Manors of Paint Branch, Green Castle Woods & Townes of Gloucester Stormwater Pond Retrofit Projects

Initial Public Meeting: March 7, 2017
Concept Design Presentation

DEPARTMENT OF
ENVIRONMENTAL
PROTECTION
MONTGOMERY COUNTY • MARYLAND

Working together for a cleaner, greener
economically vibrant community

Stantec

Introductions

Meghan Gloyd, PE
- DEP/JV Project Manager

Zainab Nejati, PE
- DEP/JV Project Manager

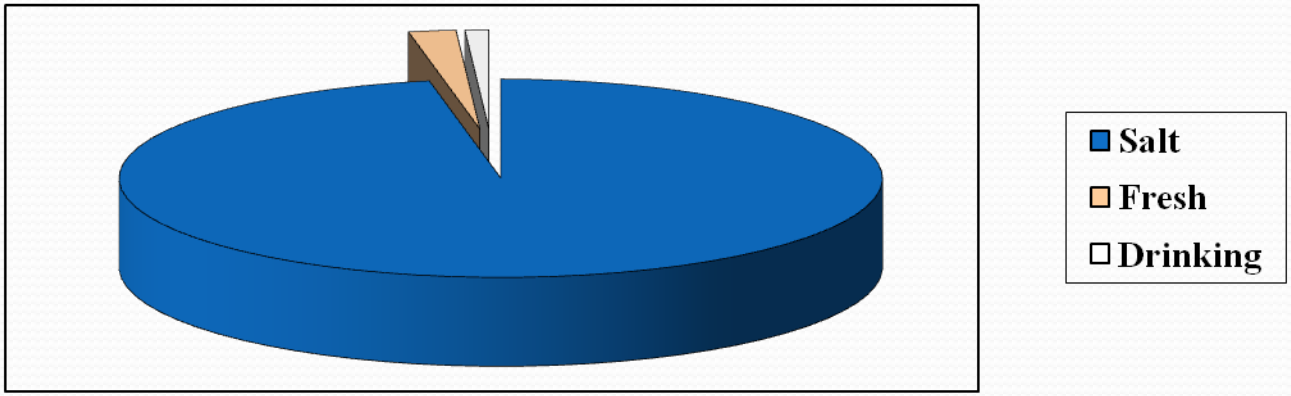
Radhika Wijetunge
- DEP/JV Watershed Planner

Fernando Benitez, PE
- Designer, Stantec Consulting Inc.

Tonight's Agenda

- Sources of water on earth
- Montgomery County background
- What is a watershed?
- Introduction to stormwater runoff
- What the County is doing to protect our waterways
- Project goals
- Proposed pond retrofit designs
- Examples of similar projects
- What to expect during construction
- Project schedules
- Questions/Comments

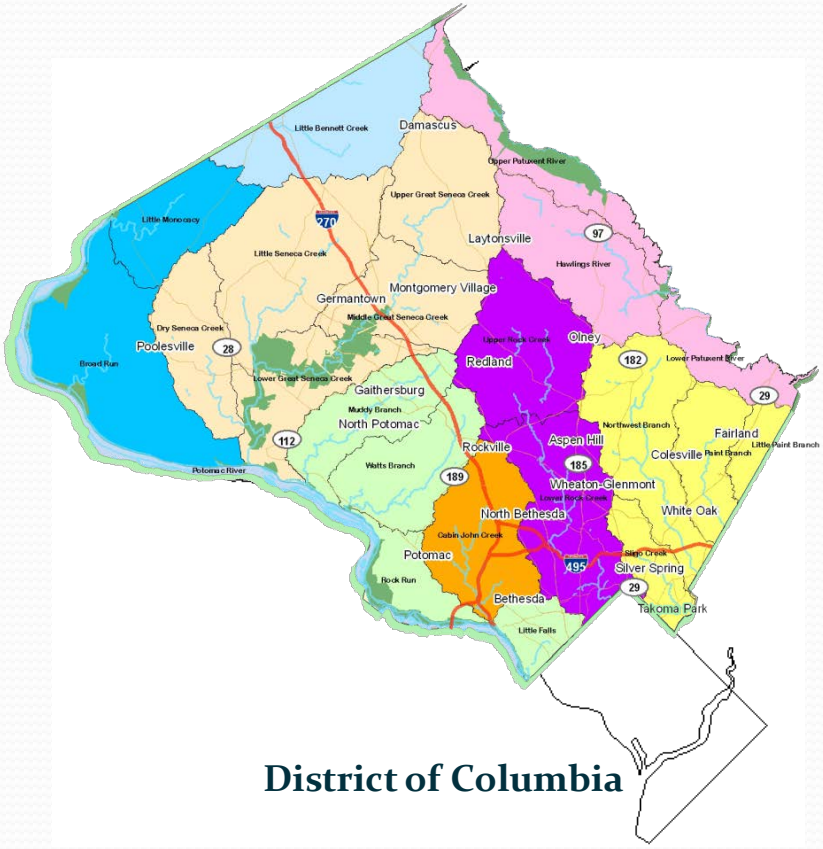
Sources of Water



- 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

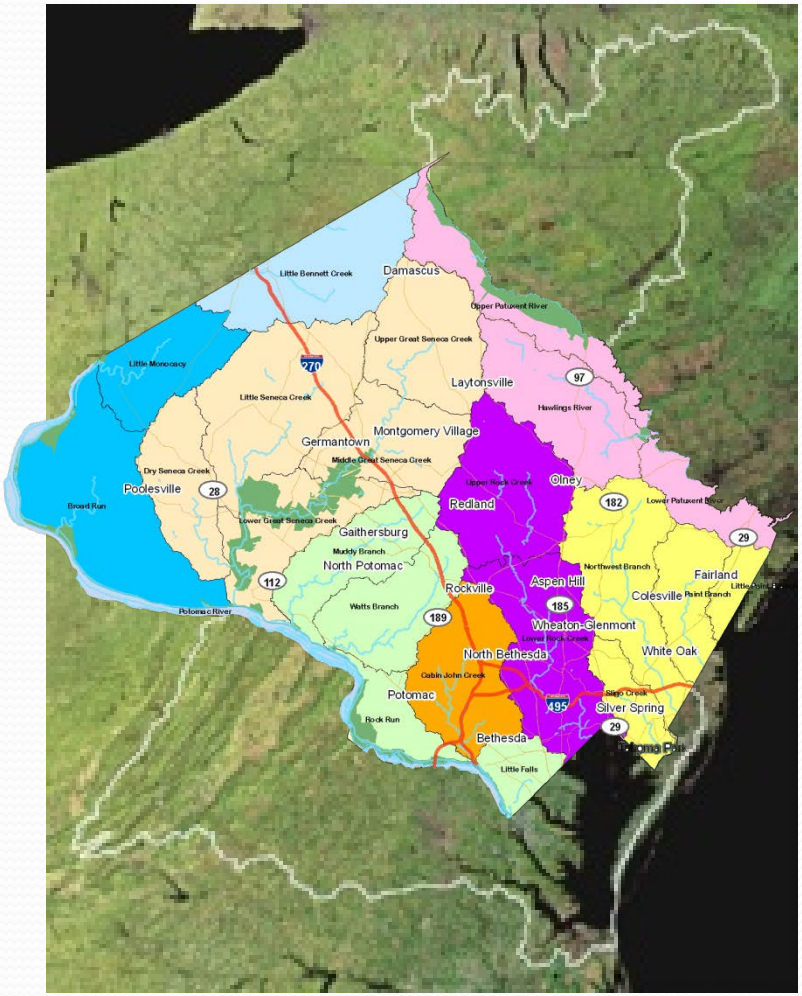
- Over 1,000,000 people
  - Second only to Baltimore City within Maryland in average people per square mile
- 500 sq. miles
- About 12% impervious surface overall
  - About the size of Washington DC
- Over 1,500 miles of streams
- Two major river basins:
  - Potomac
  - Patuxent
- Eight local *watersheds*



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)

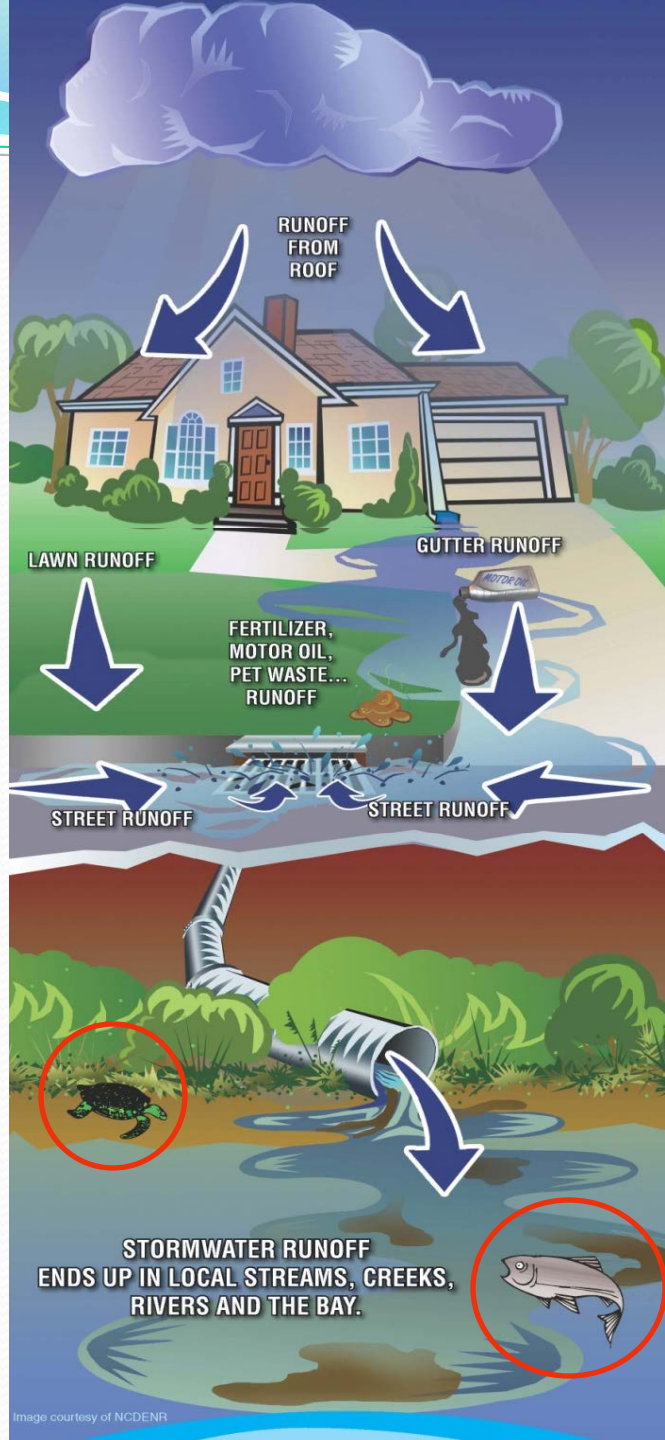


What is Runoff?

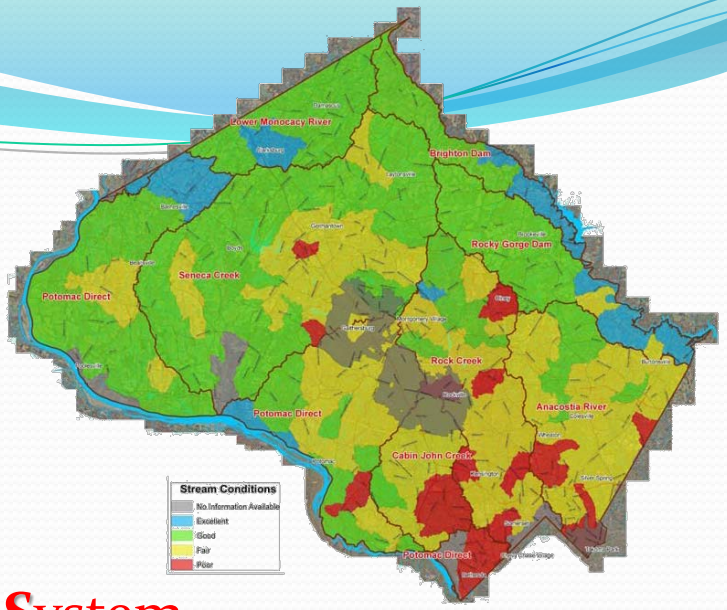
Water that does not soak into the ground becomes surface runoff. This runoff flows over hard surfaces like rooftops, driveways and parking lots collecting potential contaminants and flows:

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

<u>Two Major Issues:</u>
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 uncontrolled impervious surfaces (3,778 acres)

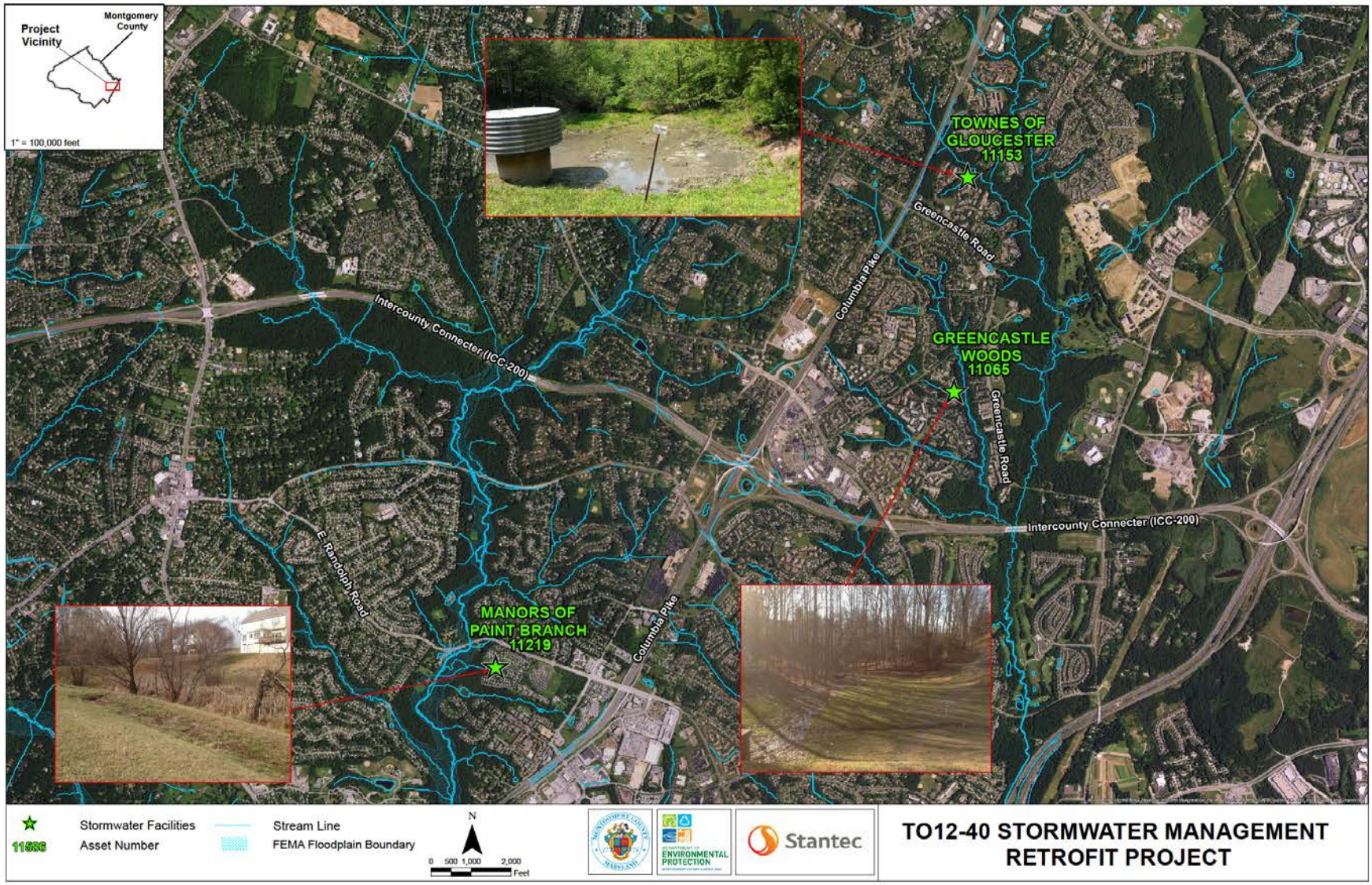
Two types of designs for Ponds

- Channel Protection Volume (CPV)
  - Designing a pond to capture 2.6 inches of rain (a 1-year storm event)
  - Storing and slowly releasing this rain event for 12 to 24 hours
  - Main Objective for this Design: Provide the greatest impact to reduce downstream erosion

- Water Quality Volume (WQV)
  - Capturing and filtering out the pollutants during a 1-inch rain event, and is based on impervious area
  - Main Objective for this Design: Reduce nutrients from entering the stream

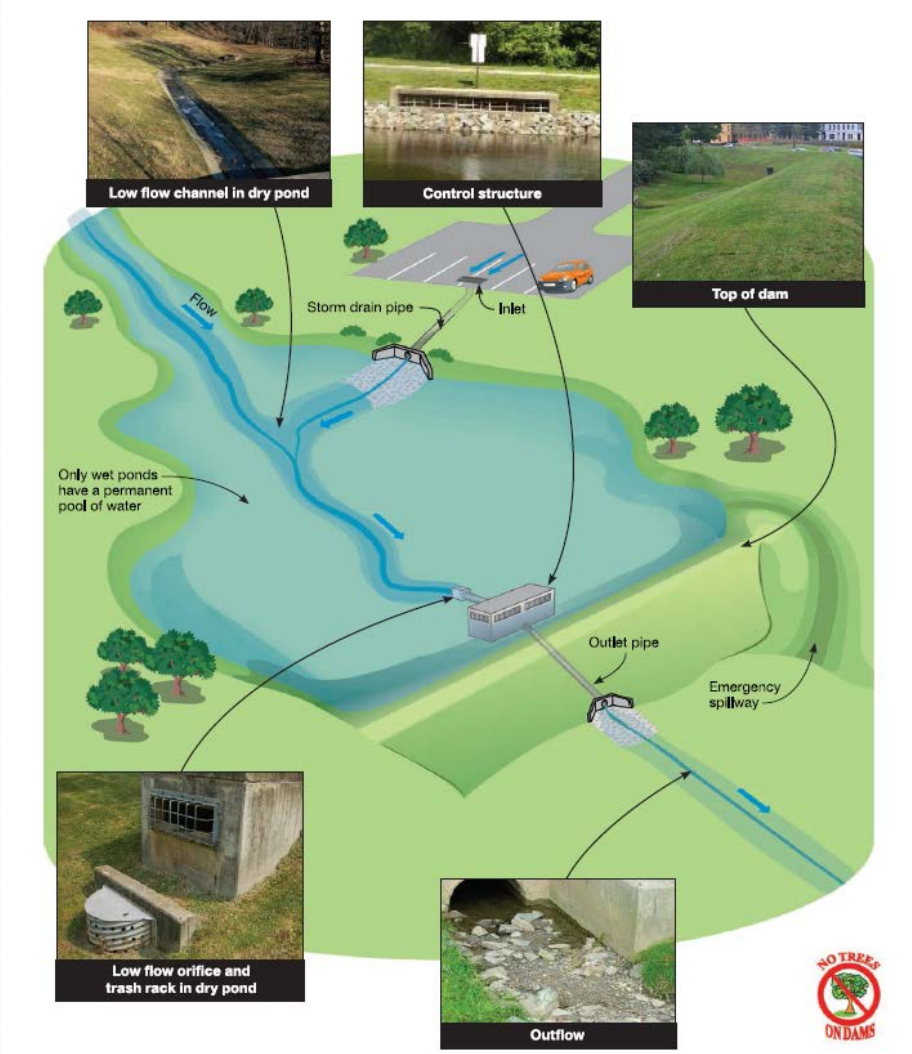
- Ideal Situation
  - Design a facility that does both with the land area being the only limiting factor

Manors of Paint Branch, Green Castle Woods & Townes of Gloucester site vicinity



PONDS

- Receiving Stream
- Outfall Structure
- Outfall Pipe
- Dam
- Control Structure-Riser
- Emergency Spillway
- Pool of Water
- Inflow Channels
- Drainage Area-Impervious



Goals of the Retrofit Project

- Create a permanent pool to capture nutrients and provide water quality treatment (Water Quality Volume, WQv)
- Capture more "peak-flow" runoff from impervious surfaces (rooftops/driveways/etc.) within the stormwater pond, also called Channel Protection Volume (CPv)
- Enhance site aesthetics with extensive plantings
  - Aquatic plants within and along the perimeter of the permanent pool will help absorb nutrients and provide a balanced aquatic ecosystem.
    - Will attract amphibian (frogs, salamanders, etc.) and (smaller) fish species
    - The resulting aquatic ecosystem will have a balance of prey (mosquitoes) and predator species
- Replace riser structure and reinforce outfall pipe
- Reinforce dam embankment.

Manors of Paint Branch Asset 11219

Site Photos

Looking Downstream(west) from site entrance Existing Swale

Looking Downstream(Northeast) from site south bank. Main cell

Asset # 11219–Wet Pond

- Reconstruct Riser structure
- Reconstruct Bio-swales
- Wetpond
- Provide Habitat for Aquatic life

Townes of Gloucester Asset 11153

Site Photos

Existing corrugated metal riser & Main Cell –Looking Southwest

Existing Pond Outfall-Looking North

Asset # 11153–Wet Pond

- Reconstruct Riser structure
- Wetpond
- Reinforce Existing Pipe outfall
- Provide Habitat for Aquatic life

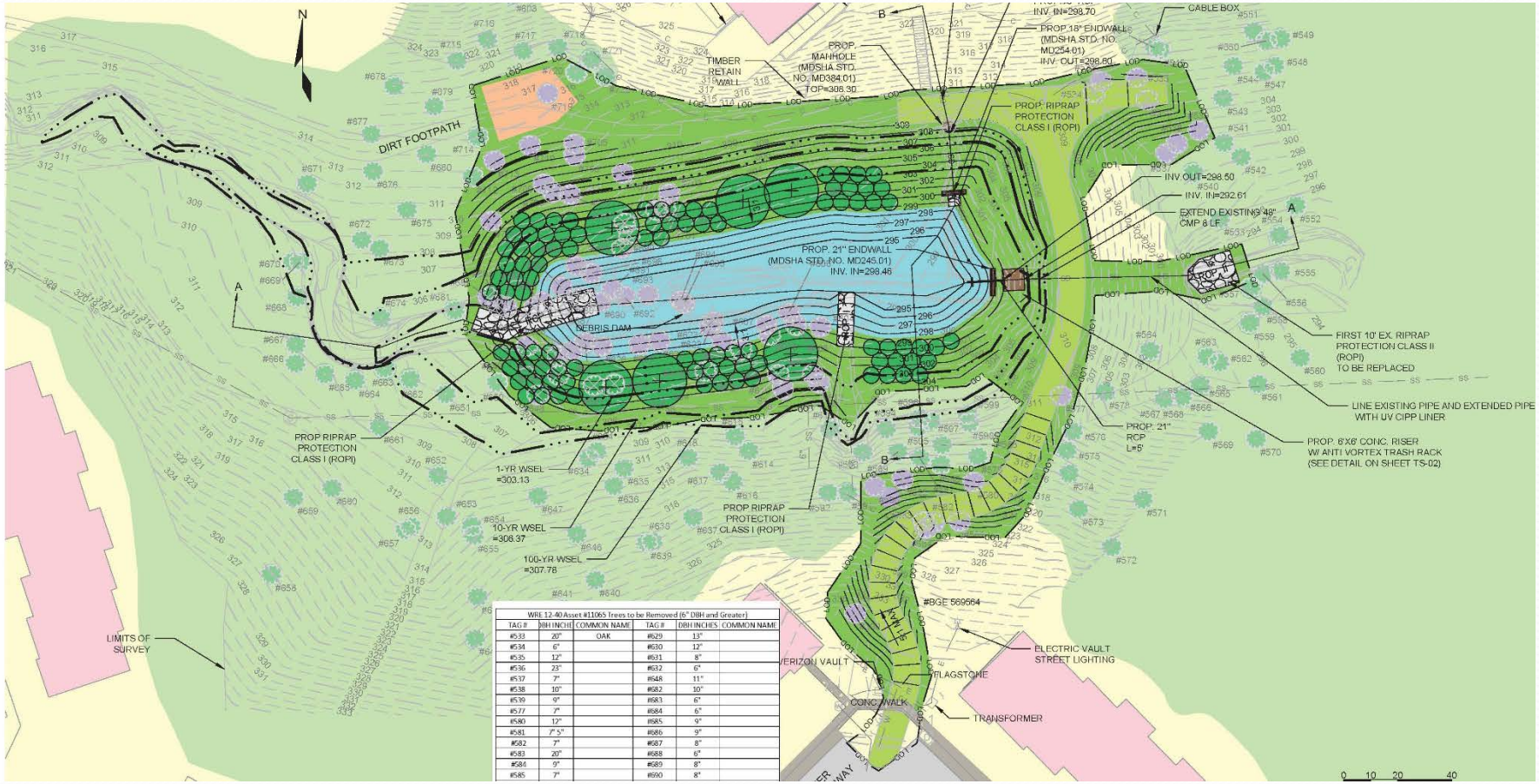
Green Castle Woods Asset 11065

Site Photos

Existing pond Main Cell –Looking South

Existing Pond Inflow-Looking West

Asset # 11065–Wet Pond



WRE 12-40 Asset #11065 Trees to be Removed (6" DBH and Greater)					
TAG #	DBH INCHE	COMMON NAME	TAG #	DBH INCHES	COMMON NAME
#533	20"	OAK	#629	13"	
#534	6"		#630	12"	
#535	12"		#631	8"	
#536	23"		#632	6"	
#537	7"		#648	11"	
#538	10"		#682	10"	
#539	9"		#683	6"	
#577	7"		#684	6"	
#580	12"		#685	9"	
#581	7" 5"		#686	9"	
#582	7"		#687	8"	
#583	20"		#688	6"	
#584	9"		#689	8"	
#585	7"		#590	8"	

- Reconstruct Riser structure
- Wetpond
- Reinforce Existing Pipe outfall
- Provide Habitat for Aquatic life

Examples of wet pond retrofits

In Construction

1 Year After Construction

5 Years After Construction

5 Years After Construction

Vegetated pond fringe examples

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

Native plant species foster aquatic ecosystem development within pond

What to expect during construction

- **Duration**
  - Approximately 8-10 months (weather dependent)
- **Construction Hours**
  - Monday through Friday, 7AM – 4PM
- **Safety**
  - Work limits will be fenced with high visibility orange construction safety fence
- **Traffic**
  - **Green Castle Woods**: access off Palmer House Way
  - **Townes of Gloucester**: access off Valiant Terrace
  - **Manors of Paint Branch**: access off Stratford Garden Road

- **Noise**
  - Contractor is required to comply with Montgomery County Noise Ordinance
- **Sediment**
  - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads

Schedule

Manors of Paint Branch, Green Castle Woods & Townes of Gloucester

Stormwater Pond Retrofit Projects

- **Survey and Site Analysis – Fall 2015—Fall 2016**
- **Public meeting to discuss concept designs– 3/7/17**
- **Revise Design Plans –Spring 2017**
- **Public Meeting to discuss final designs – Fall 2017**
- **Permits issued – Spring 2018**
- **Construction – Fall 2018**

Questions/Comments?

- For More Information:

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  Projects Webpage: www.montgomerycountymd.gov/watershedrestoration