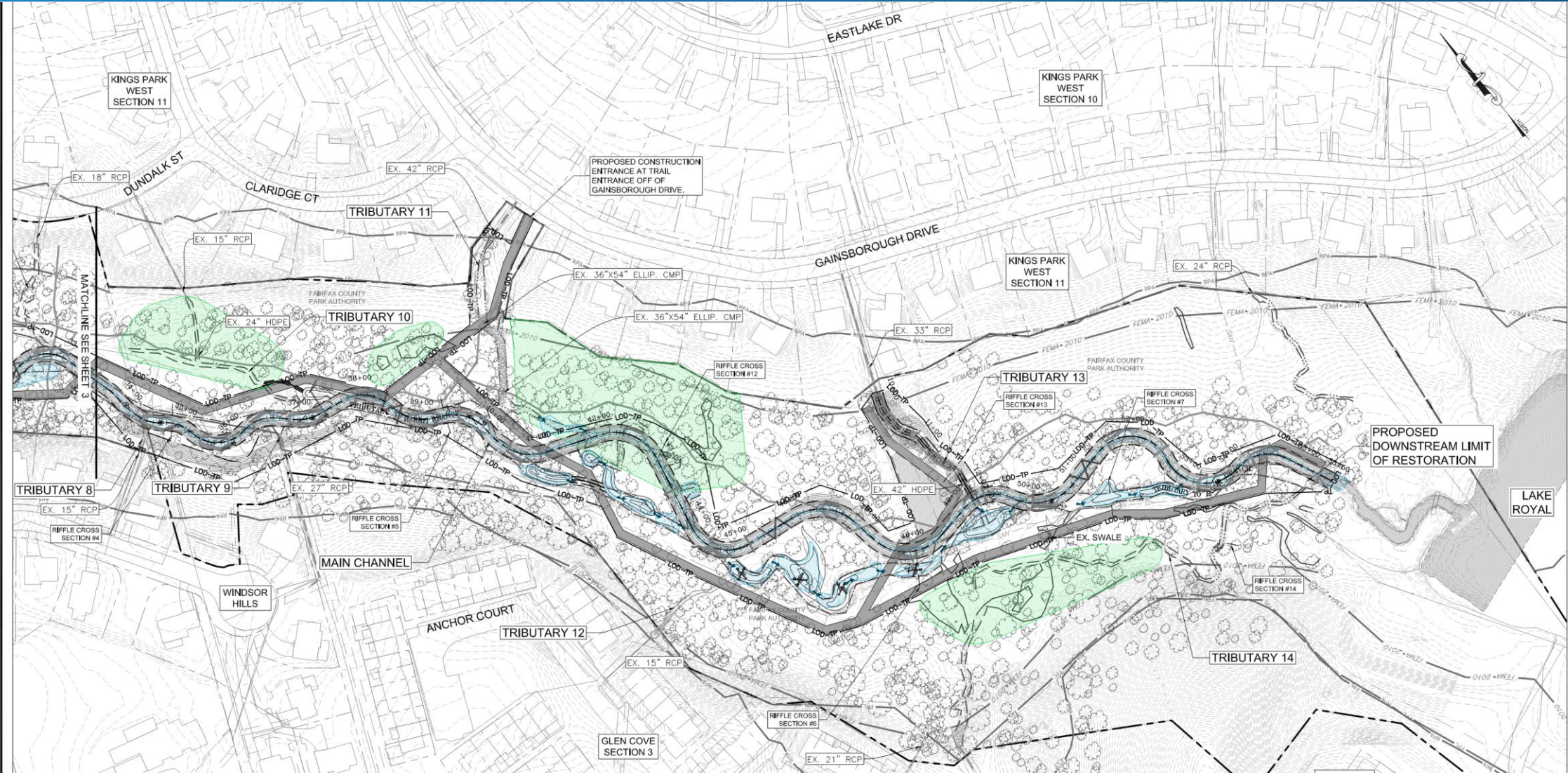
After

Stream Restoration Project-How?

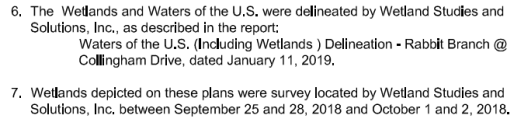
Stream Restoration Concept (35%)



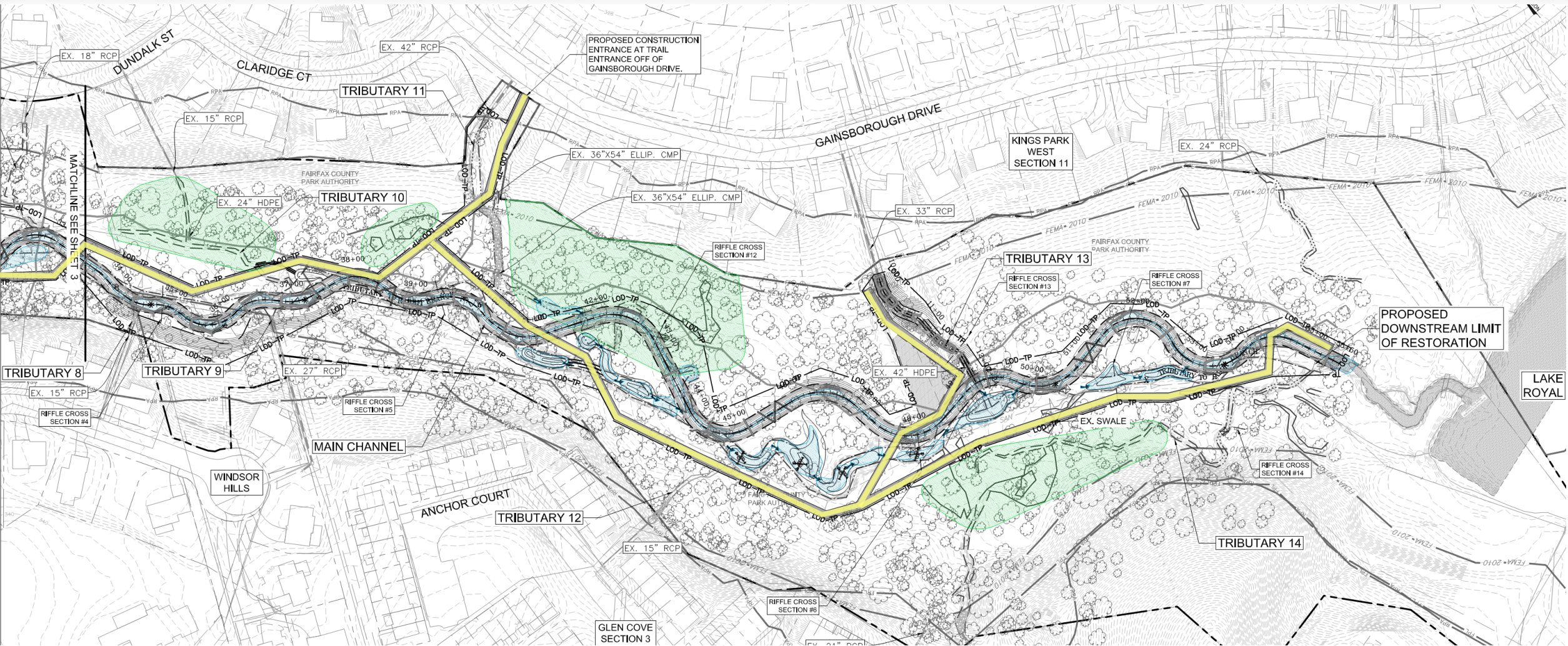
Stream Restoration Concept (35%)



Access Concept (35%)



Access Concept (35%)



Tree Survey

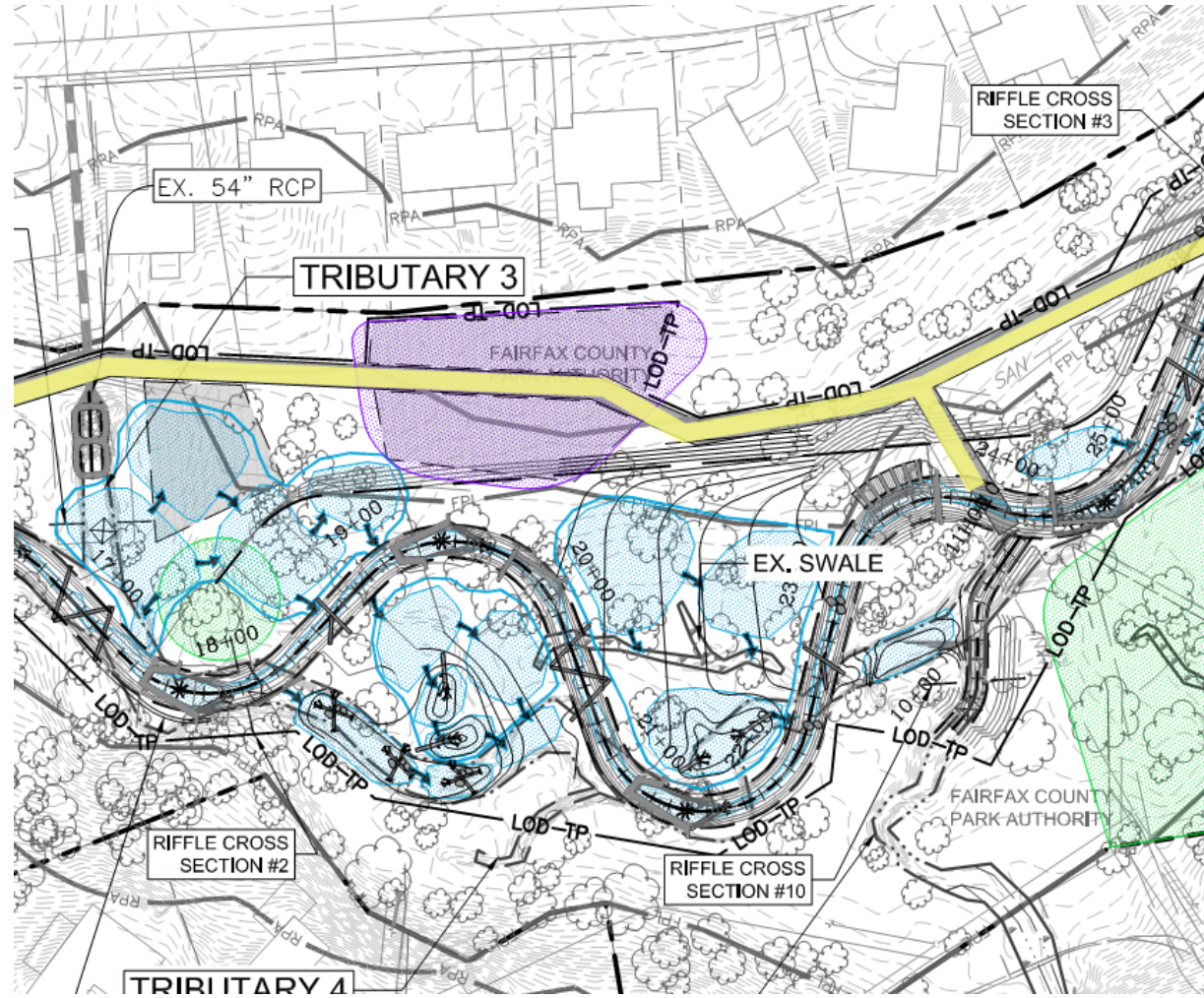
SPECIES SUMMARY - RABBIT BRANCH																
COMMON NAME	12-17" (SMALL)				18-29" (MEDIUM)				30"+ (LARGE)				TOTAL			
	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR	Living	Dead	Total	TBR
American Beech	0	0	0	0	1	0	1	1	0	0	0	0	1	0	1	1
American Holly	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0
American Sycamore	13	1	14	7	22	0	22	8	1	0	1	0	36	1	37	15
Bitternut Hickory	1	0	1	0	1	0	1	0	0	0	0	0	2	0	2	0
Black Cherry	7	1	8	2	2	0	2	2	0	0	0	0	9	1	10	4
Black Oak	5	0	5	0	14	0	14	0	5	0	5	0	24	0	24	0
Black Walnut	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0
Blackgum	13	0	13	1	3	0	3	0	0	0	0	0	16	0	16	1
Boxelder	2	0	2	0	0	0	0	0	0	0	0	0	2	0	2	0
Callery Pear	2	0	2	1	0	0	0	0	0	0	0	0	2	0	2	1
Common Chokecherry	0	0	0	0	1	0	1	1	0	0	0	0	1	0	1	1
Common Persimmon	4	0	4	0	2	0	2	2	0	0	0	0	6	0	6	2
Eastern White Pine	4	0	4	0	0	0	0	0	0	0	0	0	4	0	4	0
Mockernut Hickory	0	0	0	0	1	0	1	1	0	0	0	0	1	0	1	1
Northern Red Oak	22	2	24	3	61	1	62	9	10	0	10	0	93	3	96	12
Norway Maple	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0
Pignut Hickory	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0
Pitch Pine	1	0	1	0	1	0	1	0	0	0	0	0	2	0	2	0
Red Maple	301	6	307	70	177	4	181	62	20	0	20	6	498	10	508	138
Red Mulberry	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0
Scarlet Oak	2	0	2	1	4	0	4	1	0	0	0	0	6	0	6	2
Swamp White Oak	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0
Southern Red Oak	5	0	5	0	12	0	12	1	6	0	6	3	23	0	23	4
Tuliptree	397	6	403	72	493	4	497	74	76	1	77	12	966	11	977	158
Virginia Pine	13	3	16	0	5	1	6	0	0	0	0	0	18	4	22	0
White Oak	78	3	81	14	98	3	101	16	13	1	14	2	189	7	196	32
Yellow Birch	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0
Unknown Stump	0	0	0	0	0	2	2	1	0	1	1	0	0	3	3	1
Unknown Snag	2	30	32	7	1	27	28	6	0	0	0	0	3	57	60	13
TOTAL	879	52	931	178	901	42	943	185	131	3	134	23	1911	97	2008	386



Floodplain Reconnection and Storage Concept (35%)



Floodplain Reconnection and Storage Concept (35%)



Timeline & Next Steps

Survey & Data Collection

- Complete

Hydrology Assessment & Layout Sketch

- Complete

Conceptual design

- July, 2019

Conceptual design Community Meeting

- July, 2019

Concept revision

- September, 2019

Final design Community Meeting

- January, 2020

Design Completion

- May, 2020

Notice to Proceed Community Walk

- Fall 2020

Construction Begin

- Timing dependent on funding
availability



Additional Information

For additional information, please contact

Matthew Shepherd

571-279-7326

Email: Matthew.shepherd@fairfaxcounty.gov

To request this document in an alternate format, call 703-324-5500, TTY 711, or email

SWPDMail@fairfaxcounty.gov

www.fairfaxcounty.gov/publicworks

