

Seneca Forest (Germantown View) Stormwater Pond Improvements



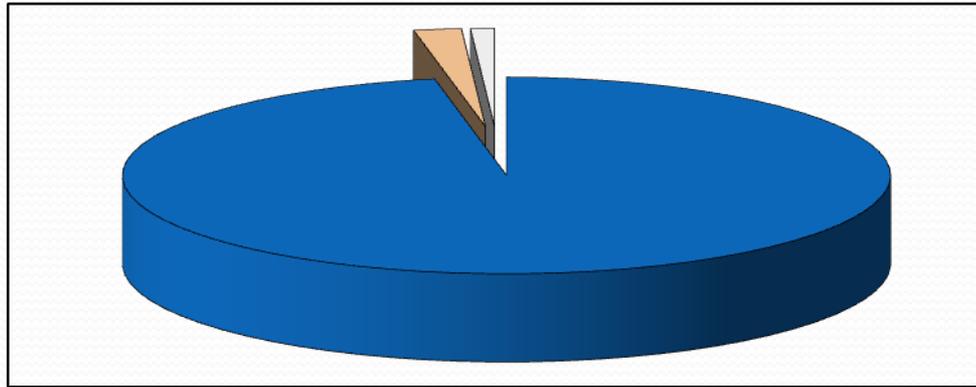
Jim Cooper (Project Manager)
Don Dorsey (Planner)

Montgomery County Department of Environmental Protection
Watershed Management Division

Tonight's Agenda

- Sources of Water on Earth
- Montgomery County background
- What is a Watershed and Runoff?
- Intro to Stormwater
- What the County is Doing to Protect Our Streams
- Goals of the Project
- Existing Conditions
- Proposed Retrofits of the Ponds
- Questions/Comments

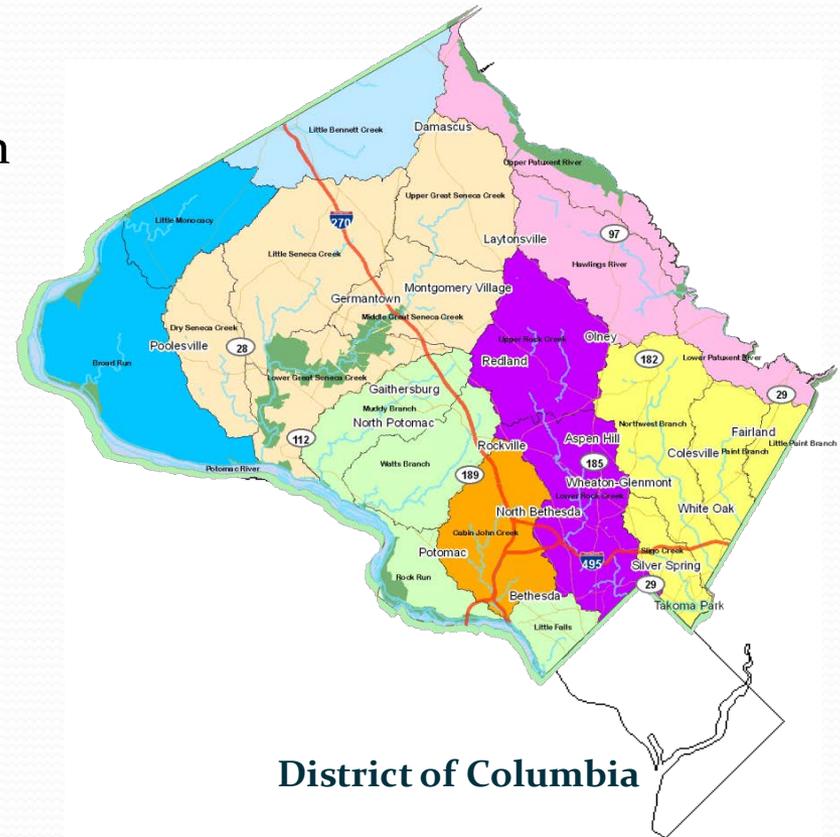
Sources of Water



- About 97% is salt water
- About 2% is fresh
- Only 1% is available for drinking water
 - 95% from groundwater across the Country
 - 32% from groundwater, 68% from surface water in Maryland
 - Potential for greater impacts from runoff in Maryland

Montgomery County, MD

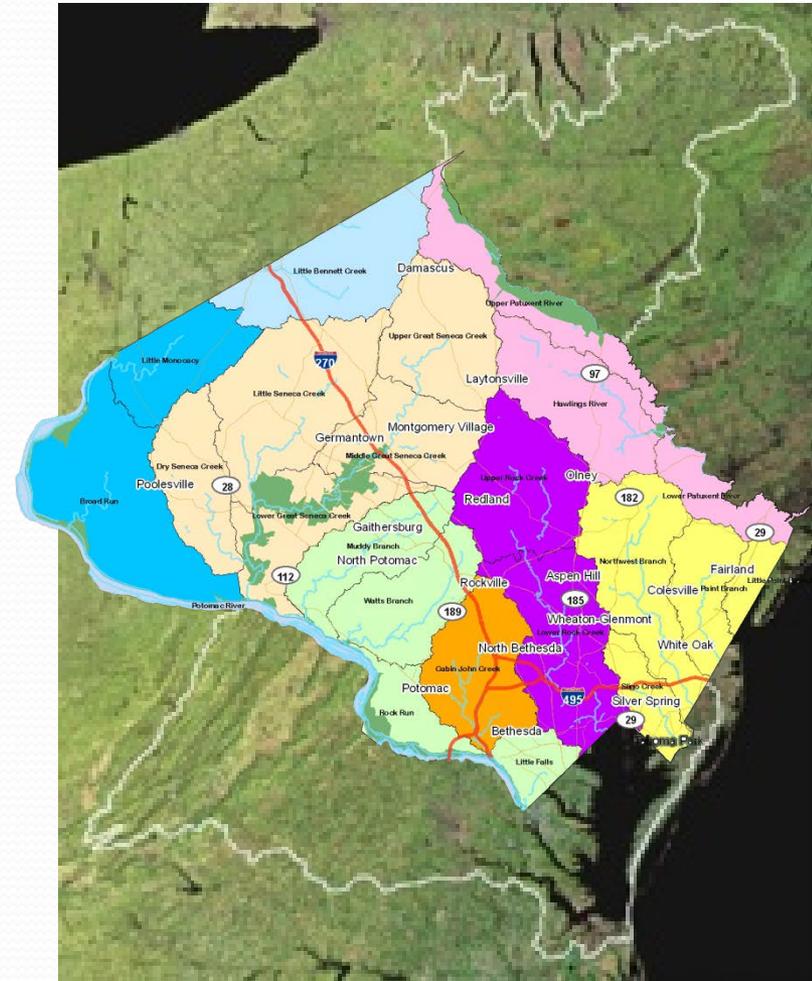
- Over 1,000,000 people
 - Second only to Baltimore City within Maryland in average people per square mile
- 500 sq. miles
- About 12% impervious surface overall
 - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
 - Potomac
 - Patuxent
- Eight local *watersheds*



Impervious: Not allowing water to soak through the ground.

What is a Watershed?

- A *watershed* is an area from which the water above and below ground drains to the same place.
- Different scales of watersheds:
 - Chesapeake Bay
 - Eight local watersheds
 - Neighborhood (to a storm drain)

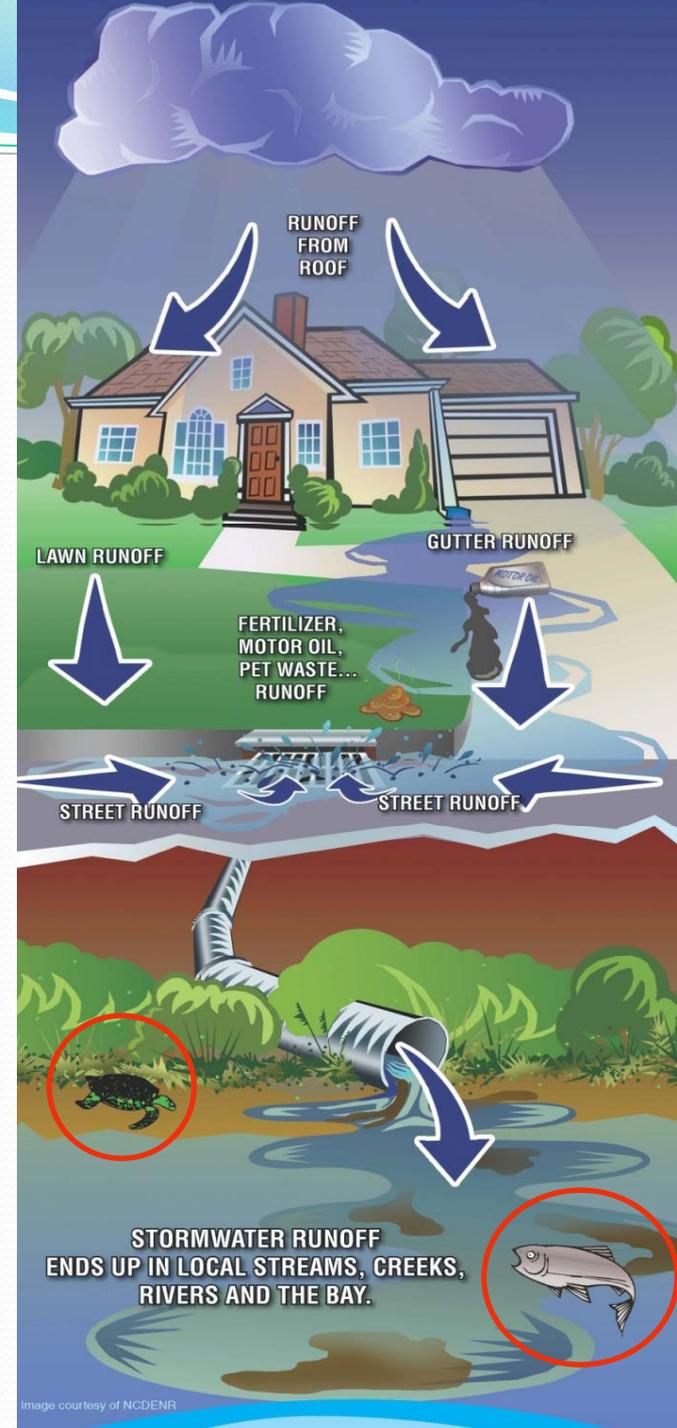


What is Runoff?

Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

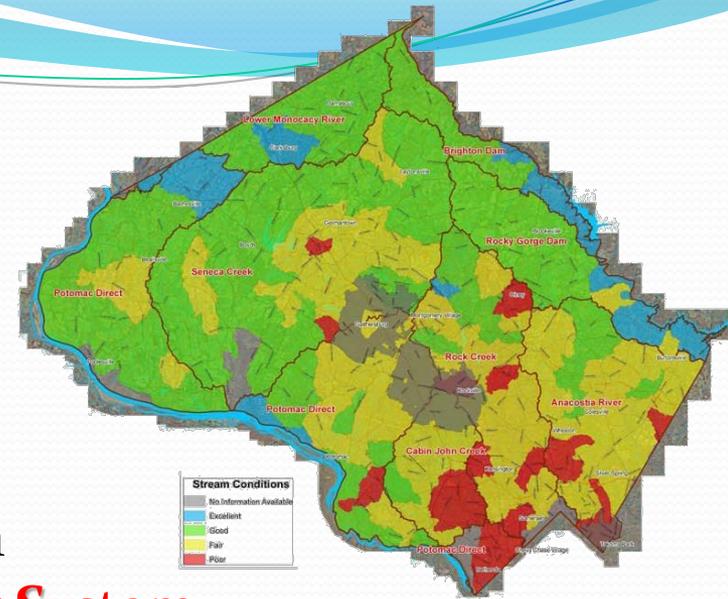
- **Directly into streams**
- **Into storm drain pipes, eventually leading to streams**
- **Into stormwater management facilities, then streams**

Two Major Issues:
Volume/Timing of Runoff
Water Quality



What is the County doing to protect our Streams?

- Must meet regulatory requirements
 - Federal Clean Water Act permit program
 - **MS4 = Municipal Separate Storm Sewer System**
- Applies to all large and medium Maryland jurisdictions
- County programs
 - Restore our streams and watersheds
 - Add runoff management
 - Meet water quality protection goals
 - Reduce pollutants getting into our streams
 - Educate and engage all stakeholders
 - Individual actions make a difference
 - Focus on watersheds showing greatest impacts



MS4 permit, what is it?

- Montgomery County is responsible for:
 - What goes into our storm drain pipes
 - What comes out of them
 - What flows into the streams
- Requires additional stormwater management for **20 percent** of impervious surfaces (4,292 acres = 6.7 square miles). That's about three times the size of Takoma Park.

Main Project Goals:

- Capture more “peak flow” runoff from impervious surfaces (rooftops/roadways/etc.) within the stormwater pond, also called Channel Protection Volume (CPv)
- Create a permanent pool to capture nutrients
 - Aquatic plants within and along the perimeter of the permanent pool will help absorb nutrients and provide a balanced aquatic ecosystem.
 - May attract red winged black birds and other avian species
 - Aquatic ecosystem will have a balance of prey (mosquitoes) vs. predator species.
 - Referred to as Water Quality Volume (WQv)

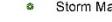
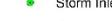
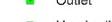
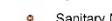
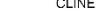
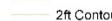
Site vicinity and drainage area map

Task Order WRE 12-34

Asset Num. 11087
Germantown View

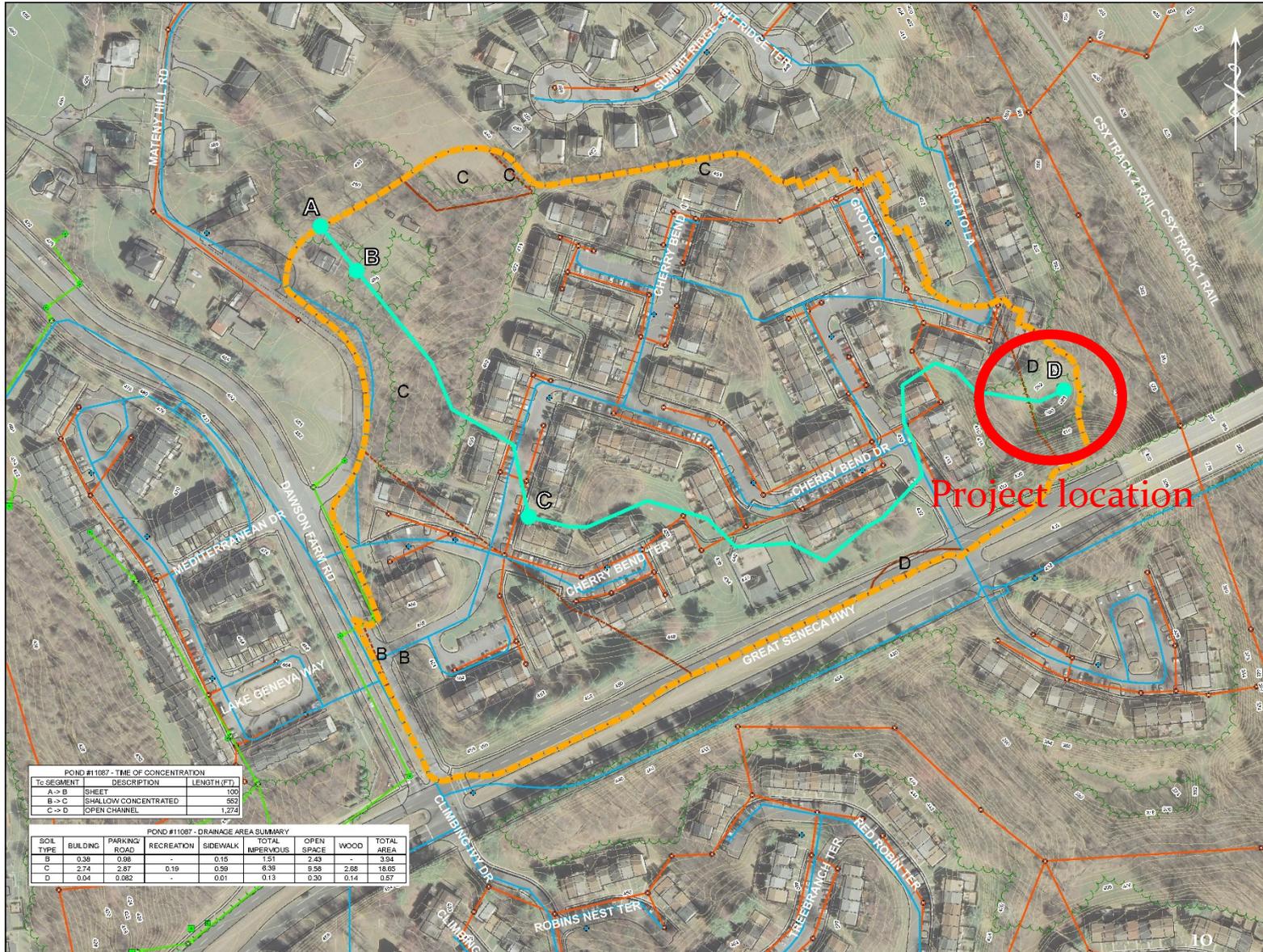
4/17/2015

Legend

-  Flow Path
-  Drainage Area
-  Storm Manhole
-  Storm Inlet
-  Outlet
-  Headwall
-  Hydrant
-  Sanitary Manhole
-  Channel
-  Storm Drain
-  Water Main
-  Sanitary Main
-  CLINE
-  Property Line
-  Forest
-  Soil Boundary
-  Impervious
-  2ft Contour

Drainage Area Map Sheet 1 of 3

Location Map



POND #11087 - TIME OF CONCENTRATION		
TG SEGMENT	DESCRIPTION	LENGTH (FT.)
A -> B	SHEET	100
B -> C	SHALLOW CONCENTRATED	952
C -> D	OPEN CHANNEL	1,274

POND #11087 - DRAINAGE AREA SUMMARY								
SOIL TYPE	BUILDING	PARKING/ROAD	RECREATION	SIDEWALK	TOTAL IMPERVIOUS	OPEN SPACE	WOOD	TOTAL AREA
B	0.38	0.98	-	0.15	7.51	2.43	-	2.94
C	2.74	2.87	0.19	0.59	6.38	9.58	2.68	16.65
D	0.04	0.082	-	0.01	0.13	0.30	0.14	0.67



0 75 150 300 Feet

Site photos

Task Order WRE 12-34

Asset Num. 11087
Germantown View

5/22/2015

Legend

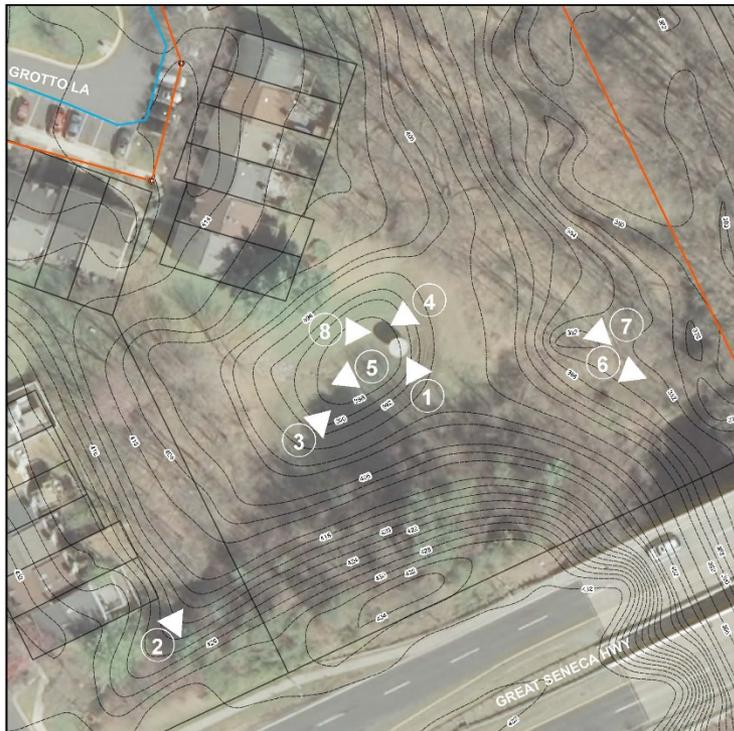
- Storm Manhole
- Storm Inlet
- Outlet
- Headwall
- Hydrant
- Sanitary Manhole
- Channel
- Storm Drain
- Water Main
- Sanitary Main
- Property Line
- 2ft Contour

Site Images Map Sheet 1 of 4

Location Map



0 25 50 100 Feet



1 INSIDE TOP OF RISER



2 POND ACCESS ROAD LOOKING EAST



3 POND LOOKING EAST



4 POND LOOKING WEST



5 POND LOW FLOW CHANNEL LOOKING WEST



6 POND OUTFALL CHANNEL



7 POND OUTFALL



8 POND RISER LOOKING EAST

Proposed Pond Design Schematic

Task Order WRE 12-34

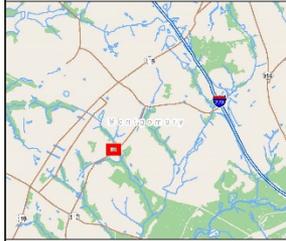
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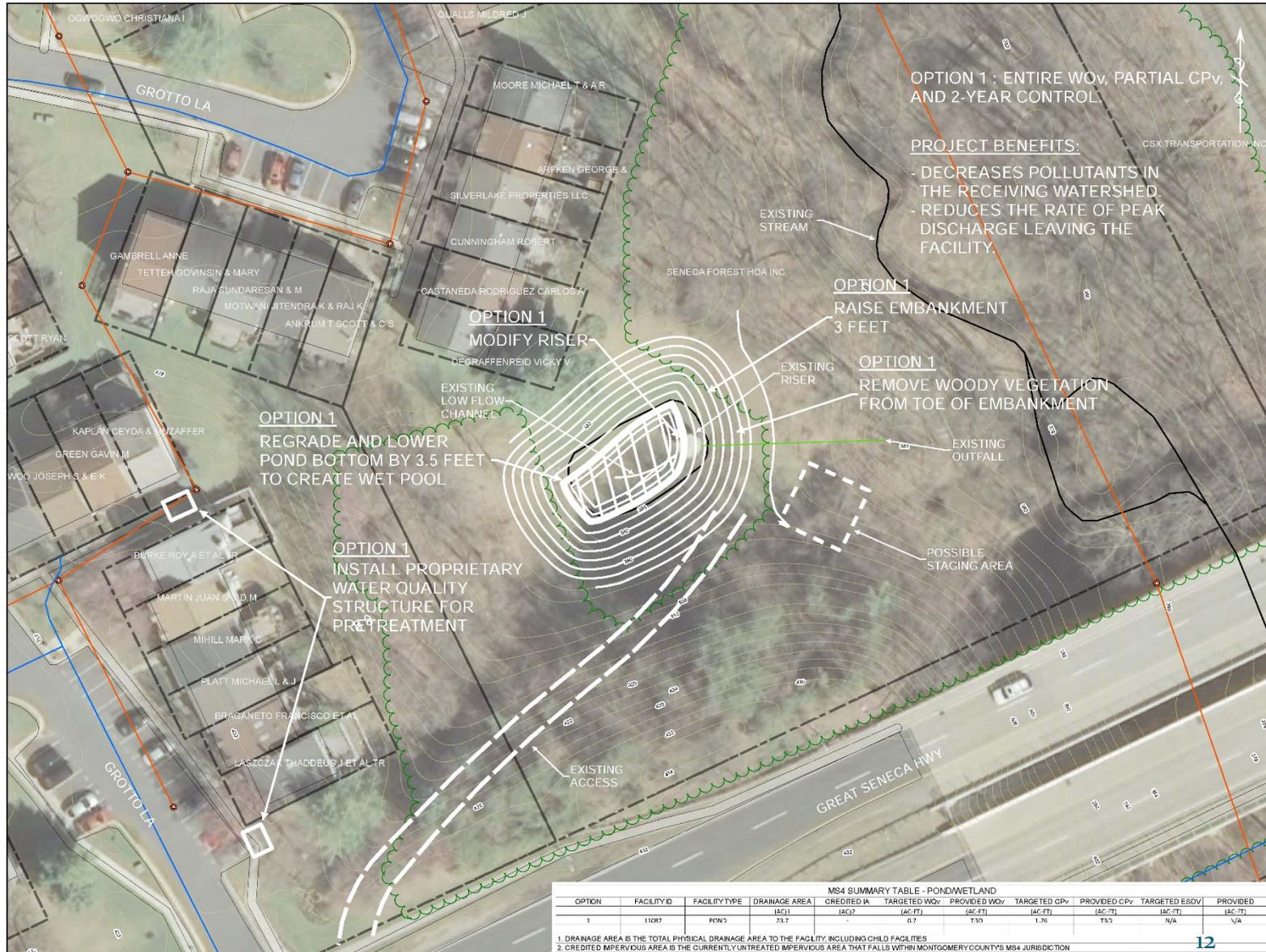
Legend

- Storm Manhole
- Storm Inlet
- Outlet
- Headwall
- Hydrant
- Sanitary Manhole
- Channel
- Storm Drain
- Water Main
- Stream
- Sanitary Main
- Property Line
- Impervious
- Forest
- 2ft Contour

Site Plan Map
Option 1
Sheet 2 of 4
Location Map



0 15 30 60 Feet



MS4 SUMMARY TABLE - POND/WETLAND

OPTION	FACILITY ID	FACILITY TYPE	DRAINAGE AREA (AC)	CREDITED IA (AC-FI)	TARGETED WQv (AC-FI)	PROVIDED WQv (AC-FI)	TARGETED CPv (AC-FI)	PROVIDED CPv (AC-FI)	TARGETED ESOv (AC-FI)	PROVIDED (AC-FI)
1	11087	POND	23.7	145.2	0.7	130	1.26	153	N/A	N/A

1. DRAINAGE AREA IS THE TOTAL PHYSICAL DRAINAGE AREA TO THE FACILITY INCLUDING CHILD FACILITIES
2. CREDITED IMPERVIOUS AREA IS THE CURRENTLY UNTREATED IMPERVIOUS AREA THAT FALLS WITHIN MONTGOMERY COUNTY'S MS4 JURISDICTION

Mosquito Predators

- Non-Biting Midge
- Diving Beetle
- Damselfly Larvae
- Backswimmers
- Water Scorpion
- Dragonfly Nymph
- Phantom Midge
- Water Strider
- Swallows, Adult Dragonflies, Frogs



Vegetated pond fringe examples



Aquatic vegetation provides a buffer between the water's edge and adjacent land



Native plant species foster aquatic ecosystem development within pond

Questions/Comments?

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<https://www.montgomerycountymd.gov/DEP/Restoration/germantown-view-seneca-forest.html>