Department of Public Works and Transportation

Rushern L. Baker, III
County Executive

Darrell B. Mobley
Director

Calverton Channel Rehabilitation

November 8, 2017

Presented by
Mary Abe, DPW&T Project Manager, OE&PM

AGENCY OVERVIEW

Department of Public Works & Transportation(DPW&T):

- Projects include bridge reconstruction, Green/Complete Street Projects, roadway widening and realignments, repair of drainage and flood control systems.
- Maintains
  - 1,900 miles of County-roadway and associated sidewalks
  - We are responsible for 172 bridges in the County which we are responsible for as well as hundreds of smaller structures and culverts, and flood levees.
  - Snow removal, street tree plantings, and street lighting

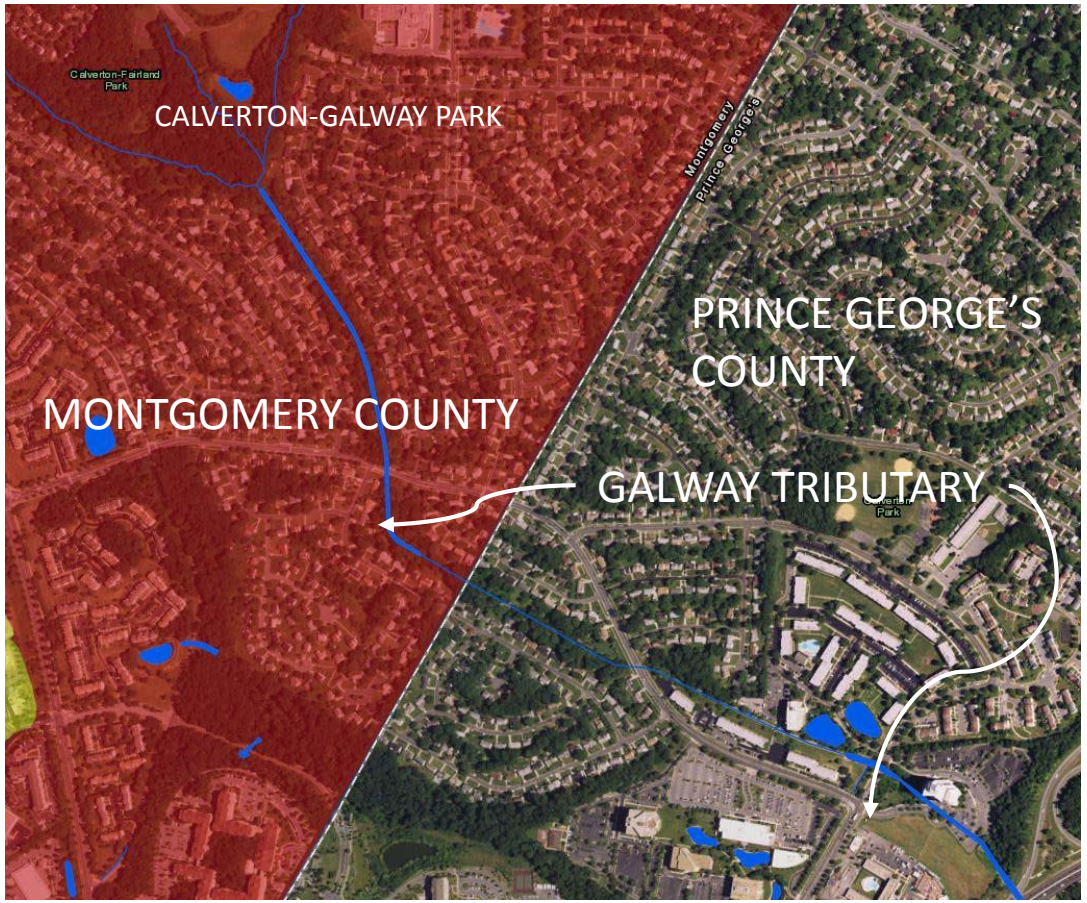
STORMWATER MANAGEMENT

DPW&T owns, operates, and maintains the County's public stormdrain and flood control facilities

- Drainage Channels
- Stormwater Management Ponds
- Bioretention
- Flood Levee Systems

CALVERTON CHANNEL HYDROLOGY

Calverton Channel conveys **Galway Tributary.** Less than a ¼ mile from the project site**, Galway Tributary** flows into Little Paint Branch. Little Paint Branch and Paint Branch then combine with Beaverdam Creek to form the Northeast Branch of the Anacostia River.



CALVERTON CHANNEL'S DRAINAGE AREA

Project Drainage Area: 1.3 Sq. Miles/832 Acres

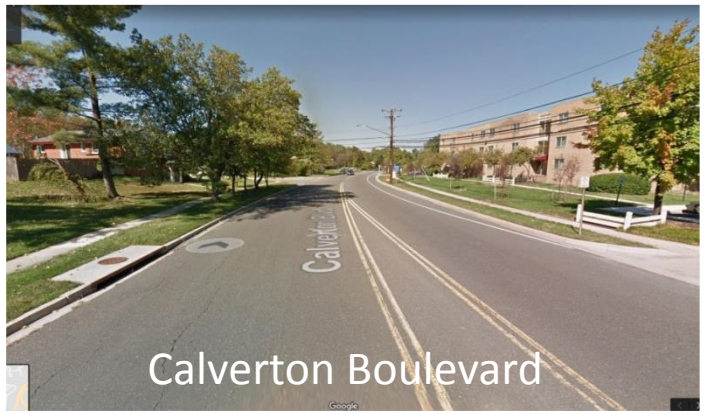
Watershed: Anacostia

Subwatershed: Little Paint Branch

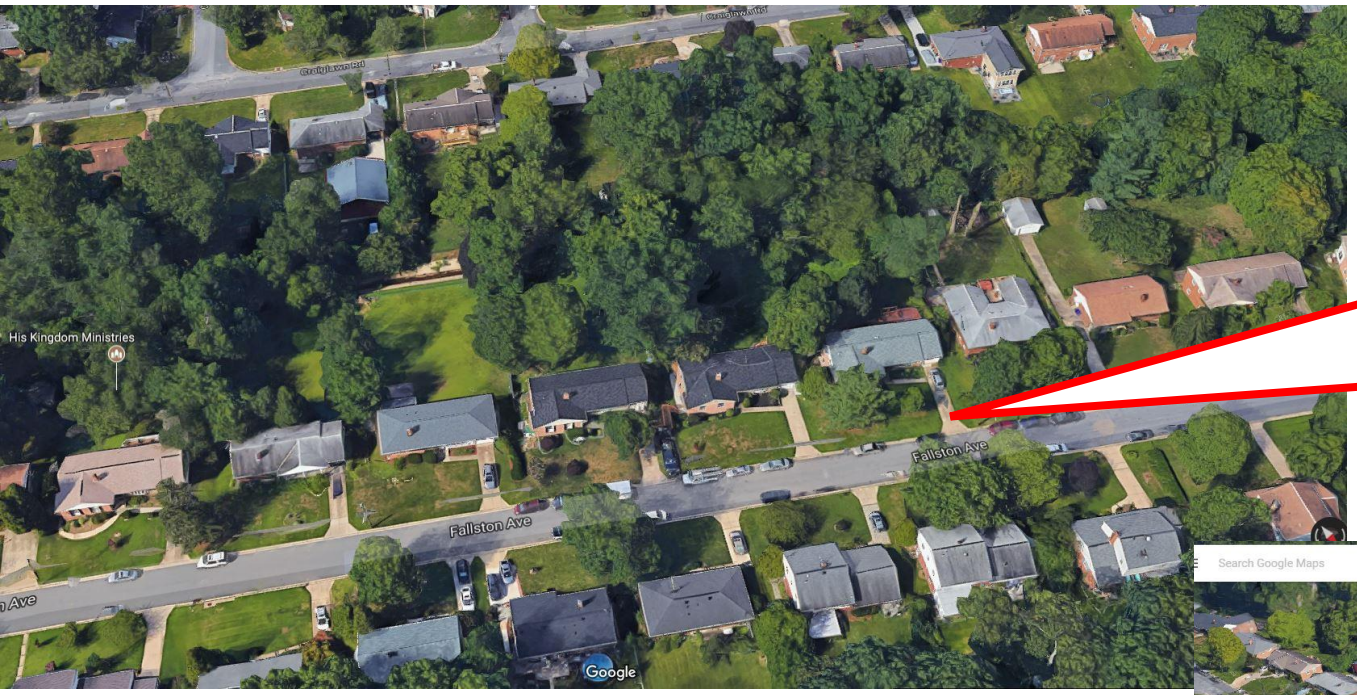
Impervious Surface: 48% or 397 Acres
Pervious Surface: 52% or 434 Acres

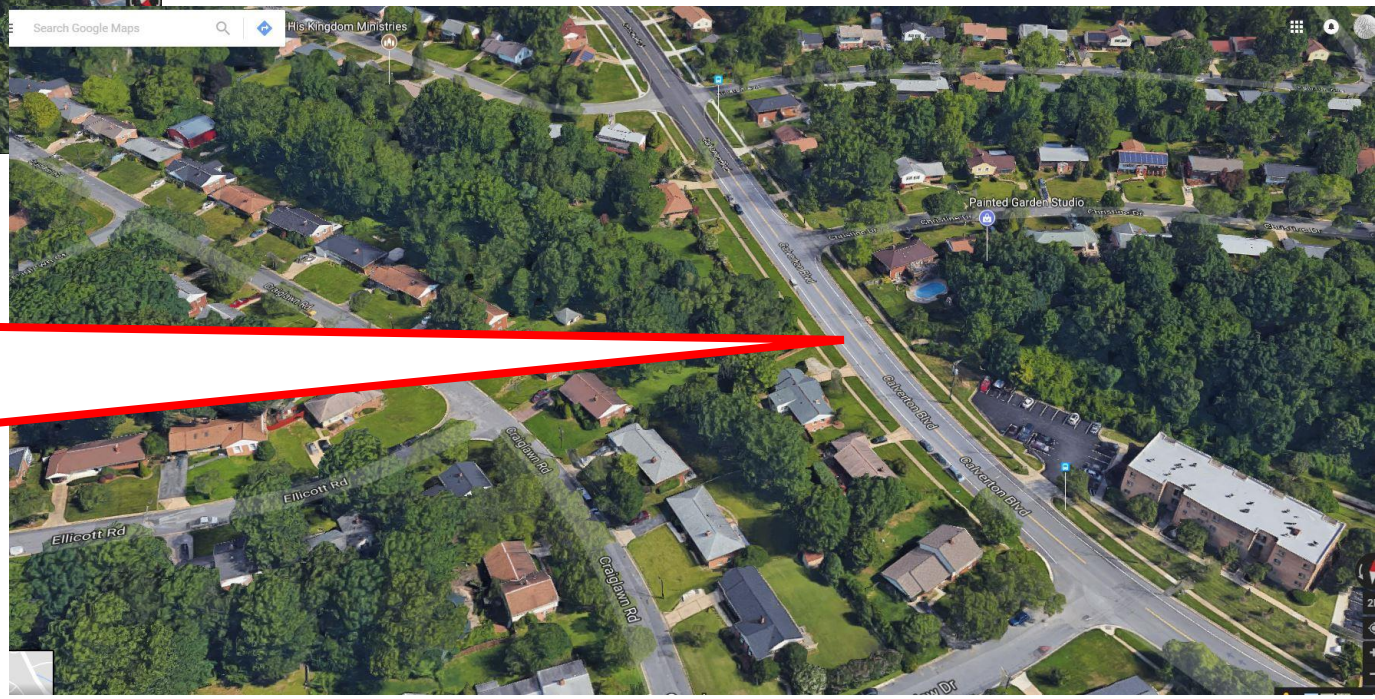
The ratio of impervious to pervious surfaces for the Calverton Channel project area is categorized as a highly impervious drainage area. The overall average impervious area rate for the Anacostia Watershed is 25%.

CALVERTON CHANNEL AT BELTSVILLE DRIVE

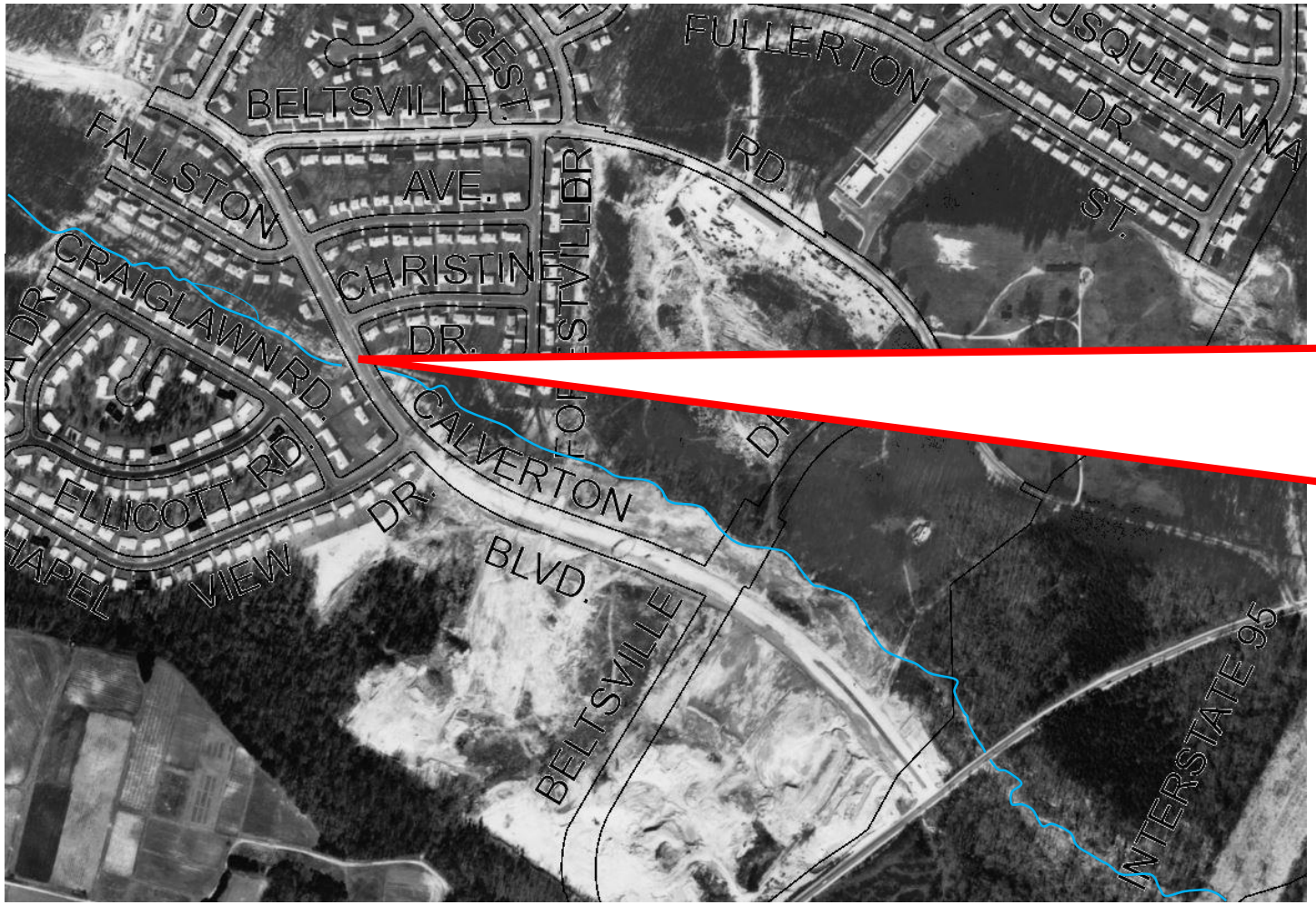


CALVERTON CHANNEL FROM CALVERTON BLVD. TO COUNTY BOUNDARY





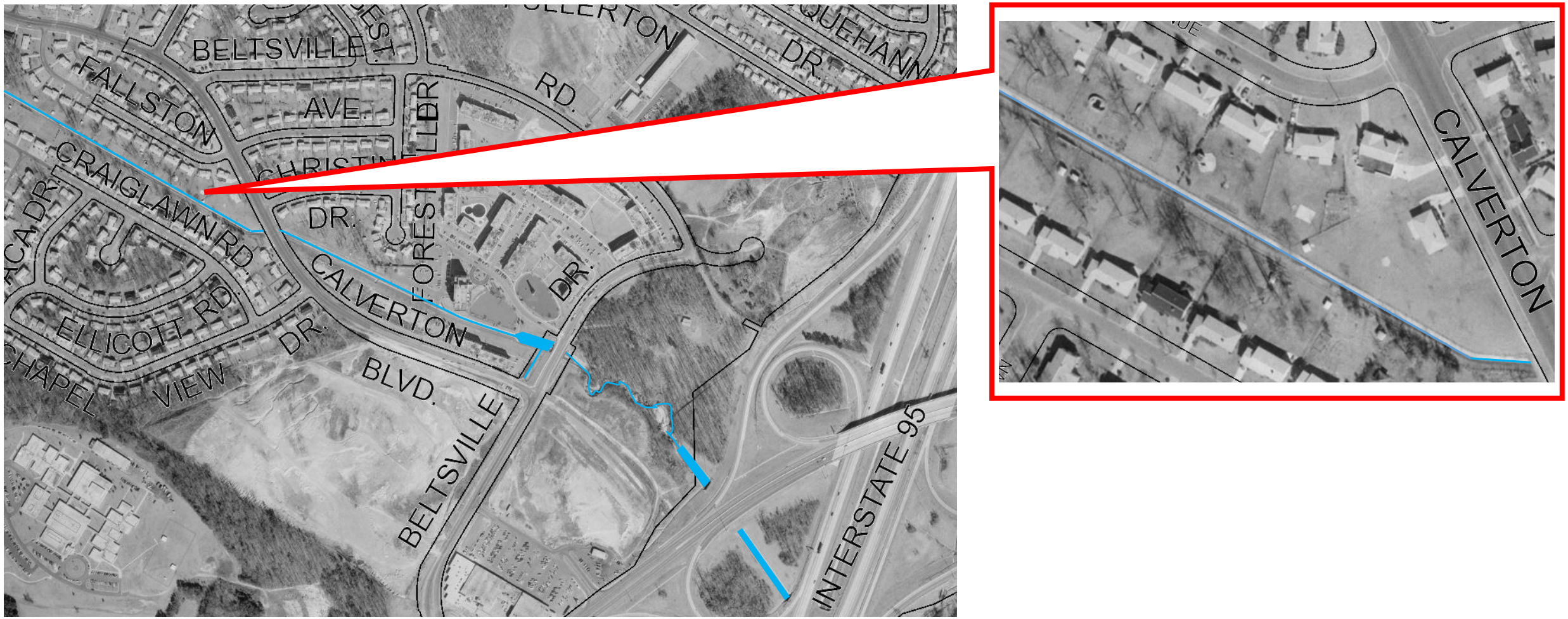
CALVERTON CHANNEL'S HISTORY



1965

BEFORE THE WSSC CONSTRUCTED CONCRETE CHANNEL

CALVERTON CHANNEL'S HISTORY



1977

AFTER THE WSSC CONSTRUCTED CONCRETE CHANNEL

WHY REHABILITATE THE CALVERTON CHANNEL NOW ?

- Calverton Channel was constructed around 1973
- It is now almost 50 years old with significant and ongoing concrete deterioration
- Degradation of the concrete slab can lead to total channel failure during a major storm event

Examples of deteriorating concrete channel slabs found throughout Calverton Channel

WHAT CAN HAPPEN WHEN A CONCRETE CHANNEL FAILS? Broken slabs create severe blockages which can cause system surcharges, flooding, and damage to downstream bridges, box culverts, vital storm conveyances, and transportation system structures.

EXISTING CHANNEL CONDITIONS FROM BELTSVILLE DR. TO CALVERTON BLVD.

LOOKING DOWNSTREAM AT CORNER
OF CALVERTON BLVD. AND BELTSVILLE DRIVE

LOOKING DOWNSTREAM AT
BELTSVILLE DRIVE CULVERT

LOOKING UPSTREAM AT
BELTSVILLE DRIVE CULVERT

LOOKING UPSTREAM AT
EXISTING PEDESTRIAN BRIDGE

LOOKING UPSTREAM
APPROACHING CALVERTON BLVD.

CALVERTON BRIDGE

EXISTING CHANNEL CONDITIONS FROM CALVERTON BLVD. TO COUNTY'S BOUNDARY

CALVERTON BLVD.
BRIDGE-LOOKING DOWNSTREAM

LOOKING DOWNSTREAM AT
CALVERTON BLVD. CULVERT AT BEND

LOOKING UPSTREAM

LOOKING DOWNSTREAM

LOOKING UPSTREAM

60" PIPE OUTFALL

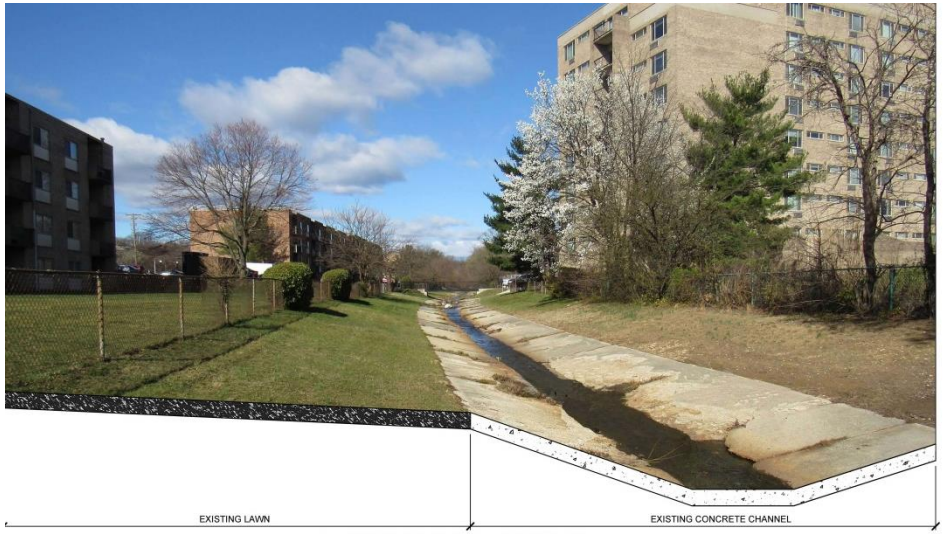
CONCRETE CHANNEL VS. GREEN CORRIDOR

In-Kind Concrete Channel Replacement VS. Green Corridor		
REPLACEMENT DIFFERENCES	**IN-KIND REPLACEMENT**	**GREEN CORRIDOR**
12 to 16 month construction timeline	✓	✓
Fences, sheds must be removed or relocated. Tree removal required as needed to construct channel.	✓	✓
Mow strip next to channel with no vegetation zone to prevent future channel issues. Chain link fence boundary.	✓	
Trees and vegetation to create buffer next to channel for enhanced long term views, habitat, and creation of a green corridor		✓
Water quality benefit to help clean the Anacostia River and Chesapeake Bay		✓
Reduced 100 Year Floodplain elevations and floodplain storage area		✓

WHY A GREEN CORRIDOR CONCEPT?

- Reduces 100 Year Floodplain
- Aesthetic improvement to support higher land values
- Water quality benefits to clean the Chesapeake Bay
- Long term sustainability and reduced maintenance
- Equivalent construction budget to in kind replacement with many more benefits
- A negative becomes a positive: The Channel becomes an asset transformed into a Green Corridor with native plants, pollinators, habitat, and flood storage

GREEN CORRIDOR CONCEPT



PERSPECTIVE 2 - BEFORE

PERSPECTIVE 2 - AFTER

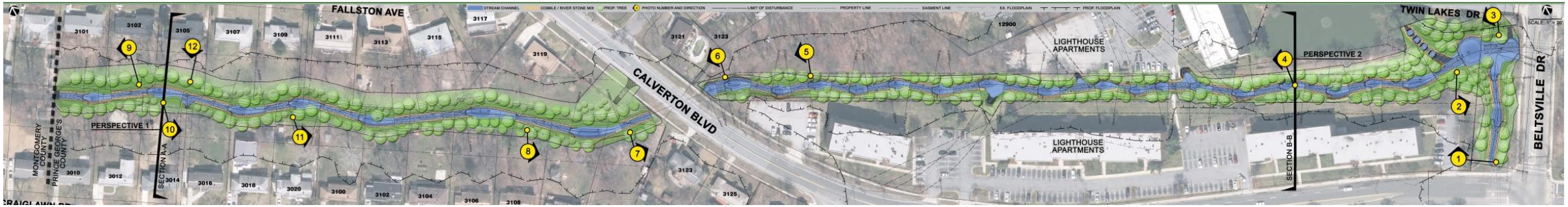
GREEN CORRIDOR CONCEPT

PERSPECTIVE 1 - BEFORE

PERSPECTIVE 1 - AFTER

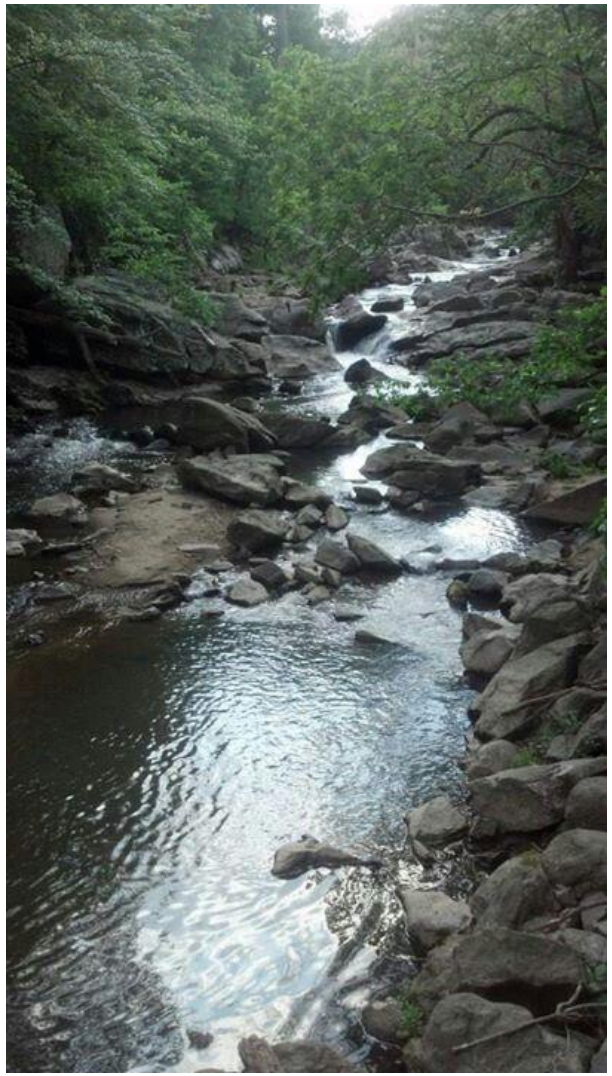
GREEN CORRIDOR

GREEN CORRIDOR PROFILE

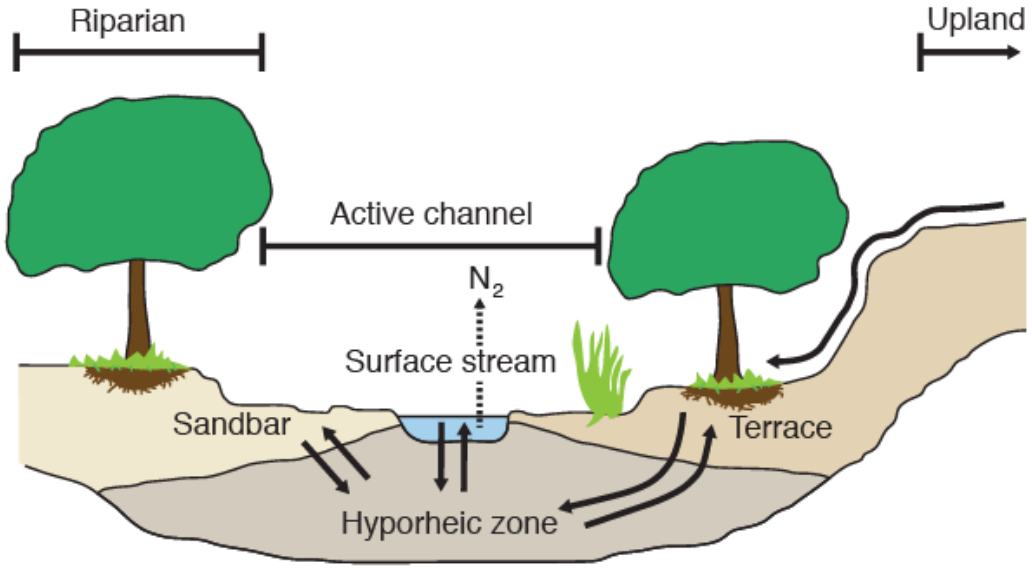


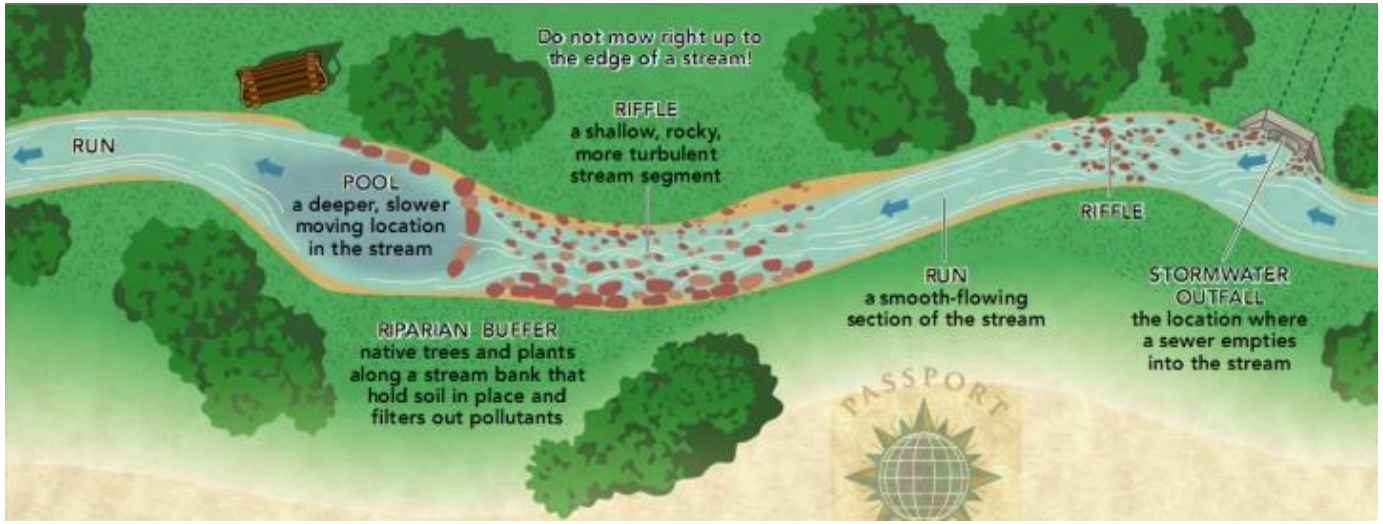
APPROXIMATELY ½ MILE OF GREEN CORRIDOR

GREEN CORRIDOR SYSTEM



Example of a healthy urban stream





GREEN CORRIDOR TECHNIQUES

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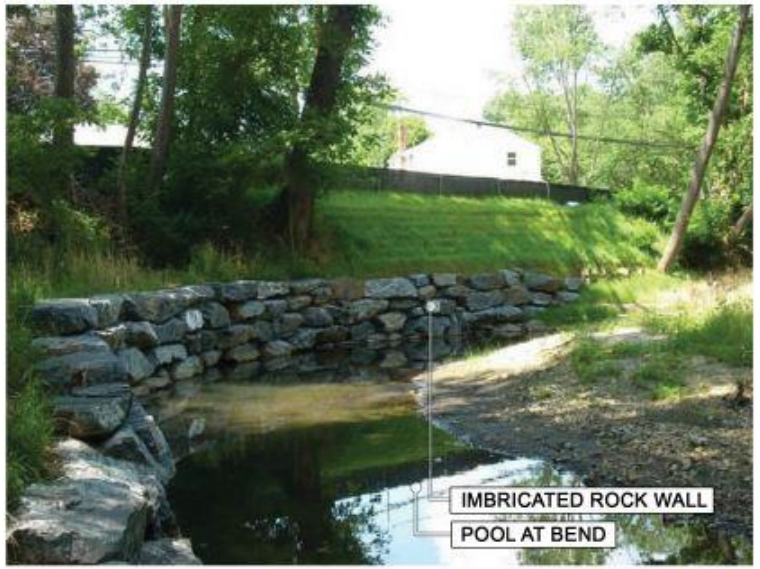
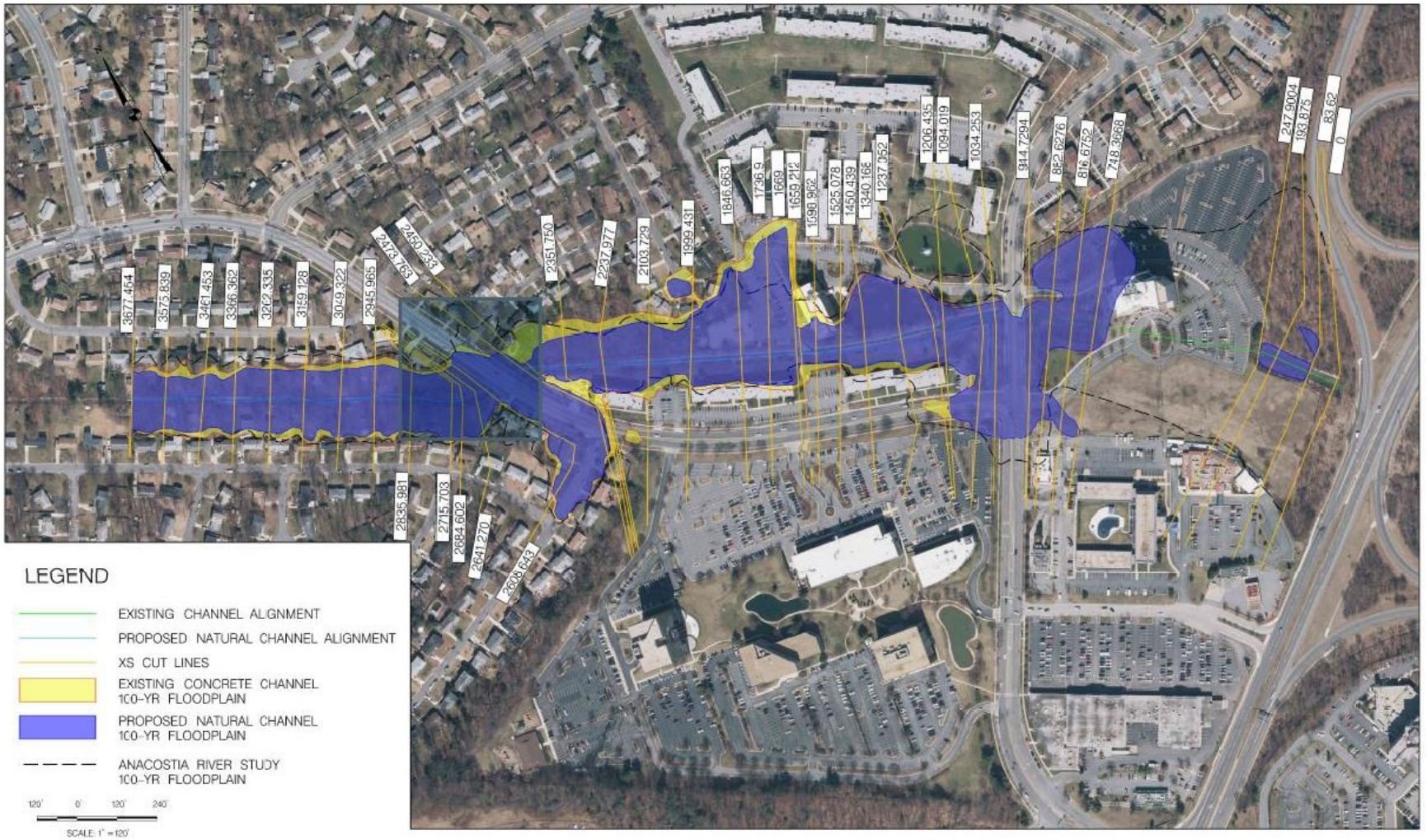
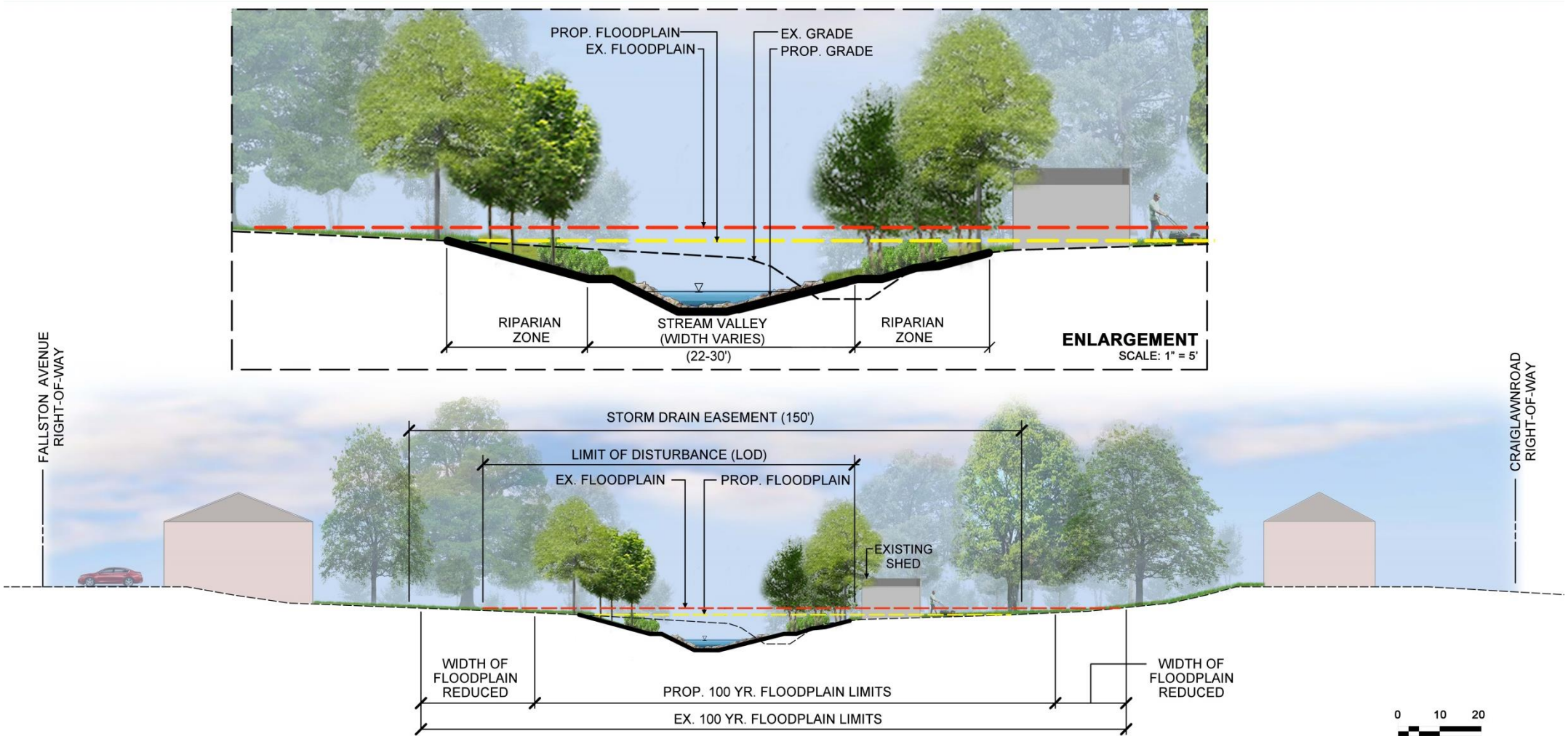


100 YEAR FLOODPLAIN MAP

CALVERTON CHANNEL REHABILITATION
100 YEAR FLOODPLAIN MAP

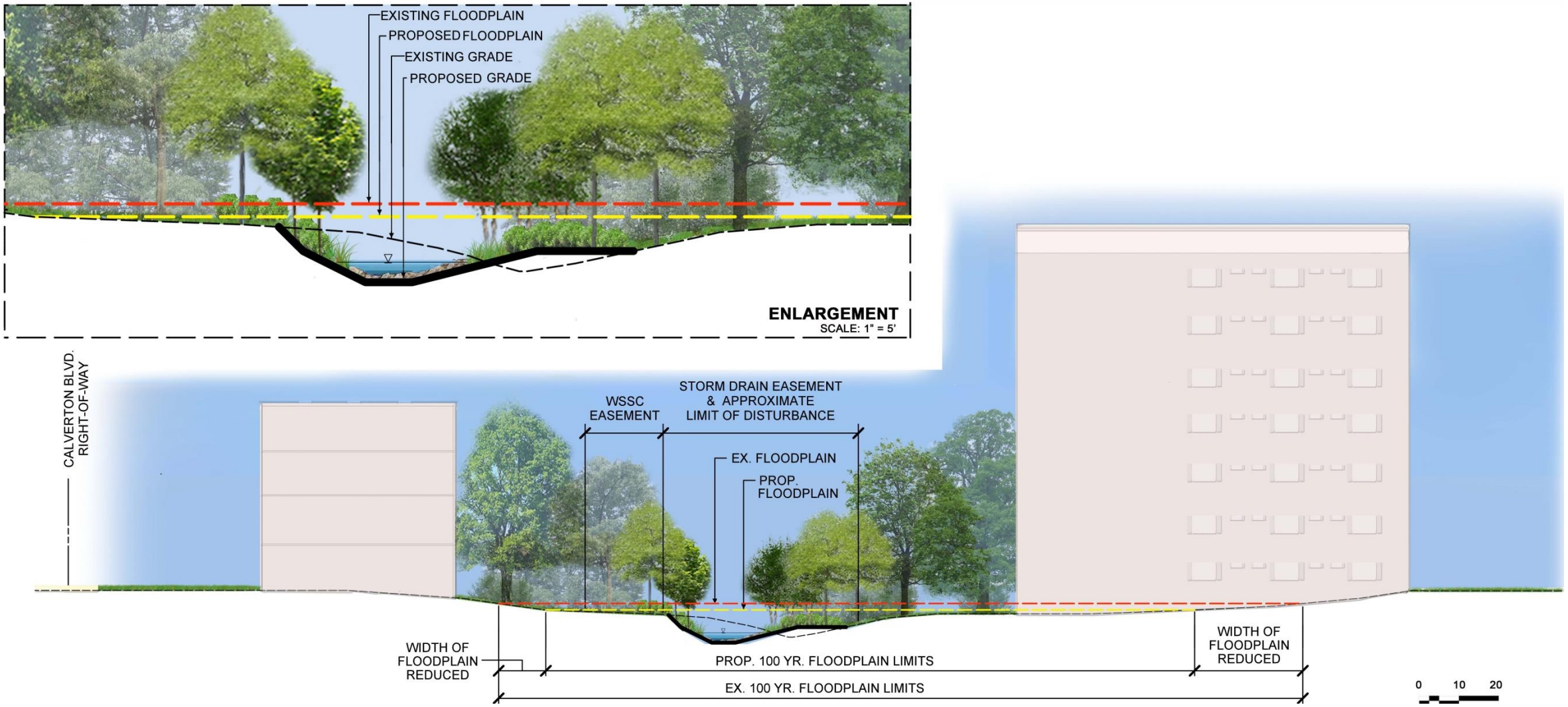


100 YEAR FLOODPLAIN REDUCTIONS



Typical 100 Year Floodplain Reductions: Channel Segment from Calverton Boulevard to Prince George's County Boundary

100 YEAR FLOODPLAIN REDUCTIONS



Typical 100 Year Floodplain Reductions: Channel Segment from Calverton Boulevard to Beltsville Drive

A GREEN CORRIDOR HELPS RESTORE THE CHESAPEAKE BAY

Drainage Area Post-BMP Reductions

Drainage Area	Impervious Area (ac)	Pervious Area (ac)	Total Area (ac)	Pre-BMP LOADS (lb/yr) TN	TP	TSS	Post-BMP LOADS (lb/yr) TN	TP	TSS	Post-BMP % Reduction TN	TP	TSS
DA1	6.2	18.6	24.8	176	13	41,591	176	13	41,591	0%	0%	0%
DA2	1.5	1.9	3.4	1	2	5,626	1	2	5,626	0%	0%	0%
DA3	20.8	42.4	63.2	467	38	105,813	463	34	103,569	1%	9%	2%
DA4	4.2	2.2	6.5	56	6	10,849	56	6	10,849	0%	0%	0%
DA5	0.6	0.1	0.7	6	1	1,175	0	0	0	100%	100%	100%
DA6	24.5	14.8	39.3	335	37	65,749	320	23	56,675	5%	37%	14%

BMP Reduction by Practice

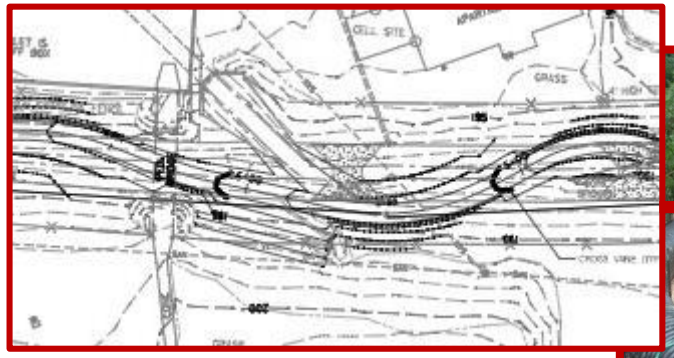
Practice	Pre-BMP LOADS (lb/yr) TN	TP	TSS	Reduction (lb/yr) TN	TP	TSS	Post-BMP LOADS (lb/yr) TN	TP	TSS	Post-BMP % Reduction TN	TP	TSS
RSC				11	10	6,732	6,606	629	780,234	0.2%	2%	1%
Stream Restoration	6,617	639	786,966	210	190	125,664	6,407	449	661,302	3%	30%	16%

Watershed Post-BMP Reduction

Drainage Area	Impervious Area (ac)	Pervious Area (ac)	Total Area (ac)	Pre-BMP LOADS (lb/yr) TN	TP	TSS	Post-BMP LOADS (lb/yr) TN	TP	TSS	Post-BMP % Reduction TN	TP	TSS
Total Watershed	397	434	832	6,617	639	786,966	6,396	439	654,570	3%	32%	17%

The natural filtering capacity of the proposed Calverton Channel Green Corridor will treat over 250 acres of impervious surface to help restore the Chesapeake Bay

DESIGN TO BUILD GREEN CORRIDOR PROCESS



Design to Permit
October 2017-December 2018

Construction
June 2019- August 2020

2-5 Years
Monitoring & Stabilizing
2020- 2025

Adaptive Management
Stabilization repairs and removal of blockages only as needed

NEXT STEPS

- Public Notification by DPW&T will be mailed out as required by the Prince George's County Department of Permitting, Inspections, and Enforcement – November 2017
- Project design reviewed by local, state and federal agency as required by permit and law
- Public meeting to be scheduled to discuss the project design and receive public feedback
- Quarterly updates will be provided by DPW&T to the Calverton Citizen's Association and other local groups

QUESTIONS?

FOR ADDITIONAL INFORMATION OR QUESTIONS
PLEASE CONTACT :
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Mabe@co.pg.md.us or 301-883-5627