Persimmon Tree Community Association
Stormwater Management Facility Repair/Retrofit
Pond 11030 & Pond 11074

Public Meeting April 26, 2017
Carderock Spring Elementary School
Introductions

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Montgomery County DEP - Stormwater Facility Maintenance Program

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Engineer III
Montgomery County DEP - Stormwater Facility Maintenance Program

Matthew Ernest, P.E.
Associate/Water Resource Engineer
A. Morton Thomas and Associates
Tonight’s Agenda

- Background
- Project goals
- Proposed pond retrofit designs
- Examples of similar projects
- What to expect during construction
- Project schedules
- Questions/Comments
Montgomery County, MD

- Over 1,000,000 people
- 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.
Development and watersheds

- Evaporation
- Infiltration into ground water
- Less issues with runoff

- Less evaporation
- Less infiltration into ground water
- MORE runoff!
What governs us?

National Pollutant Discharge Elimination System (NPDES) permit program decreases water pollution by regulating pollution sources.

The Maryland Department of the Environment (MDE) requires the County to obtain an MS-4 Permit. This regulates Stormwater Discharges and requires the County to inspect and maintain all stormwater structures.

Code of Montgomery County, Article II, Ch. 19 (COMCOR) requires DEP to inspect and enforce maintenance of all stormwater structures in the County.
Meeting the MS4 Permit

What must the County do to protect our streams?

- Restore streams and watersheds by adding runoff management
- Meet water quality protection goals (TMDLs)
  - Reduce pollutants entering our streams
  - Focus on watersheds showing greatest impacts
- Inspect and ensure maintenance of Stormwater Management Facilities
- Educate and engage County stakeholders
What is the Water Quality Protection Charge?

- Part of Montgomery County property tax bills.
- Calculated based on the potential for a property to contribute to stormwater runoff.
- All property owners in Montgomery County pay the WQPC, including businesses, HOAs, and non-profit organizations.
- The WQPC raises funds to improve the water quality of our streams and reduce the impacts of stormwater runoff.
Stormwater Facility Maintenance Program

- DEP is responsible for inspection of all stormwater management facilities*
- DEP is responsible for ensuring all stormwater facilities* are functioning properly
- Funded by Water Quality Protection Charge
Maintenance Responsibility

- Before 2006, property owners responsible for all maintenance
- In 2003, DEP started a shared maintenance program for residential property owners = Transfer Program
  - Property owner is responsible for non-structural maintenance
  - County performs structural maintenance
Non-Structural Maintenance

- Landscaping
- Mowing
- Over grown vegetation

- Woody vegetation
- Trash removal
- Aesthetics
Structural Maintenance

- Typical - Routine
  - Blocked low flow
  - Animal burrows
  - Minor sediment removal

- Sand filter tilling
- Flow splitter cleaning
- Cleaning UG facilities
Structural Maintenance, cont.

- Capital Projects
  - Dredging
  - Slip-lining
  - Dam failures
    - Barrel replacements
    - Riser replacements
  - Safety improvements
  - Retrofits
Persimmon Tree Ponds

- Built in 1970s
- No maintenance was done before 1999
- DEP accepted in as is condition in 2013
- DEP performed routine maintenance in 2016
- This project is major structural repair/retrofit
Project Goal

- Remove sediment
- Repair structures
  - Construct New/Replace Existing Control Structures
  - Repair or Remove/Replace Existing Spillway Pipes
  - Replace Storm Drain Outfalls to Prevent Erosion
- Retrofit to maximize storm water treatment

Why are Stormwater Ponds Important?

- Stormwater ponds are important stormwater management tools, because they:
  - Remove pollutants
  - Improve health of streams and rivers
  - Help to make our waters fishable and swimmable
  - Improve the quality of the Chesapeake Bay
Stormwater Management Pond

Components of a Typical Pond

- Inflow (Stream/Piped)
- Embankment
- Control Structure
- Outfall Pipe
- Outlet Channel
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
Facility 11030 Drainage Area Map
Facility 11030 Site Images
Facility 11030 – Option 1

Reconstruct Facility as a Dry Pond (same as current condition)
- No Water Quality Treatment
- 54% Channel Protection Volume Provided
- 8 Foot Temporary Ponding Depth with 24 Hour Drain Time
- Pros – Least Costly Option
- Cons – No Water Quality, Only Partial CPv
- Long Term Maintenance
  - Removal of Sediment Build-Up
Facility 11030 – Option 2

Step Pool and Regenerative Outfall
- 32% WQv Treatment (0.12 acre-feet)
- Minimal Ponding Depth During Rainfall Events Only
- Pros – Eliminates Embankment Hazard Classification
- Cons – Only Partial WQv, No Channel Protection Volume
- Minimal Long Term Maintenance
Facility 11030 – Option 2
Sample Image

Home Port Farms - Immediately after

Home Port Farms - One year after construction

Homeport Farms - Six years after construction
Facility 11030 – Option 3

Convert Dry Pond to a Surface Sand Filter

- 4 Foot Temporary Ponding Depth with 24 Hour Drain Time
- 54% Water Quality Volume Treatment (0.20 acre-feet)
- No Channel Protection Volume
- Pros – Achieves Most Water Quality Treatment
- Cons – Only Partial WQv, No Channel Protection Volume
- Long Term Maintenance
  - Removal and Replacement of Top Layer of Sand
Facility 11030 – Option 3
Sample Image
## Facility 11030 Evaluation Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Option 1 Dry Pond</th>
<th>Option 2 Regenerative Outfall</th>
<th>Option 3 Surface Sand Filter</th>
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- **Good** ▪️
- **Average** ▫️
- **Poor** ▼️
Facility 11074 Drainage Area Map
Facility 11074 Site Images

SWM Facility Repair Project
Montgomery County Department of Environmental Protection
Permits, Tree, Communication Association Funds

APRIL 2017
For more information, contact: Julie Liu, Jluis@montgomerycountymd.gov / 240-777-7762 - Department of Environmental Protection

FACILITY 11074
EXISTING CONDITIONS PLAN

POND LOOKING NORTH
EXISTING RISE Structure
LOOKING SOUTH AT EMBANKMENT
POND ACCESS ROUTE
Facility 11074 – Option 1A

**Reconstruct as a Dry Pond (similar to current conditions)**

- 7.4 Foot Temporary Ponding Depth with 24-Hour Drain Time
- No Water Quality Volume
- 36% Channel Protection Volume (0.55 acre-feet)
- Pros – Least Costly Option, Maintains Existing Embankment, Slip Lines Existing Outfall Pipe
- Cons – No WQv, Only Partial CPv
- Long Term Maintenance
  - Removal of Sediment Buildup
Facility 11074 – Option 1B

Reconstruct as a Dry Pond (similar to current conditions)

- 7.4 Foot Temporary Ponding Depth with 24-Hour Drain Time
- No Water Quality Volume
- 36% Channel Protection Volume (0.55 acre-feet)
- Pros – Constructs Embankment to Current Standards
- Cons – No WQv, Only Partial CPv, Reconstructs Entire Embankment
- Long Term Maintenance
  - Removal of Sediment Buildup
Facility 11074 – Option 2

Reconstruct as a Dry Pond (similar to current conditions)

- 9.5 Foot Temporary Ponding Depth with 24-Hour Drain Time
- 24” Deep Permanent Pool
- No Water Quality Volume
- 66% Channel Protection Volume (1.00 acre-feet)
- Pros – Maximizes CPv Treatment
- Cons – Weir Wall Replaces Embankment, No WQv, Only Partial CPv, Reconstructs, Most Costly Alternative
- Long Term Maintenance
  - Removal of Sediment Buildup
Facility 11074 – All Options

Sample Images

- Dry Pond Example
- Weir Wall Example
- Current Conditions
- Riser Structure Example
## Facility 11074
### Evaluation Criteria

<table>
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<tr>
<th>Criteria</th>
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<th>Option 1B Dry Pond New Outfall</th>
<th>Option 2 Dry Pond Weir Wall</th>
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<tr>
<td>Red</td>
<td>Poor</td>
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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**
  - Access to be determined

- **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

Persimmon Tree Community Association
Stormwater Management Facility
Repair/Retrofit Ponds

- Survey and Site Analysis – Fall 2016/Winter 2017
- Public meeting to discuss concept designs – 4/26/17
- Revise Design Plans – Fall 2017/Winter 2018
- Public Meeting to discuss final designs – Winter 2018
- Permits issued – Spring 2019
- Construction – Summer 2019
Questions/Comments?

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Persimmon Tree Community Association Project Page: