APPENDIX R

PUBLIC MEETING 12/5/2018 - POWERPOINT PRESENTATION

Phase III Stream Assessment Study: Potential Stream Restoration Projects

Strawberry Run and Taylor Run

December 5, 2018

Eco-City Alexandria
Clean Waterways

Tonight's Agenda

- Introduce the project team
- Why stream restoration?
- Healthy stream characteristics
- City's Stream Assessment Program
- Project selection
- Finished project examples
- Next steps

Project Team

Consultant

Wood Environment & Infrastructure Solutions

wood.

City Departments

Transportation and Environmental Services (T&ES)

Department of Project Implementation (DPI)

Recreation, Parks and Cultural Activities (RPCA)

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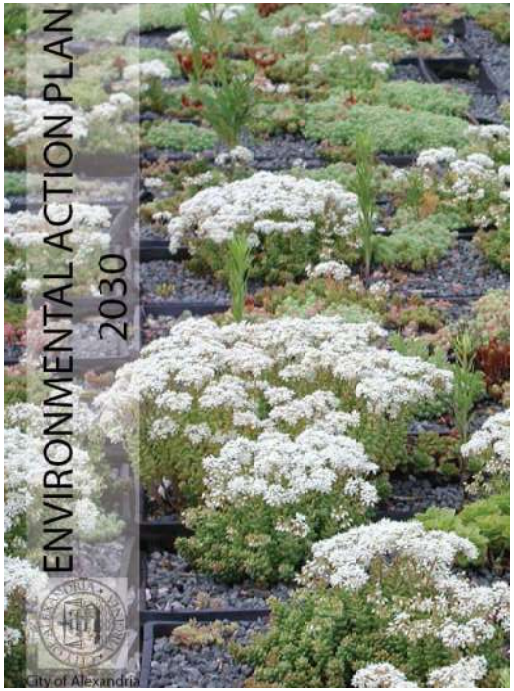
wood.

Project Drivers

1. Water quality and improving local streams is a City priority
2. Local benefits: enhanced water quality, improved habitat, protection of property
3. State and EPA require development of Total Maximum Daily Loads (TMDLs) for impaired streams



Chesapeake Bay TMDL

Chesapeake Bay TMDL Cleanup Mandates

- Enforced through the City's stormwater permit
- Requires ~1/4 of the City to be retrofit for water quality treatment before 2028
- Dense urban nature of the City limits potential solutions
- Stream restoration is one of the more cost-efficient approaches

MS4 Permit Cycle	**% Total**	**Approx. Acres**
Phase I (2013 - 2018)	5%	120 - 130
Phase II (2018 - 2023)	35%	660
Phase III (2023 - 2028)	60%	1,450
Total All Phases	**100%**	**2,140**

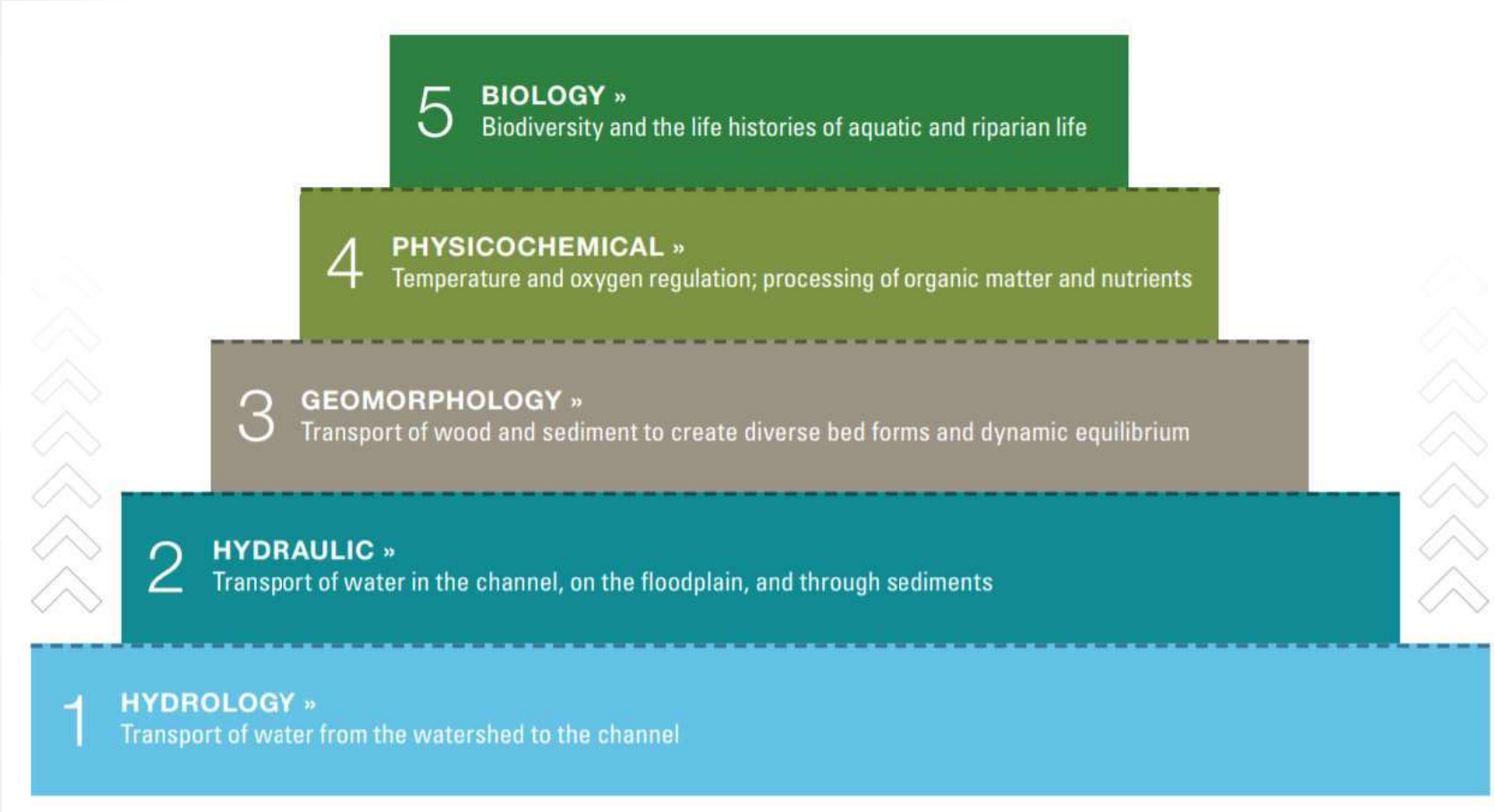
What Makes a Stream Healthy?

Physical → Chemical → Biological

1. Bed stability and diversity
2. Sediment transport balance
3. In-stream habitat & flow diversity
4. Bank stability (native plant roots)
5. Riparian buffer (streamside forest)
6. Active floodplain
7. Healthy watershed

"Multiple Benefits" or "Co-Benefits"

Stream Pyramid



Courtesy of Stream Mechanics

Scour

Scour – Field Examples

Outfall to Holmes Run

Strawberry Run

Taylor Run

Stream Assessment Program

Phase I Stream Categorization

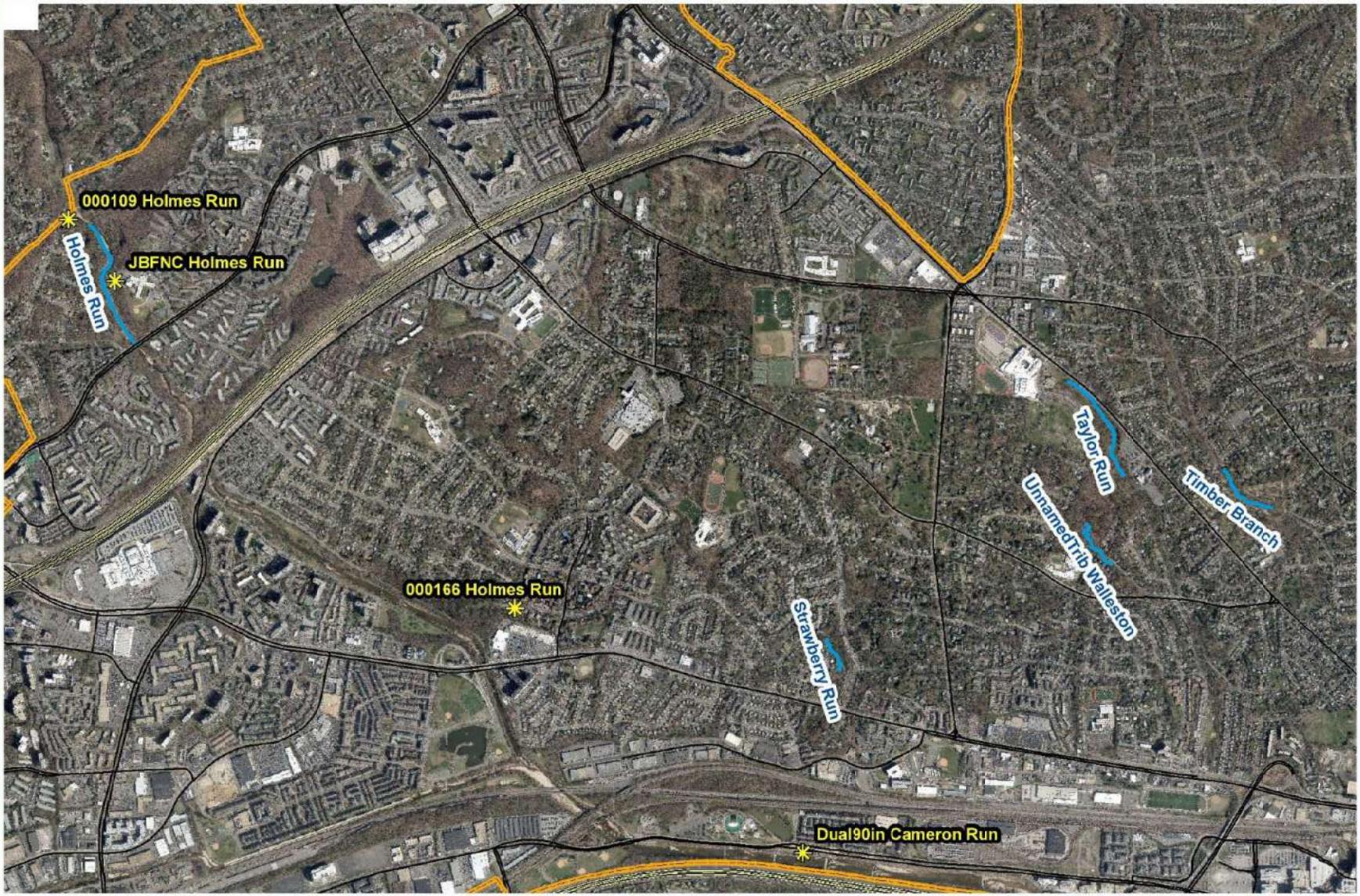
Mapping of streams, defining limits, and stream categorization

Phase II Assessment of Streams

Stream habitat, infrastructure impacts, problem areas, characteristics

Phase III Project Identification

Potential project sites evaluated and ranked. Conceptual designs for top projects.



Outfalls_For_Evaluation
Streams_For_Evaluation
City of Alexandria Boundary

ATTACHMENT 1
POTENTIAL PROJECTS FOR EVALUATION

1 inch = 2,000 feet

0 875 1,750 3,500 Feet

N

Potential Projects – Stream Segments

Unnamed Tributary near Walleston Ct.

Strawberry Run near Taft Avenue

Taylor Run near Chinquapin Park

Holmes Run north of N. Beauregard St.

Timber Branch near Ivy Hill Cemetery

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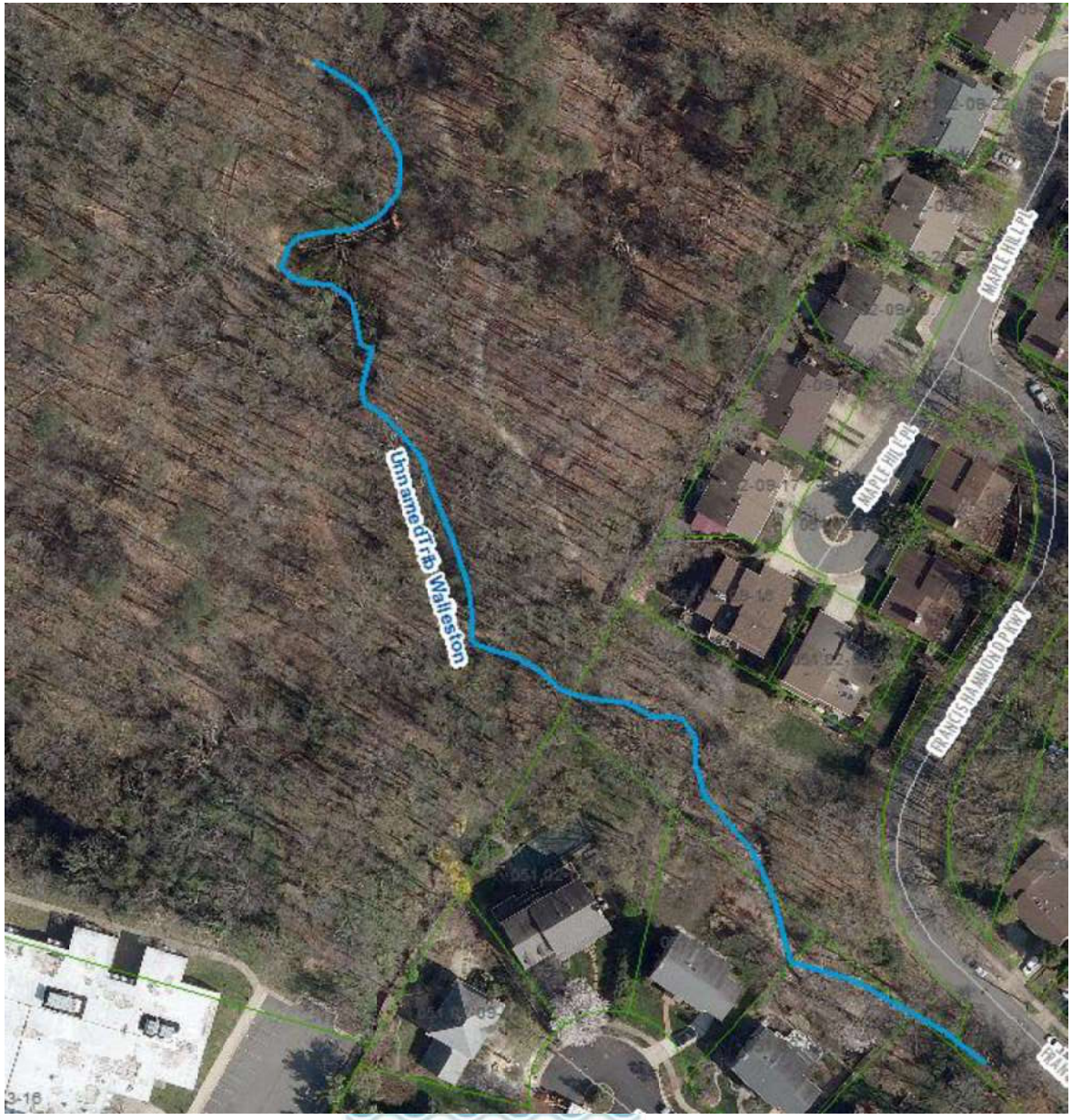
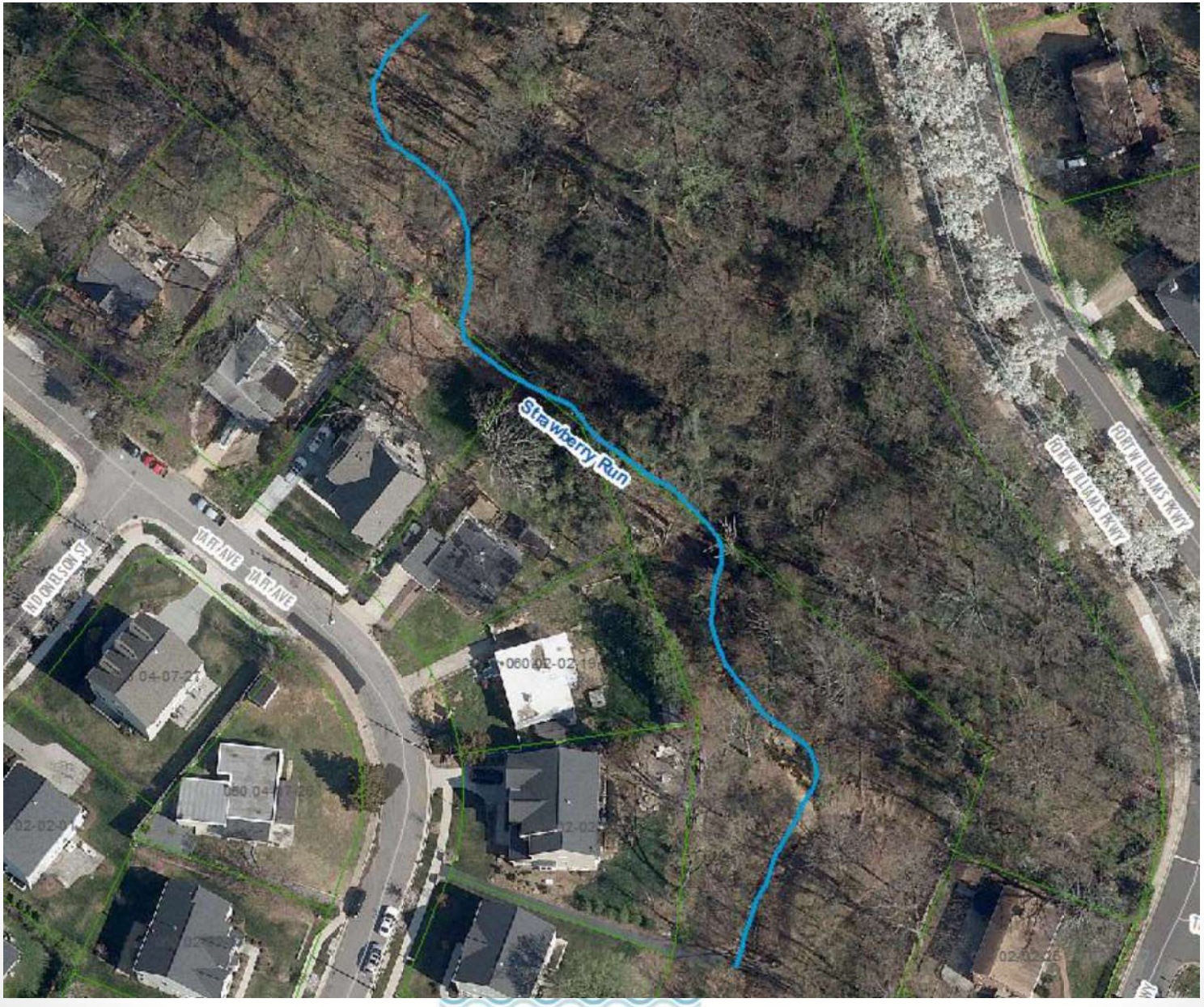
wood.

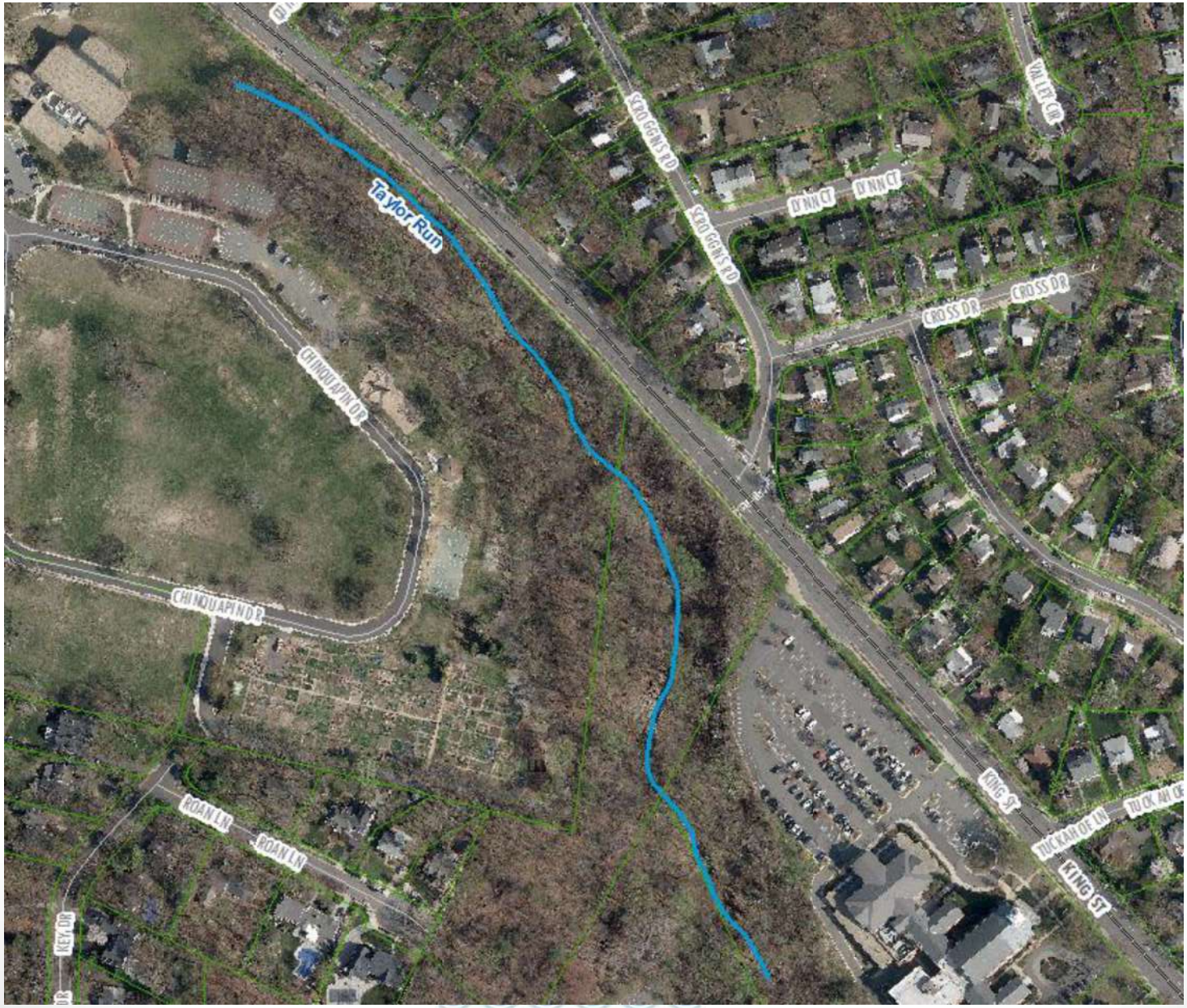
Unnamed Tributary near Walleston Ct.



Strawberry Run near Taft Avenue



Taylor Run near Chinquapin Park



Holmes Run north of N. Beauregard St.

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Timber Branch near Ivy Hill Cemetery

Phase III Stream Assessment

Evaluation of Potential Projects

- Field Assessment
- Recommendations
- Decision Matrix and Priority Ranking

Number	Ranking Criteria	Importance Score 1-10	Normalized Weight	Unnamed Tributary near Walleston Court	Strawberry Run near Taft Avenue	Taylor Run near Chinquapin Park	Holmes Run, north of N. Beauregard St.	Timber Branch near Ivy Hill Cemetery
1	Channel Dimension at Bankfull Cross-Section	7	5.0%	5	5	5	3	5
2	Channel Planform Pattern	7	5.0%	5	5	3	3	5
3	Channel Bed Longitudinal Profile	7	5.0%	3	5	5	3	3
4	Streambank Stability and Protection from Erosion	8	5.8%	3	5	1	1	5
5	Presence of Urbanite	4	2.9%	1	5	5		3
6	Channel Obstructions	4	2.9%	3	5	5		3
7	Riparian Vegetation	2	1.4%	1	5	3		1
8	Presence of desirable fish and wildlife	3	2.2%	1	3	3		1
9	Environmentally Sensitive Areas	4	2.9%	5	3	3		3
10	Impacts to Trees	5	3.6%	1	3	1		1
11	Construction Access	8	5.8%	5	1	3		3
12	Property Ownership	9	6.5%	1	1	3		1
13	Utility Conflicts	5	3.6%	5	5	1		3
14	Stakeholders	9	6.5%	1	3	3		1
15	Historically Sensitive Areas				1	3		3
16	Public Education and Outrea				1	5		1
17	Recreation Potential				3	3		3
18	Infrastructure at Risk				1	3		1
19	Public Safety Concerns				3	5		1
20	Associated Infrastructure Pr				1	5		3
21	Cost per lb. of Phosphorous				3	1		3
22	Cost per lb. of Phosphorous				3	1		5
23	MS4 Draining to Project Site				5	5		5

Strawberry Run

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Strawberry Run

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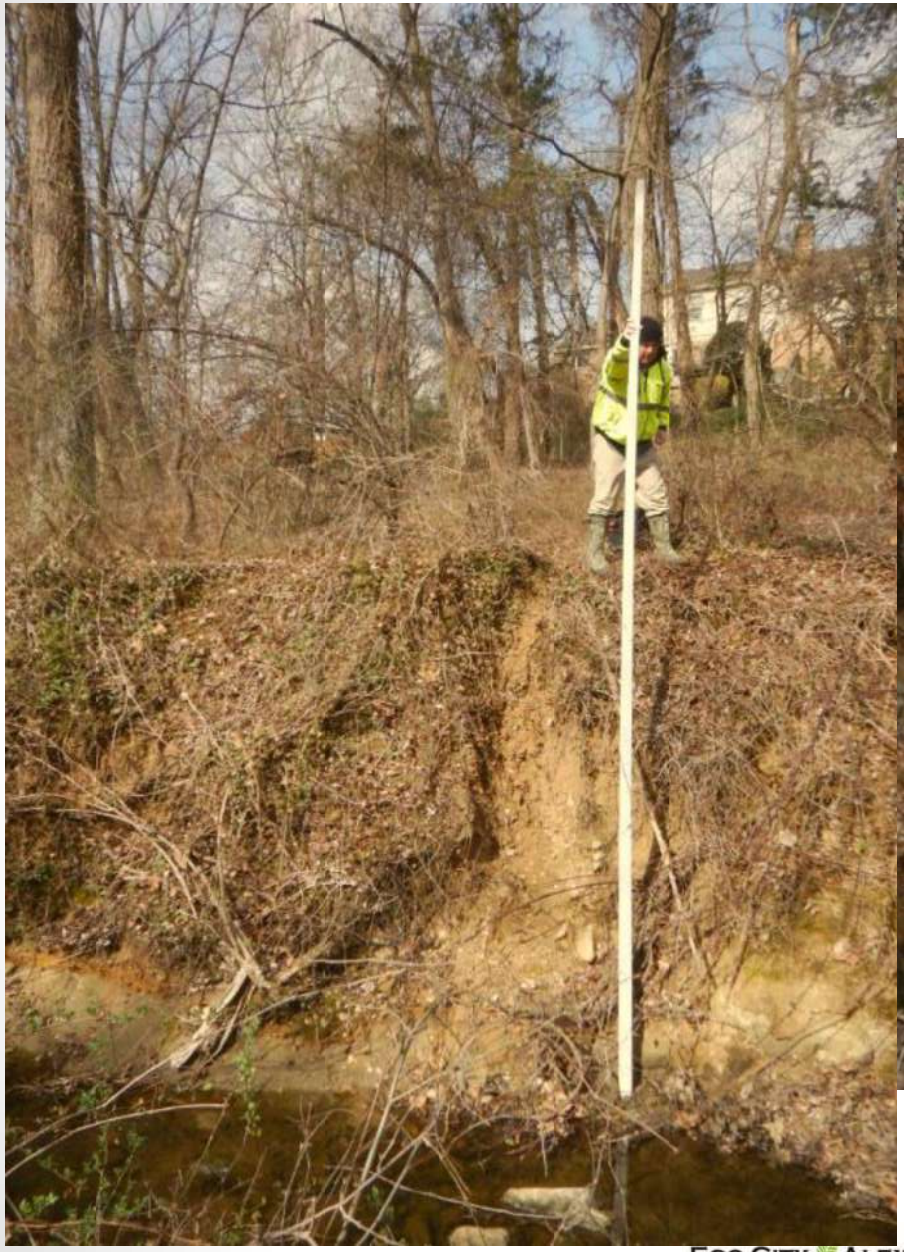
Strawberry Run



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Taylor Run

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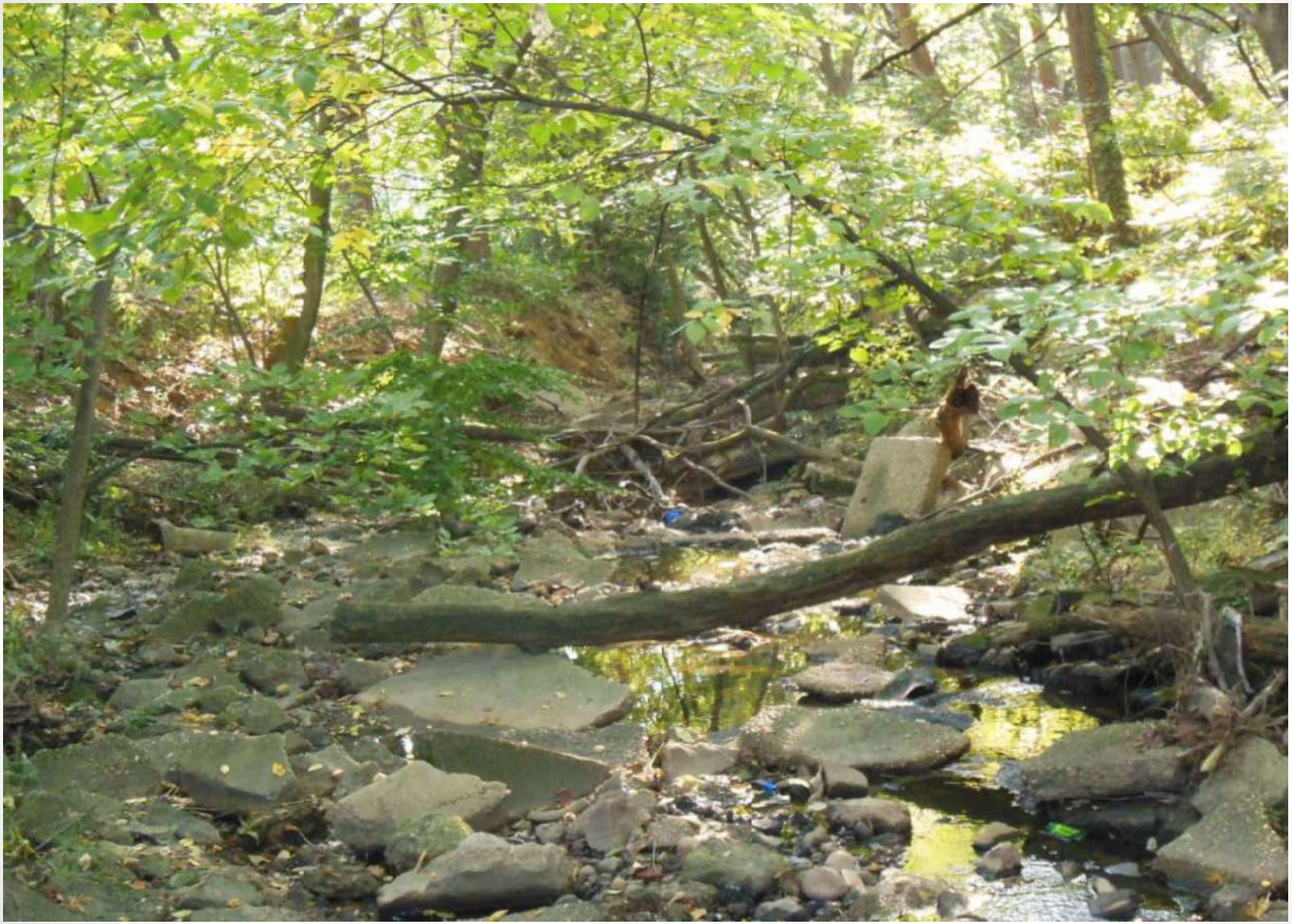
Taylor Run



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Taylor Run

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Taylor Run

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Phase III Stream Assessment

Conceptual Designs and Cost Estimates

- Conceptual Designs
- Using Natural Channel Design (NCD) which emulates natural river systems
- Planning Level Cost Estimates

Natural Channel Design

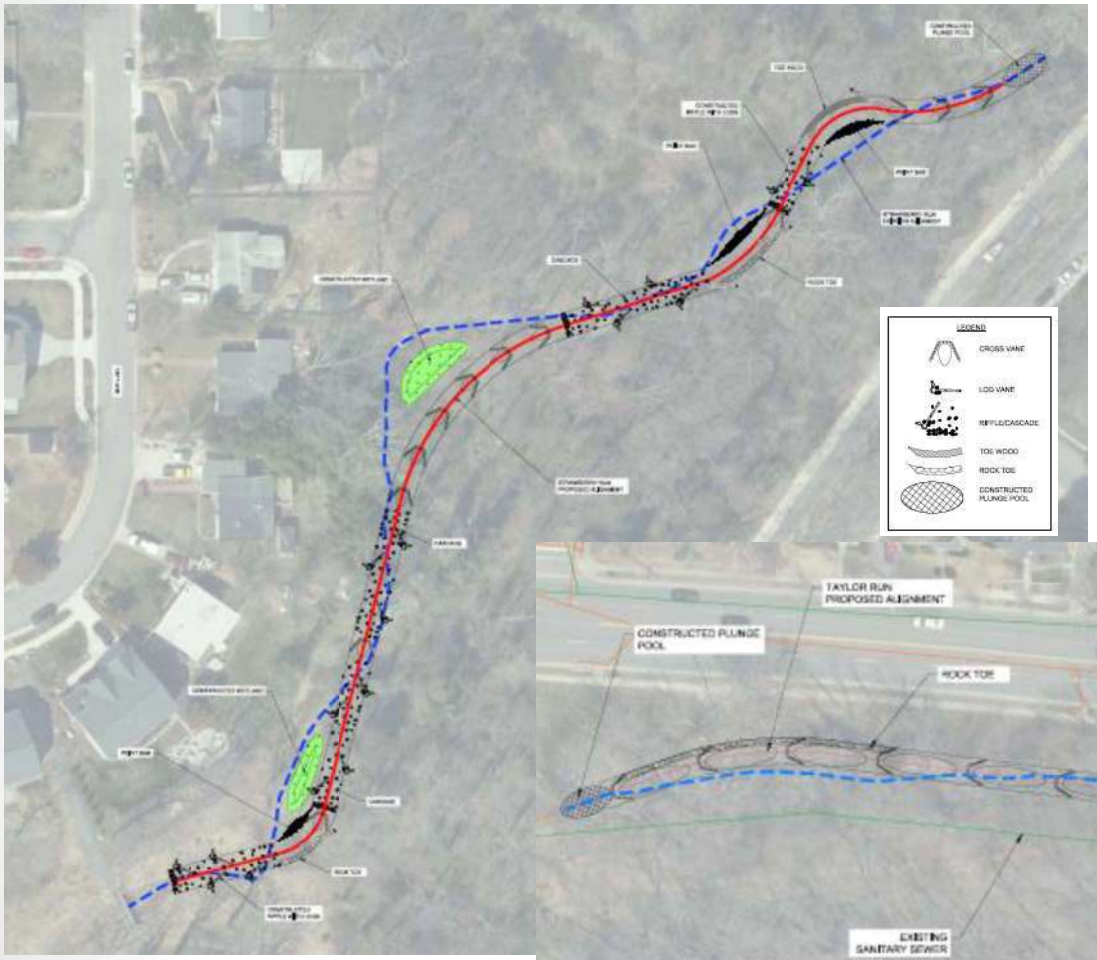
Riffle

Step-Pools

Cascade

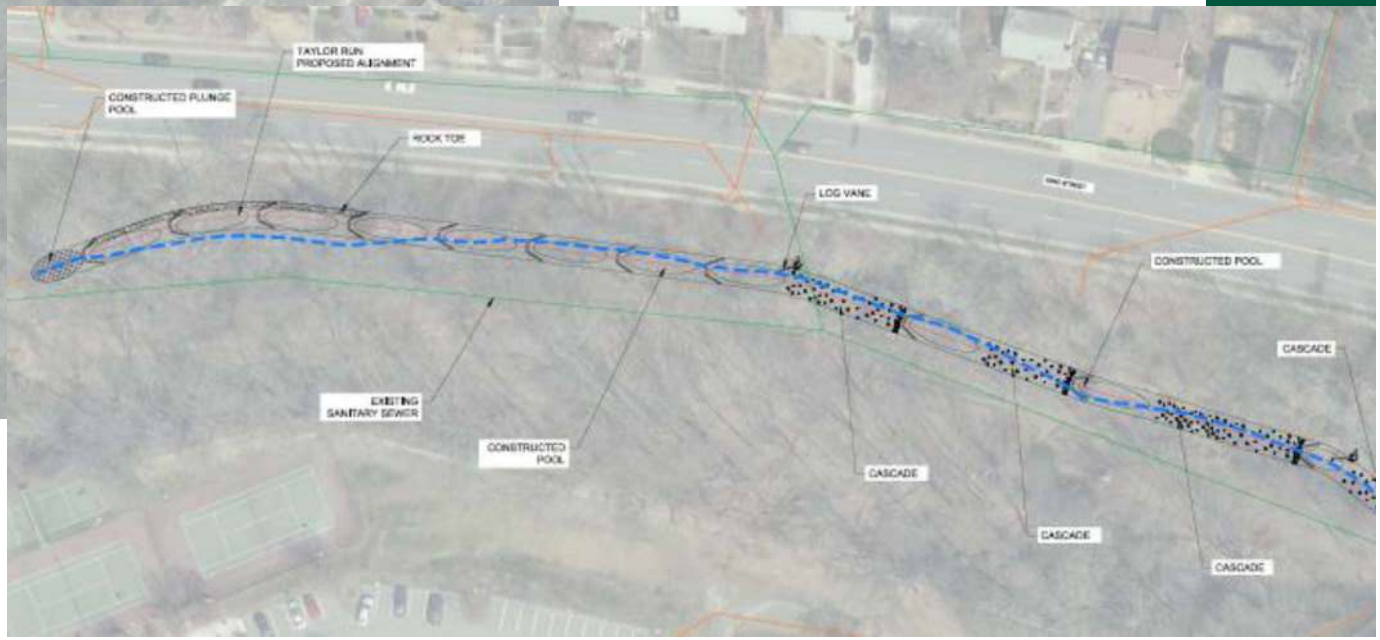
Log Vane

Conceptual Designs

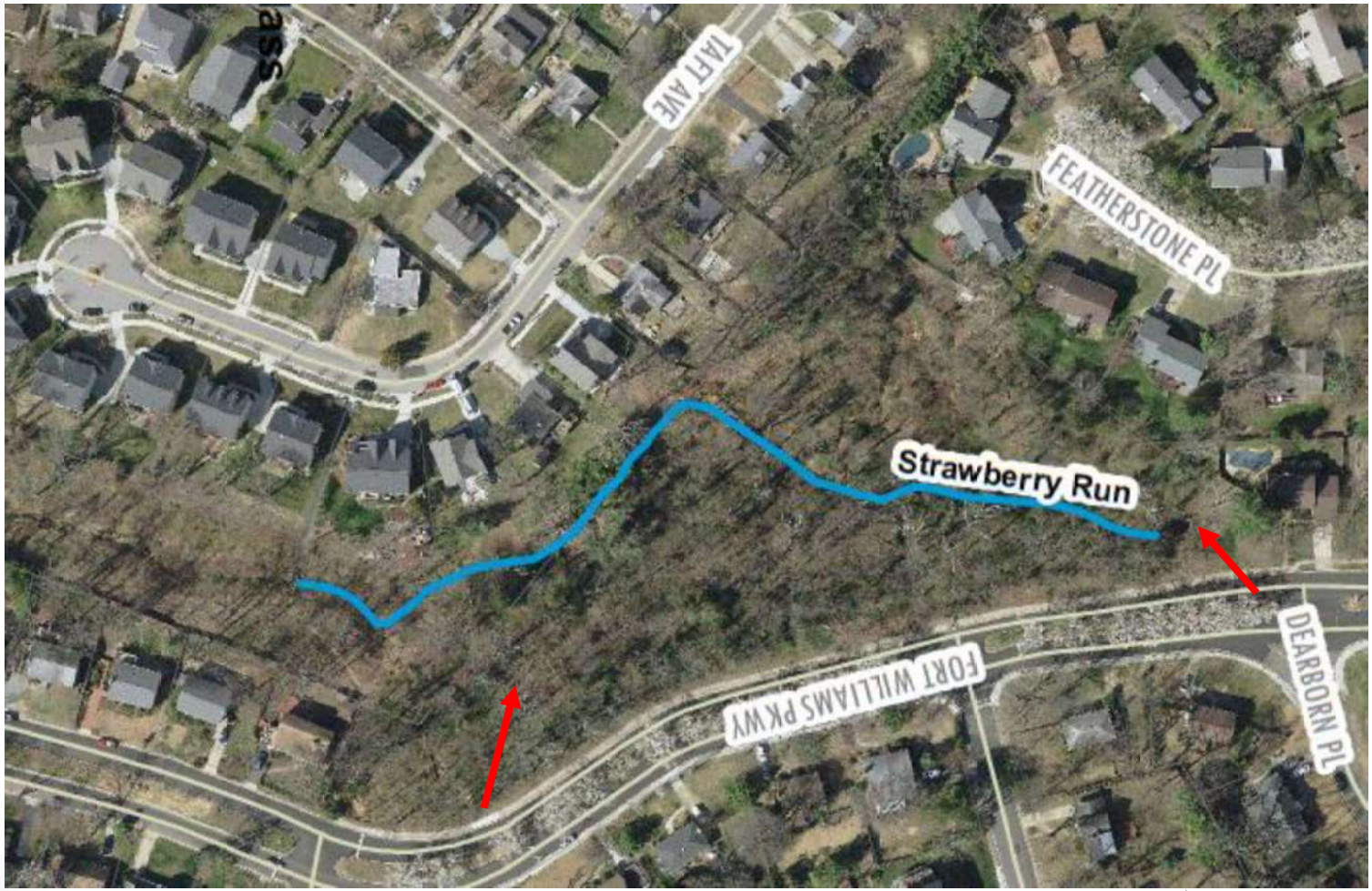


Strawberry Run

Taylor Run



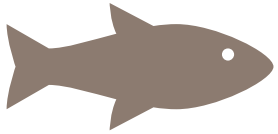
Feasibility



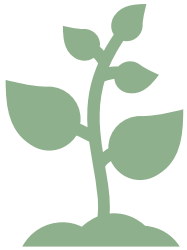
Potential Construction Access

Benefits

Habitat



Water Quality



Native Vegetation

Aesthetics

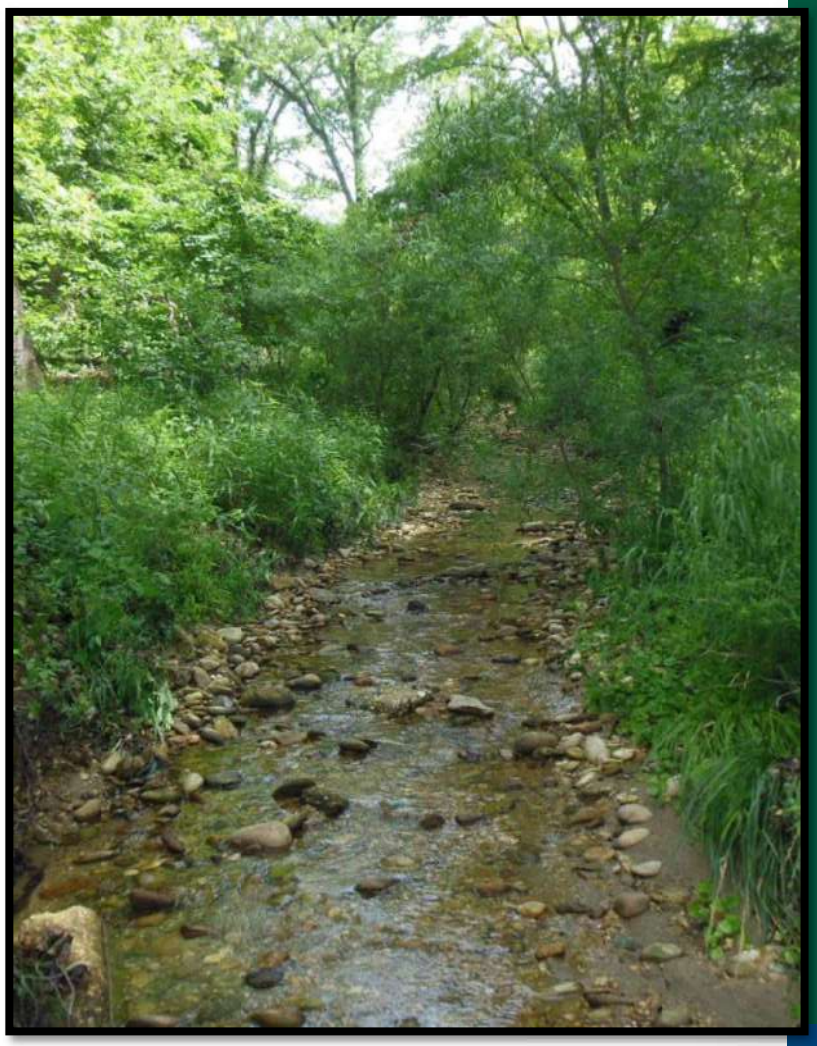
Strawberry Run – Downstream Project

Before

After

Strawberry Run – Downstream Project

Before



After

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Joint Base Andrews

Before

After

Courtesy of Wood Environment & Infrastructure Solutions

Cullers Run

Before

After

Courtesy of Wood Environment & Infrastructure Solutions

Cullers Run

Courtesy of Wood Environment & Infrastructure Solutions

North Mill Creek

Before

After

Courtesy of Wood Environment & Infrastructure Solutions

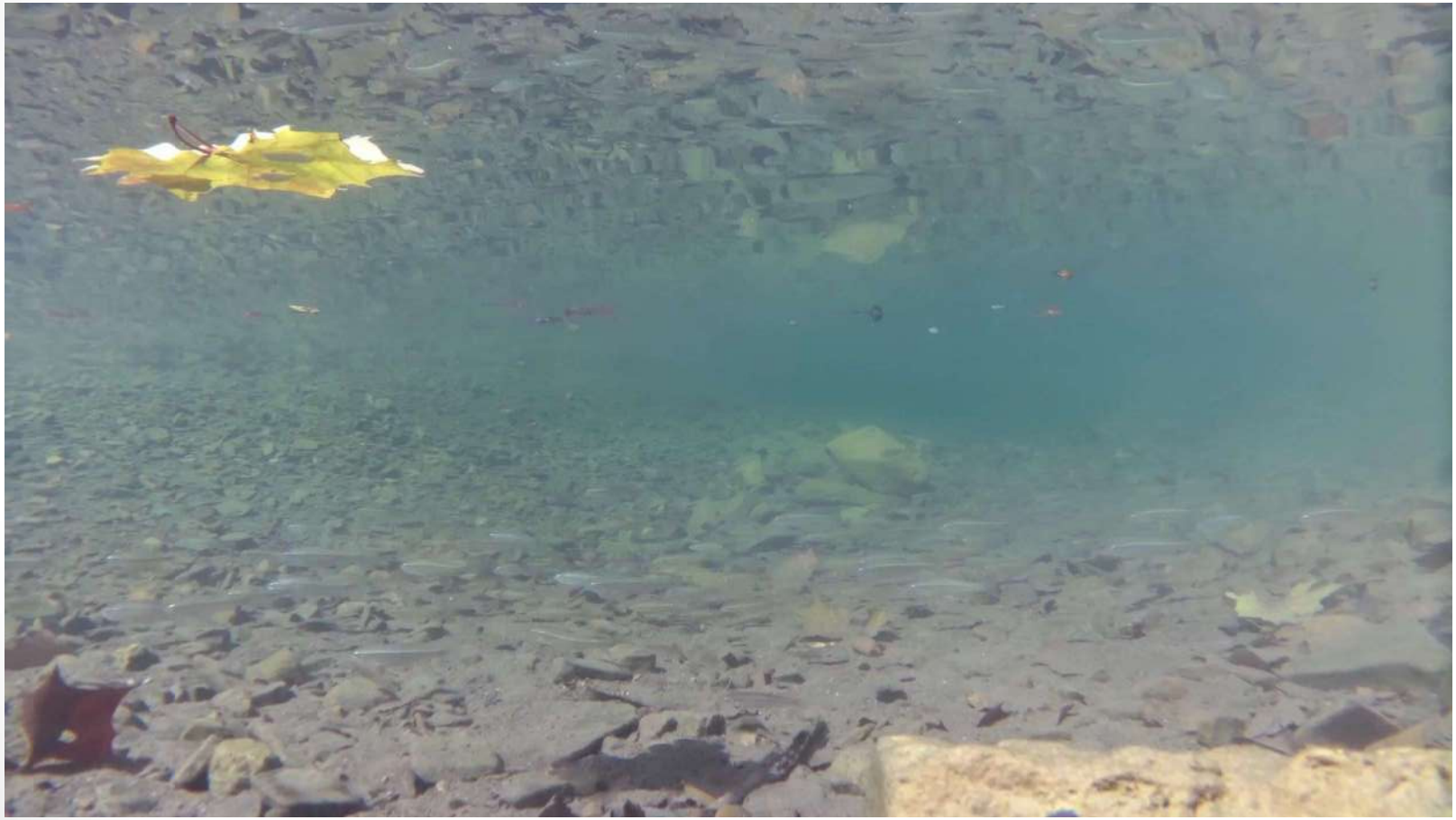
Big Rocky Run

Before

After

Courtesy of Wood Environment & Infrastructure Solutions

Habitat…



Next Steps & What To Expect

Outreach

- Public and Stakeholder Outreach
- Consider feedback in designs
- More outreach…

Finalize Phase III Stream Assessment

- Outfall Conceptual Designs – Dec. 2018
- Report – January 2019

Funding

- Applied for matching 50/50 state grants

Next Steps & What To Expect

Continue with Design

(may depend on grant funding)

- 30%, 60%, 90%, Final
- Topographic survey
- Tree survey
- Refine designs

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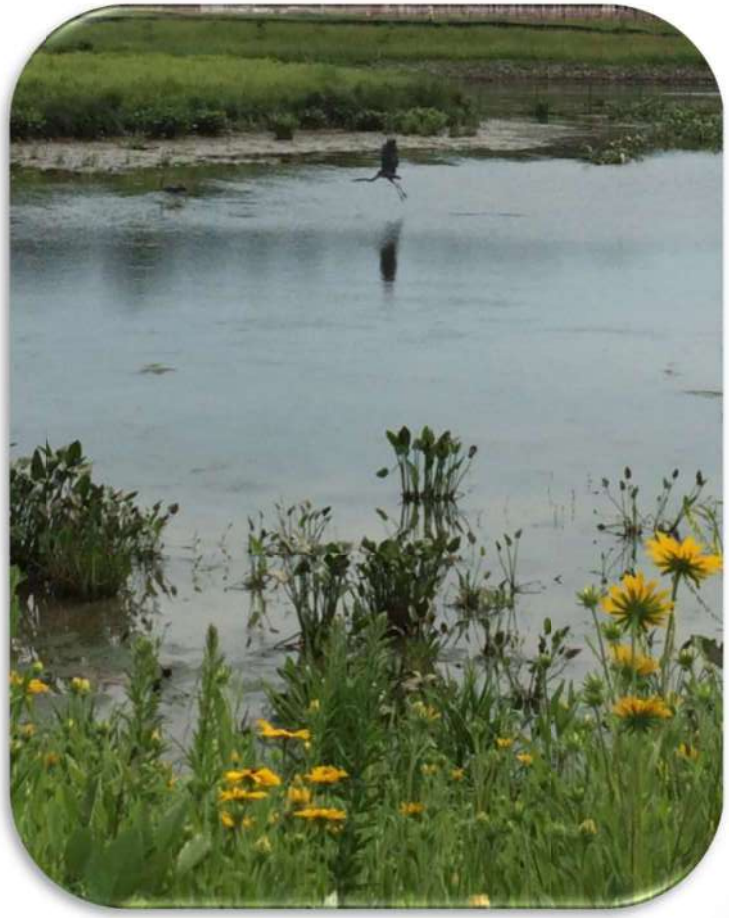

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