

Pine Knolls and Fox Hills of Potomac

Stormwater Management Retrofit Projects



Department of
Environmental
Protection



Montgomery County
Maryland

March 4th, 2014 Public Meeting

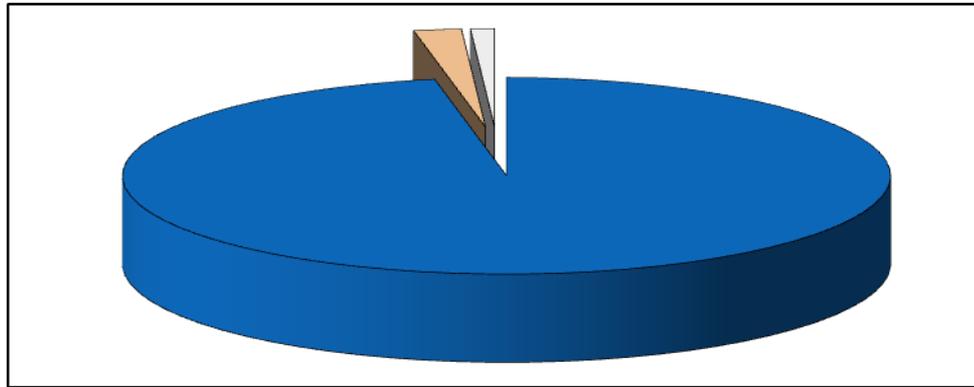
Montgomery County Department of Environmental Protection
Watershed Management Division

AMT

Today's Agenda

- Introductions
 - **Mike Lichty**– Senior Engineer, Montgomery County DEP
 - **Darian Copiz** – Watershed Planner; Montgomery County DEP
 - **Joan Fernandez**– Project Manager; Brown and Caldwell
 - **Matt Ernest**– Project Designer; A. Morton Thomas
- Background Information – Why County is Doing This
- Pine Knolls and Fox Hills of Potomac Stormwater Management Overview
- Project Objectives
- Project Costs and Benefits
- Design and Permitting Timeline
- What to Expect During Construction

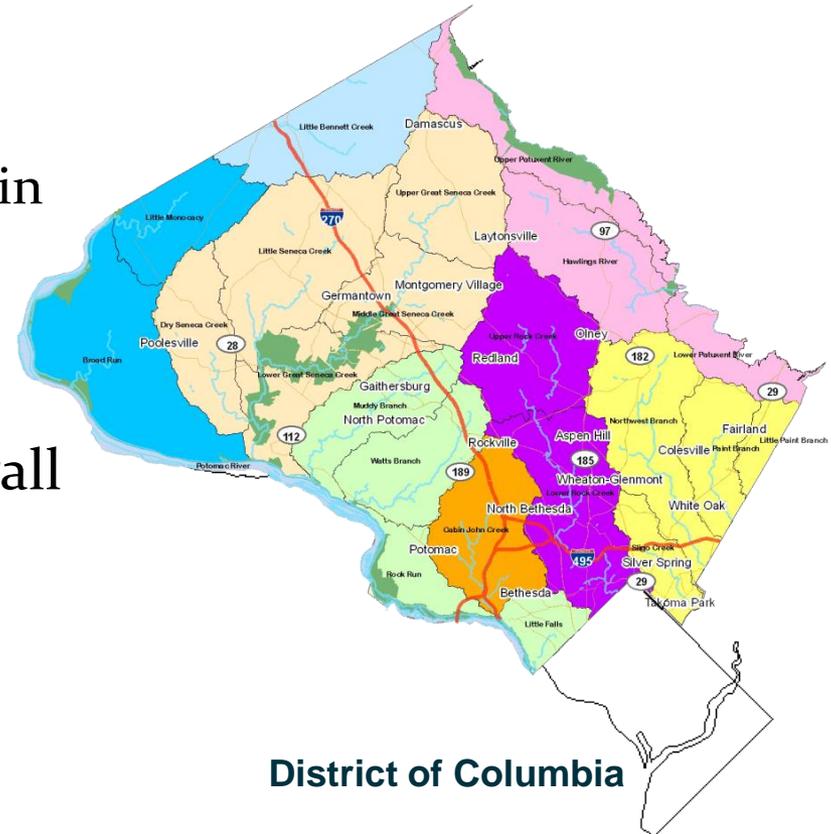
Sources of Water



- About 97% is salt water
- About 2% is frozen
- Only 1% is available for drinking water
 - Across the Country, about 57% comes from surface water sources
 - In Maryland, 74% is from surface water sources
- Potential for greater impacts from runoff in Maryland

Montgomery County, MD

- 500 sq. miles
- 1,000,000 people
 - Second only to Baltimore City within Maryland in average people per square mile
 - 184 languages spoken
- 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)

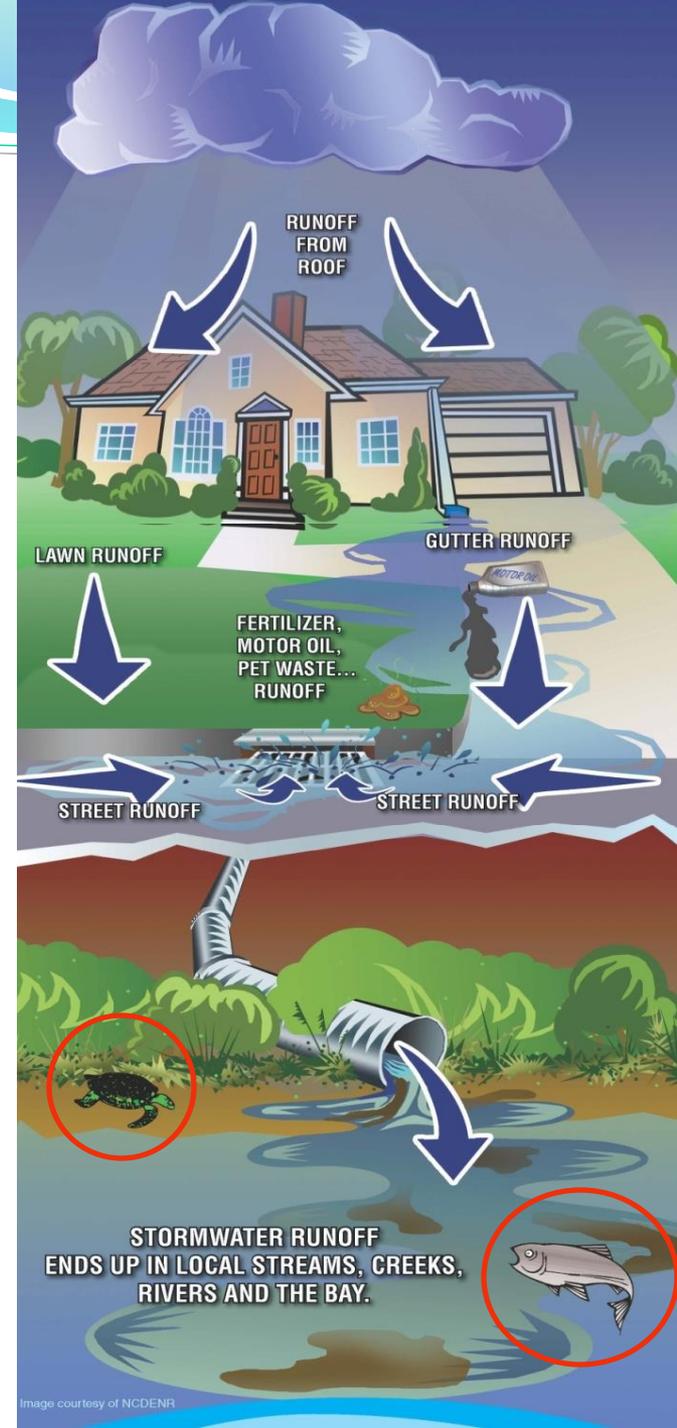


What is Runoff?

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:

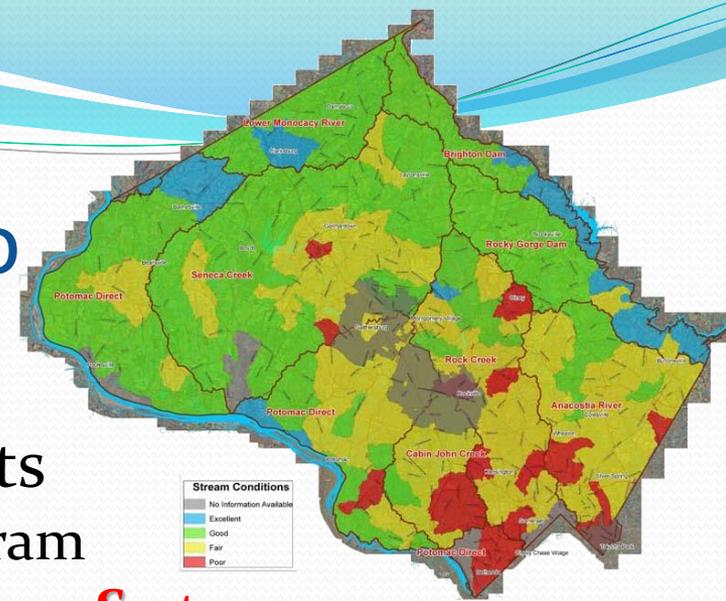
- **Directly into streams**
- **Into storm drain pipes, eventually leading to streams**
- **Into stormwater management facilities, then streams**

Two Major Issues:
Volume/Timing of Runoff
Water Quality



What is the County doing to protect our Streams?

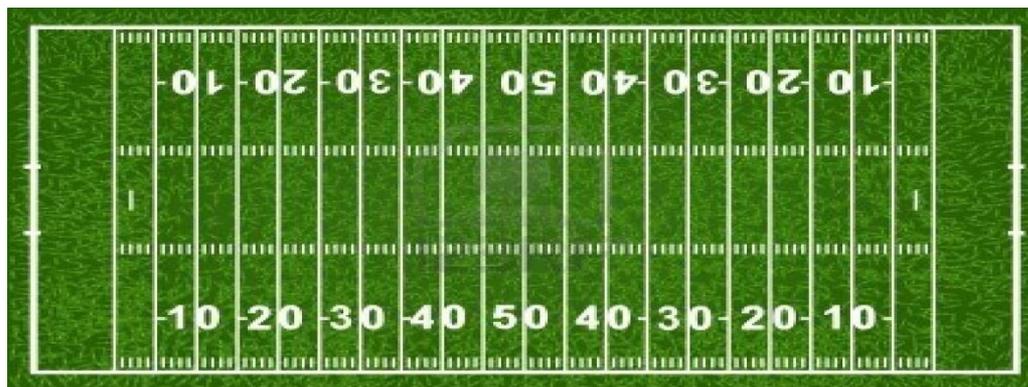
- Must meet regulatory requirements
 - Federal Clean Water Act permit program
 - **MS4 = Municipal Separate Storm Sewer System**
- Applies to all large and medium Maryland jurisdictions
- County programs
 - Restore our streams and watersheds
 - Add runoff management
 - Meet water quality protection goals
 - 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?

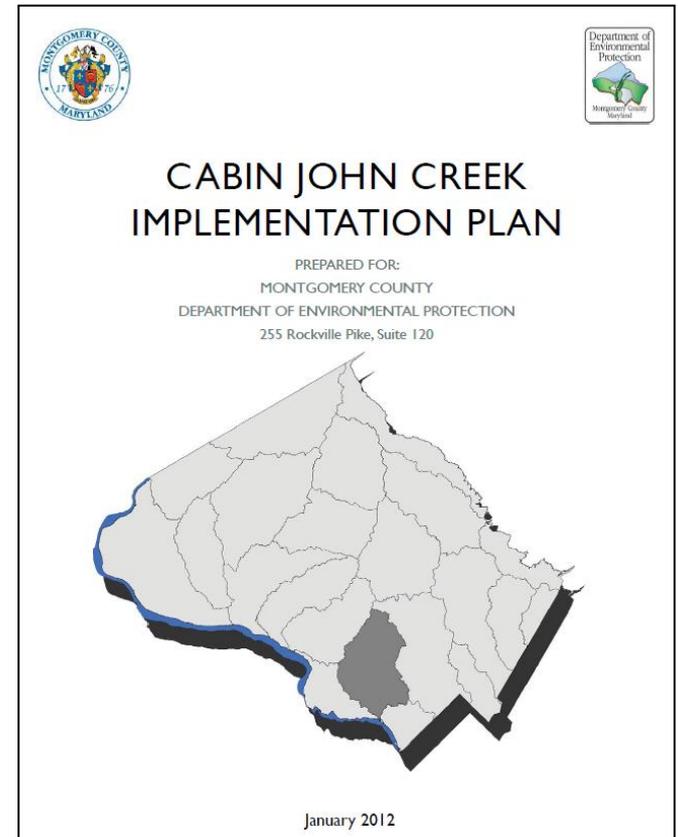
- Montgomery County is responsible for:
 - What goes into our storm drain pipes
 - What comes out of them
 - What flows into the streams
- Requires additional stormwater management for **20 percent** of impervious surfaces (4,292 acres = 6.7 square miles). That's about three times the size of Takoma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

That's equivalent to 3,307 football fields!



Project Selection

- Ponds constructed in early 1980s
- Located in a key watersheds (Cabin John) for pond retrofits
- Meet current safety and design standards
- Opportunity for water quality treatment and ecological benefits



Project Location

PROJECT
LOCATION

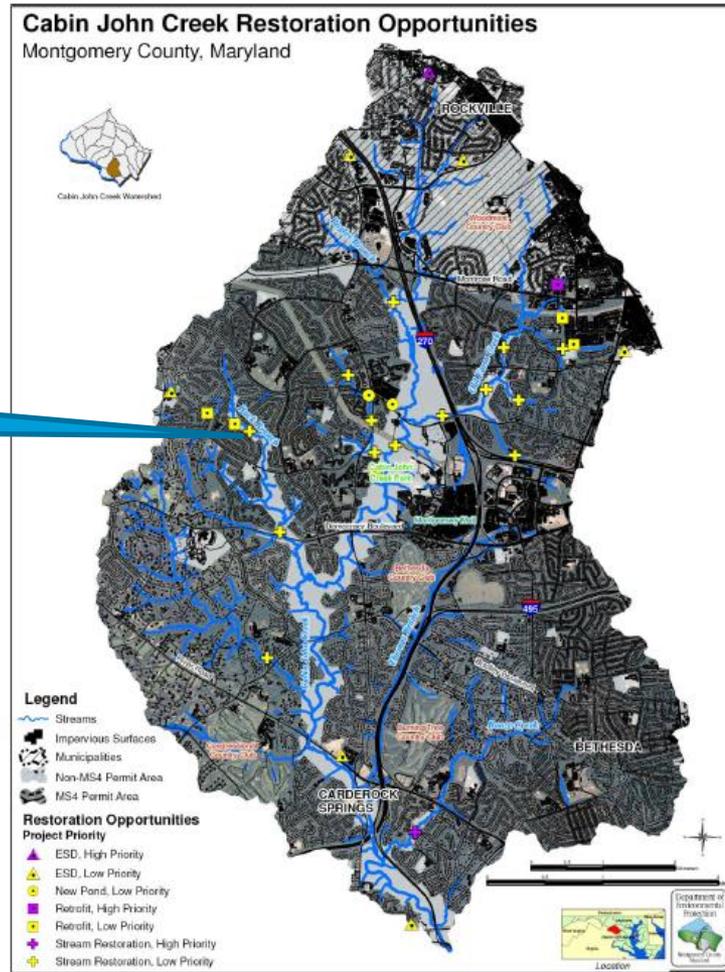
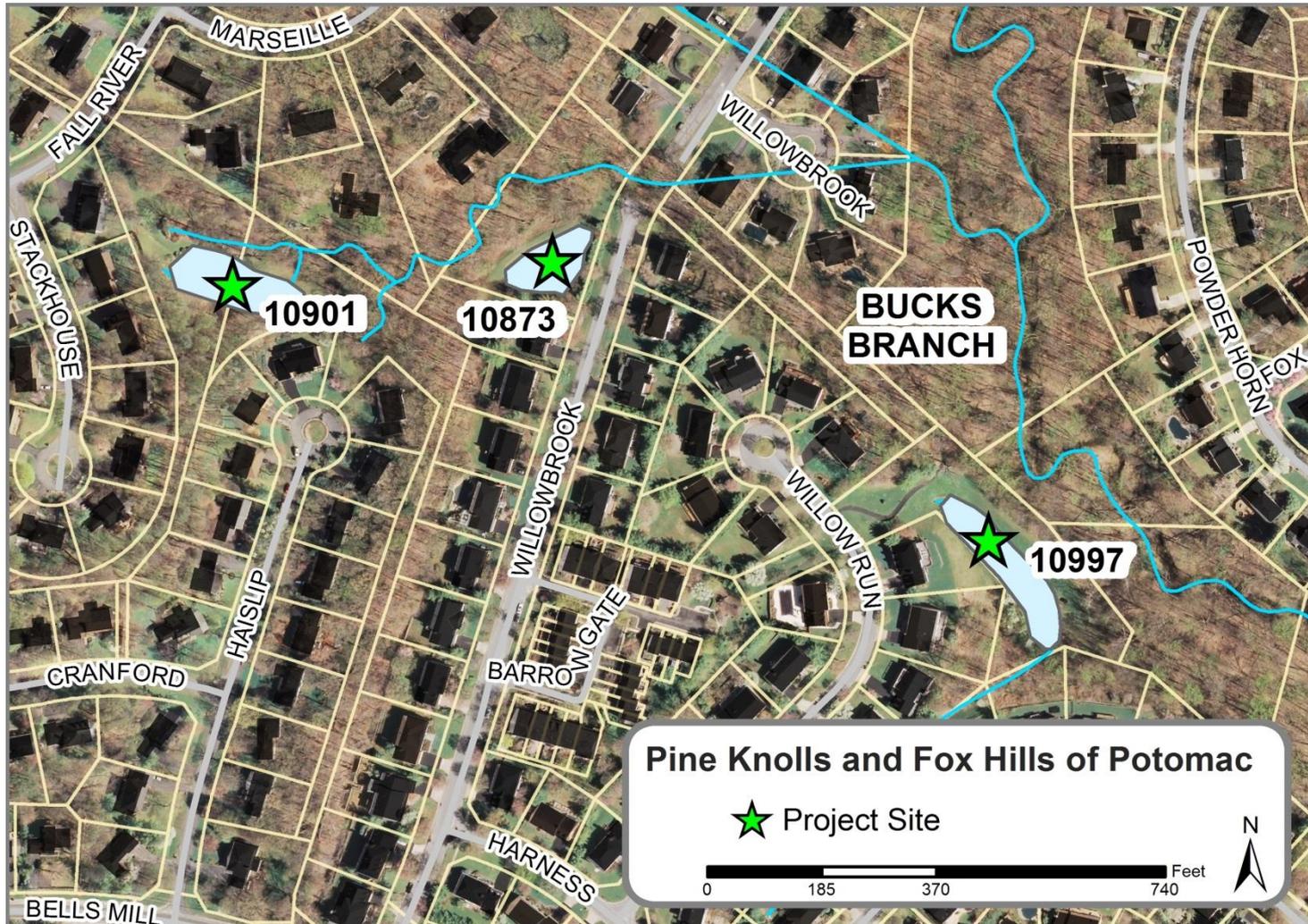


Figure 3. Cabin John Creek watershed restoration opportunities

Pine Knolls and Fox Hills of Potomac



Project Objectives

- STORMWATER MANAGEMENT
 - Add permanent pool for water quality where feasible
- STREAM PROTECTION
 - Modify outlet works to better regulate pond discharge and protect Bucks Branch
- MAINTENANCE
 - Replace existing risers with water-tight structures
 - Replace dam embankment or install impervious liner
 - Install internal drain in downstream embankments
- AESTHETICS/ENVIRONMENT
 - Landscape the pond to improve aquatic habitat and aesthetics
 - Augment existing environmental features such as forest and wetlands where possible

Stormwater Pond Drainage Areas

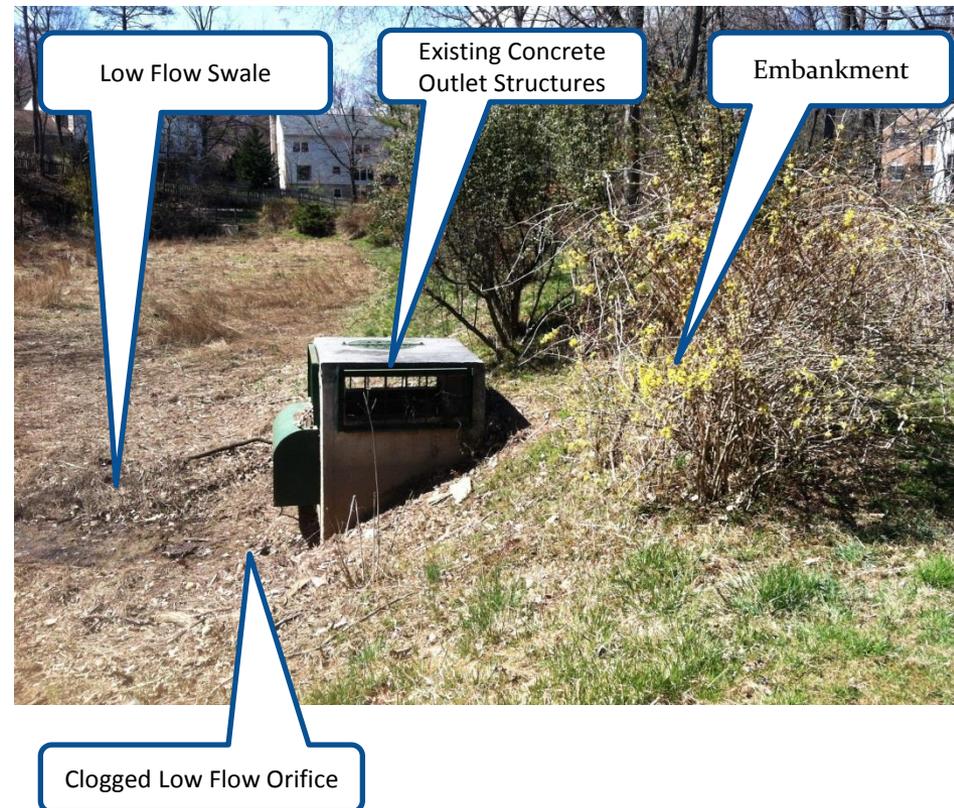
Asset #	Name	Drainage Area	% Impervious
10901	Pine Knolls	78.6	23%
10997	Fox Hills East	13.6	32%
10873	Fox Hills West	5.4	43%

Pond 10901 – Pine Knolls

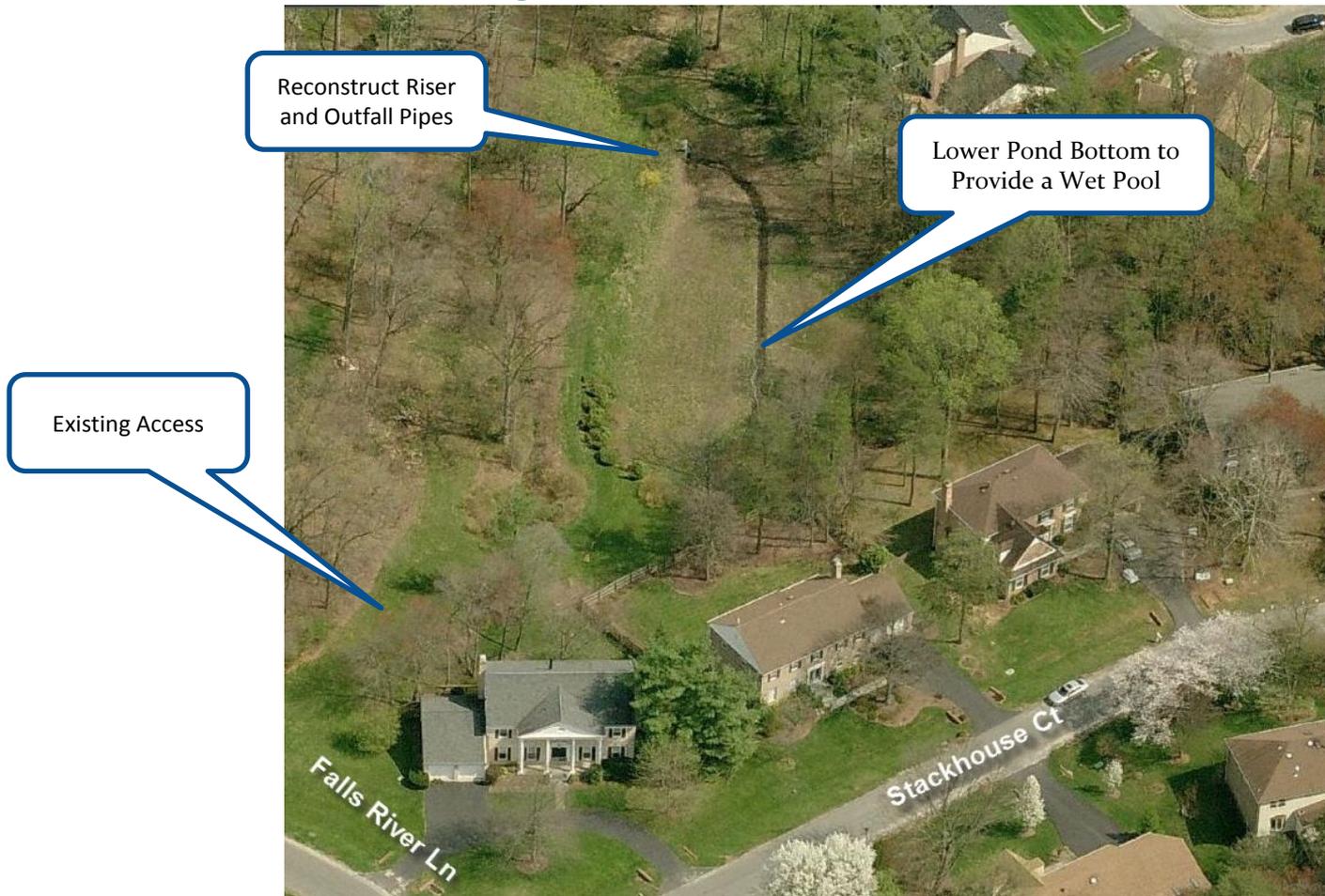
Existing Conditions

- Stormwater Management
Dry Pond

- 8' High Earth Embankment Dam
- Adjacent residential properties
- Does not meet current SWM requirements to achieve any MS4 credit.
- Low flow drainage channel in center of facility



Pond 10901 – Pine Knolls Proposed Retrofit



Pond 10997 – Fox Hills East

Existing Conditions

- Stormwater Management Dry Pond
 - 9' High Earth Embankment Dam
 - Adjacent to Residential Properties
 - Does not meet current SWM requirements to achieve any MS4 credit



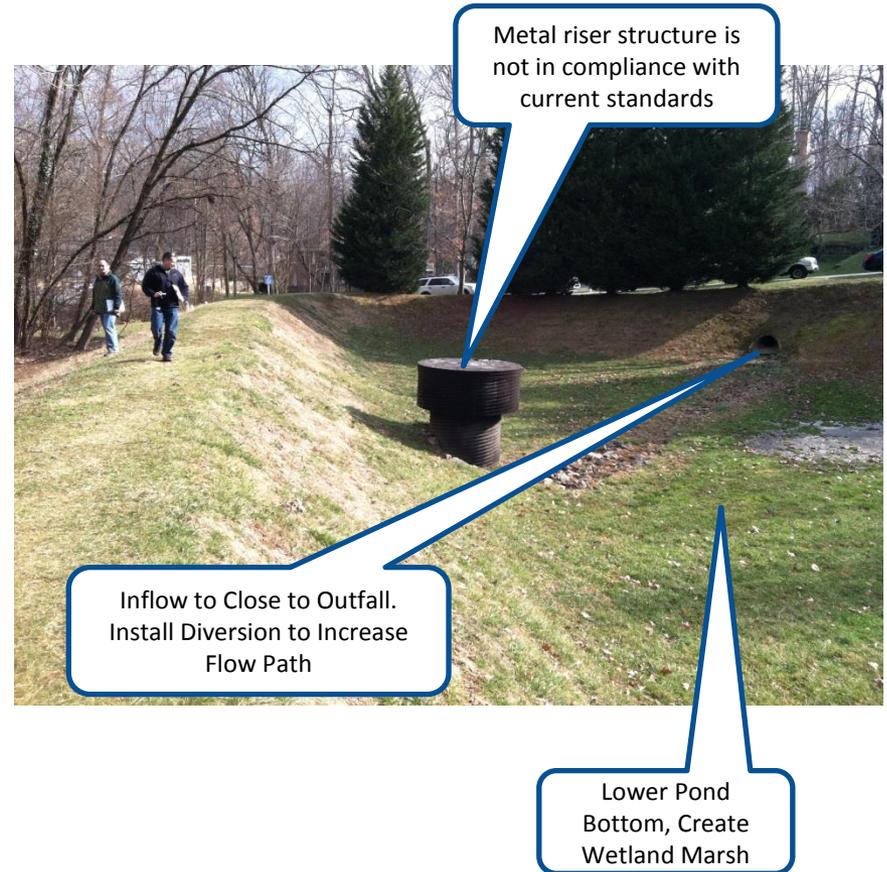
Pond 10997 – Fox Hills East Proposed Retrofit



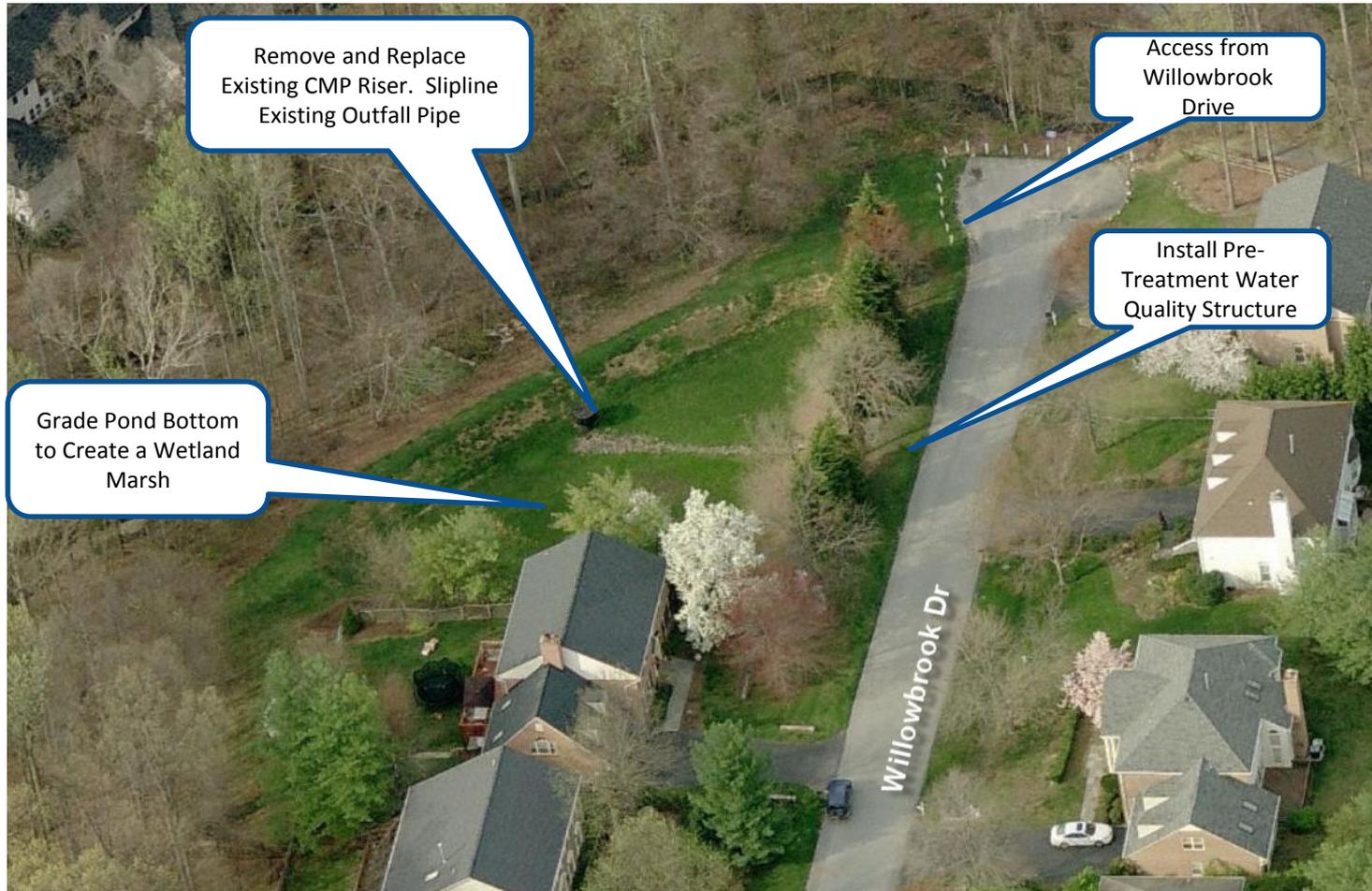
Pond 10873 – Fox Hills West

Existing Conditions

- Stormwater Management Dry Pond
 - 8' High Earth Embankment Dam
 - Existing Pedestrian Path Across Embankment
 - Does not meet current SWM requirements to achieve any MS4 credit



Pond 10873 – Fox Hills West Proposed Retrofit



Project Objectives - SWM

- Pine Knolls (10901, Normandy Falls) - Permanent Wet Pool.
- Fox Hills East (10997) – Dry Pond, 24-hour Channel Protection Volume Storage
- Fox Hills West (10873) – Create Wetland. Provide 24-hour Channel Protection Volume Storage

Stormwater Pond Retrofit ~ During Construction



Stormwater Pond Retrofit ~ Within 1 Year After Construction



Stormwater Pond Retrofit ~ Within 5 Year After Construction



Project Objectives - Maintenance

- Maintenance
 - Replace existing risers with water-tight structures to meet current standards
 - Install impervious liner on dam embankments
 - Install forebays and pre-Treatment measures at inflow points where possible



Project Objectives - Aesthetics

- Landscape all facilities with native vegetation to improve aquatic habitat and aesthetics



Project Costs

- **Financial** – estimated cost of \$2.1M financed through MCDEP CIP Program using funds generated through the Water Quality Protection Charge.
- **Recreational** – temporary construction impacts to pedestrian path leading to Fox Hills East (10997).
- **Forest** – tree clearing to comply with state dam safety laws along the downstream toe of the dam.
- **Traffic** – construction traffic enter and exit roadways Monday – Friday, 7AM to 4PM

Project Benefits

- **Water** – improved water quality and stream water temperature through better management of runoff.
- **Environmental** – reduced downstream discharge allows for natural self-repair of stream channel. Increased aquatic and riparian habitat through landscaping and reforestation.
- **Recreational** – increased aesthetic appeal of ponds.
- **Maintenance** – safer operating structure that will require minimal structural maintenance in future.

Estimated Design and Permitting Timeline

- **Design** - January 2014 – October 2014
- **Approvals** – November / December 2014
- **Permits** – January 2015
- **Bidding** – Spring 2015
- **Construction** – Spring / Summer 2015

What to expect during construction

- **Duration**
 - Approximately 3 months for each pond
- **Construction Hours**
 - Monday through Friday, 7AM – 4PM
- **Safety**
 - Open sides of site will be fenced with orange construction safety fence to separate construction from residents.
- **Traffic**
 - Minor impacts to traffic from entering and exiting construction traffic and contractor parking during the day.
- **Noise**
 - Contractor is required to comply with Montgomery County Noise Ordinance – site elevation will help alleviate noise pollution.
- **Sediment**
 - Contractor will be required to comply with Montgomery County Sediment Control Permit and not track dirt onto roads



Questions?

For more information:

Joan Fernandez, 240-499-8531,

Joan.Fernandez@montgomerycountymd.gov