Contractors Training for Aboveground Stormwater Facility Maintenance

Spring 2017

Presented by:

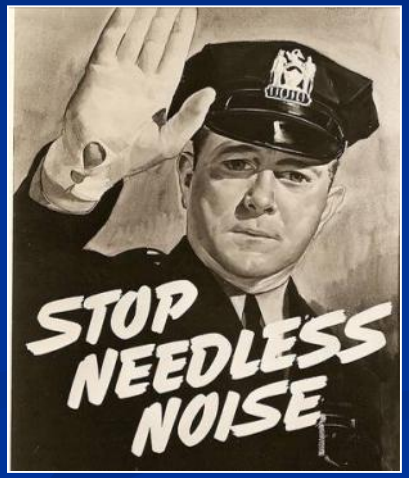
Ed Edmiston & Steve Pullum

Purpose of Training

- Review Procedures for Aboveground Stormwater Facility Inspections
- Aboveground stormwater facility maintenance and repair procedures
- Requirements for completing and finalizing a project

Contractor Requirements

- Maintain Confined Space Certification
- Follow Montgomery County Noise Control Ordinance
- Follow Montgomery County and/or Maryland State Highway Administration Work Zone Traffic Control Standards

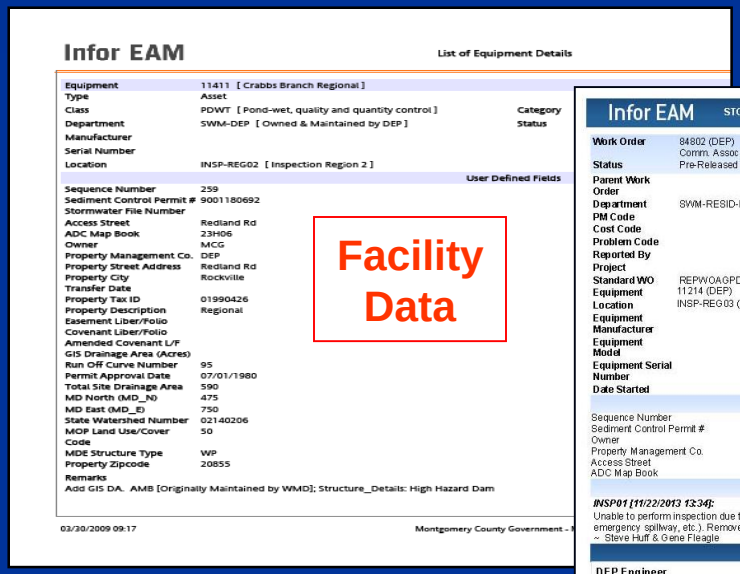


Types of Aboveground Facilities

- Ponds (wet or dry)
- Wetlands
- Sand Filters
- Infiltration Trenches
- Bio-Retention Facilities

Facility Data

- County maintains a database of all stormwater facilities, inspection reports, inspection photos, plans and asbuilts, etc.



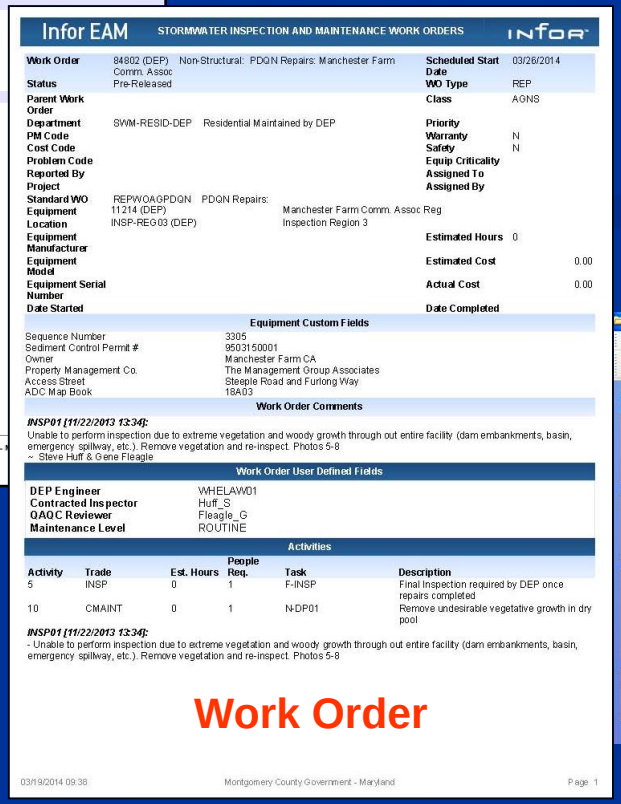
Infor EAM — List of Equipment Details

Equipment	11411 [Crabbs Branch Regional]		
Type	Asset		
Class	PDWT [Pond-wet, quality and quantity control]	Category	
Department	SWM-DEP [Owned & Maintained by DEP]	Status	
Manufacturer			
Serial Number			
Location	INSP-REG02 [Inspection Region 2]		
User Defined Fields			
Sequence Number	259		
Sediment Control Permit #	9001180692		
Stormwater File Number			
Access Street	Redland Rd		
ADC Map Book	23H06		
Owner	MCG		
Property Management Co.	DEP		
Property Street Address	Redland Rd		
Property City	Rockville		
Transfer Date			
Property Tax ID	01990426		
Property Description	Regional		
Easement Liber/Folio			
Covenant Liber/Folio			
Amended Covenant L/F			
GIS Drainage Area (Acres)			
Run Off Curve Number	95		
Permit Approval Date	07/01/1980		
Total Site Drainage Area	590		
MD North (MD_N)	475		
MD East (MD_E)	750		
State Watershed Number	02140206		
MOP Land Use/Cover Code	50		
MDE Structure Type	WP		
Property Zipcode	20855		
Remarks			

Add GIS DA. AMB [Originally Maintained by WMD]; Structure_Details: High Hazard Dam

03/30/2009 09:17 Montgomery County Government - M

Facility Data



Infor EAM — STORMWATER INSPECTION AND MAINTENANCE WORK ORDERS — INFOR

Work Order	84802 (DEP) Non-Structural: PDQN Repairs: Manchester Farm Comm. Assoc	Scheduled Start Date	03/26/2014
Status	Pre-Released	WO Type	REP
Parent Work Order		Class	AGNS
Department	SWM-RESID-DEP Residential Maintained by DEP	Priority	
PM Code		Warranty	N
Cost Code		Safety	N
Problem Code		Equip Criticality	
Reported By		Assigned To	
Project		Assigned By	
Standard WO	REPWOAGPDQN PDQN Repairs:		
Equipment	11214 (DEP) Manchester Farm Comm. Assoc Reg		
Location	INSP-REG03 (DEP) Inspection Region 3		
Equipment Manufacturer		Estimated Hours	0
Equipment Model		Estimated Cost	0.00
Equipment Serial Number		Actual Cost	0.00
Date Started		Date Completed	

Equipment Custom Fields

Sequence Number	3305
Sediment Control Permit #	9503150001
Owner	Manchester Farm CA
Property Management Co.	The Management Group Associates
Access Street	Steeple Road and Furlong Way
ADC Map Book	18A03

Work Order Comments

INSP01 [11/22/2013 13:34]:
Unable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin, emergency spillway, etc.). Remove vegetation and re-inspect. Photos 5-8
~ Steve Huff & Gene Fleagle

Work Order User Defined Fields

DEP Engineer	WHELAW01
Contracted Inspector	Huff_S
QAQC Reviewer	Fleagle_G
Maintenance Level	ROUTINE

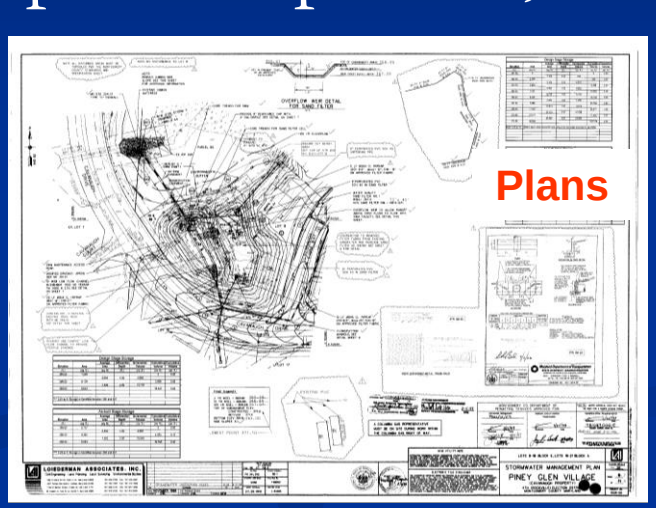
Activities

Activity	Trade	Est. Hours	People Req.	Task	Description
5	INSP	0	1	F-INSP	Final Inspection required by DEP once repairs completed
10	CMAINT	0	1	N-DP01	Remove undesirable vegetative growth in dry pool

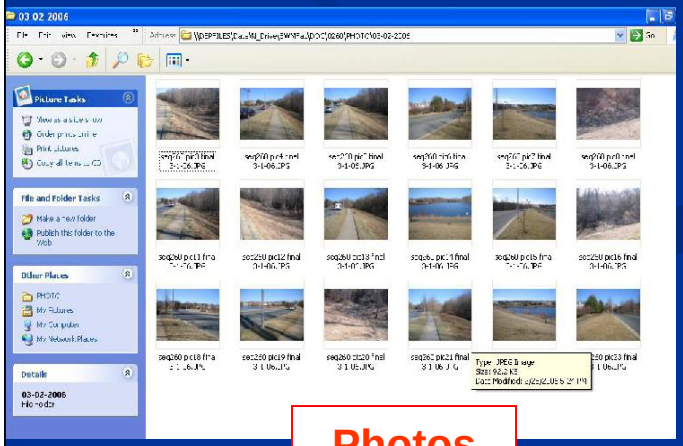
INSP01 [11/22/2013 13:34]:
- Unable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin, emergency spillway, etc.). Remove vegetation and re-inspect. Photos 5-8

03/19/2014 09:38 Montgomery County Government - Maryland Page 1

Work Order

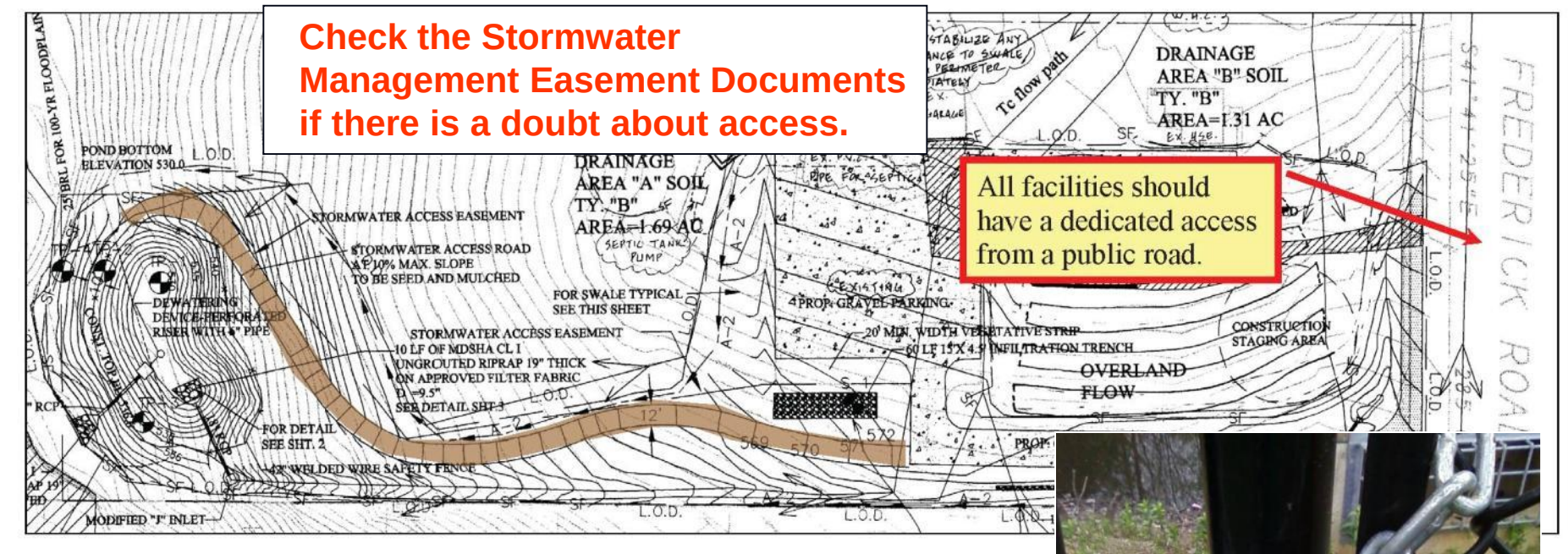


Plans



Photos

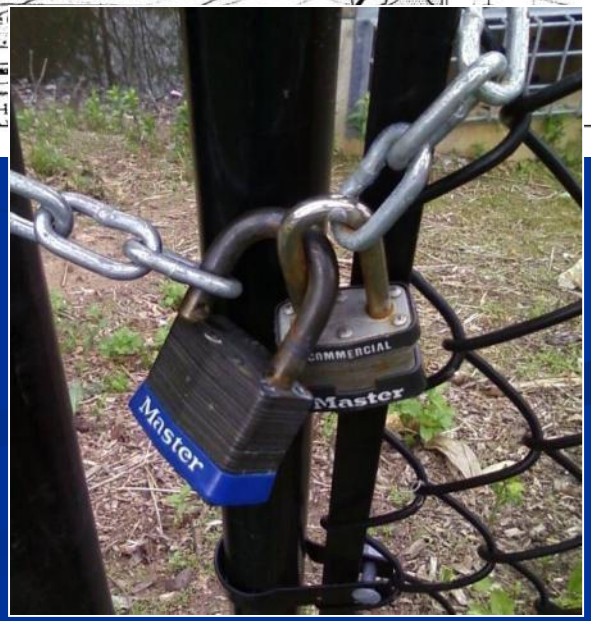
Facility Maintenance Access



Check the Stormwater Management Easement Documents if there is a doubt about access.

All facilities should have a dedicated access from a public road.

If there is a locked access gate, the property owner's lock and DEP's lock should be "interlocked" as shown. This method allows access by property owner and DEP without the need to exchange keys.



Aboveground Inspection Procedures

- Performed every three years
- County contracted inspector notified of facilities due for inspection in a particular month
- Contract inspector performs inspection
- Inspection report and photographs of the inspection are delivered to County
- MC.DEP prepares Maintenance Repair Report (Work Order)
- MC.DEP forwards Repair Report/Work Order to the facility owner via e-mail

Aboveground Notification Procedures, cont.

- The e-mail and repair report/work order informs the owner of the required maintenance and repairs

  Contractors should not prepare bids off the work order alone.

- The repairs must be completed within 60 days.

  This is a change from previous years.

Stormwater Maintenance Program Updates

CRITICALITY RATINGS

- **EMERGENCY ~ *"Repairs Required ASAP!"***

  Failure to perform repairs may result in a threat to public health and safety or significant structure failure.

- **HIGH ~ *"Repairs Required Within 60 Days"***

  Repairs necessary to ensure the proper functioning of the facility, which, if not performed, could affect the structural integrity of the facility and impact water quality within the watershed.

- **ROUTINE ~ *"Pay Now or Pay <u>More</u> Later"***

  Repairs necessary to ensure proper functioning of the facility, which, if not performed within the following 12 months could elevate criticality of repairs to HIGH status.

- **CONTINUE ROUTINE MAINTENANCE**

  Maintenance of the facility is acceptable.

Aboveground Maintenance Notification Procedures

Infor EAM — STORMWATER INSPECTION AND MAINTENANCE WORK ORDERS — INFOR

Work Order	84802 (DEP) Non-Structural: PDQN Repairs: Manchester Farm Comm. Assoc	**Scheduled Start Date**	03/26/2014
Status	Pre-Released	**WO Type**	REP
Parent Work Order		**Class**	AGNS
Department	SWM-RESID-DEP Residential Maintained by DEP	**Priority**	
PM Code		**Warranty**	N
Cost Code		**Safety**	N
Problem Code		**Equip Criticality**	
Reported By		**Assigned To**	
Project		**Assigned By**	
Standard WO	REPWOAGPDQN PDQN Repairs:		
Equipment	11214 (DEP) Manchester Farm Comm. Assoc Reg		
Location	INSP-REG03 (DEP) Inspection Region 3		
Equipment Manufacturer		**Estimated Hours**	0
Equipment Model		**Estimated Cost**	0.00
Equipment Serial Number		**Actual Cost**	0.00
Date Started		**Date Completed**	

Equipment Custom Fields

Sequence Number	3305
Sediment Control Permit #	9503150001
Owner	Manchester Farm CA
Property Management Co.	The Management Group Associates
Access Street	Steeple Road and Furlong Way
ADC Map Book	18A03

Work Order Comments

INSP01 [11/22/2013 13:34]:
Unable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin, emergency spillway, etc.). Remove vegetation and re-inspect. Photos 5-8
~ Steve Huff & Gene Fleagle

Work Order User Defined Fields

DEP Engineer	WHELAW01
Contracted Inspector	Huff_S
QAQC Reviewer	Fleagle_G
Maintenance Level	ROUTINE

Activities

Activity	Trade	Est. Hours	People Req.	Task	Description
5	INSP	0	1	F-INSP	Final Inspection required by DEP once repairs completed
10	CMAINT	0	1	N-DP01	Remove undesirable vegetative growth in dry pool

INSP01 [11/22/2013 13:34]:
- Unable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin, emergency spillway, etc.). Remove vegetation and re-inspect. Photos 5-8

03/19/2014 09:38 Montgomery County Government - Maryland Page 1

Montgomery County Asset 10995

10995 05172012 001

10995 05172012 002

10995 05172012 003

10995 05172012 004

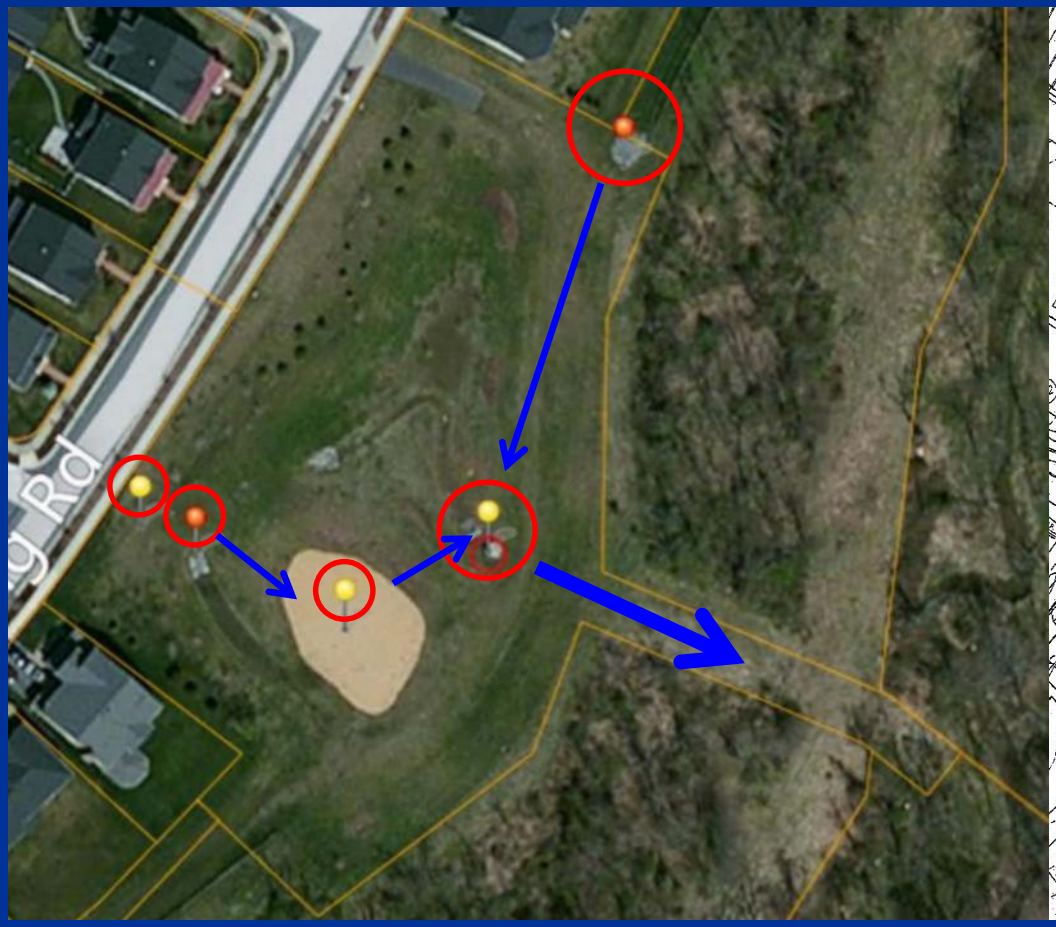
WORK ORDER PHOTOS

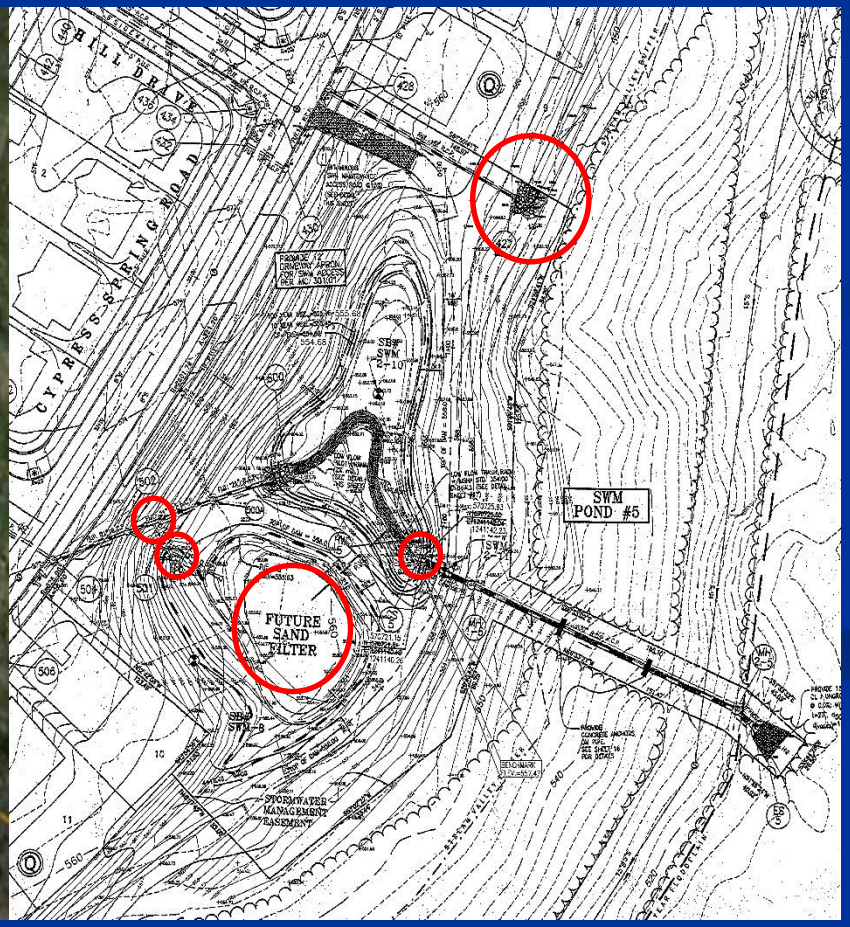
Electronic Repair Report (e-mail attachment)

from MC.Stormwater@montgomerycountymd.gov

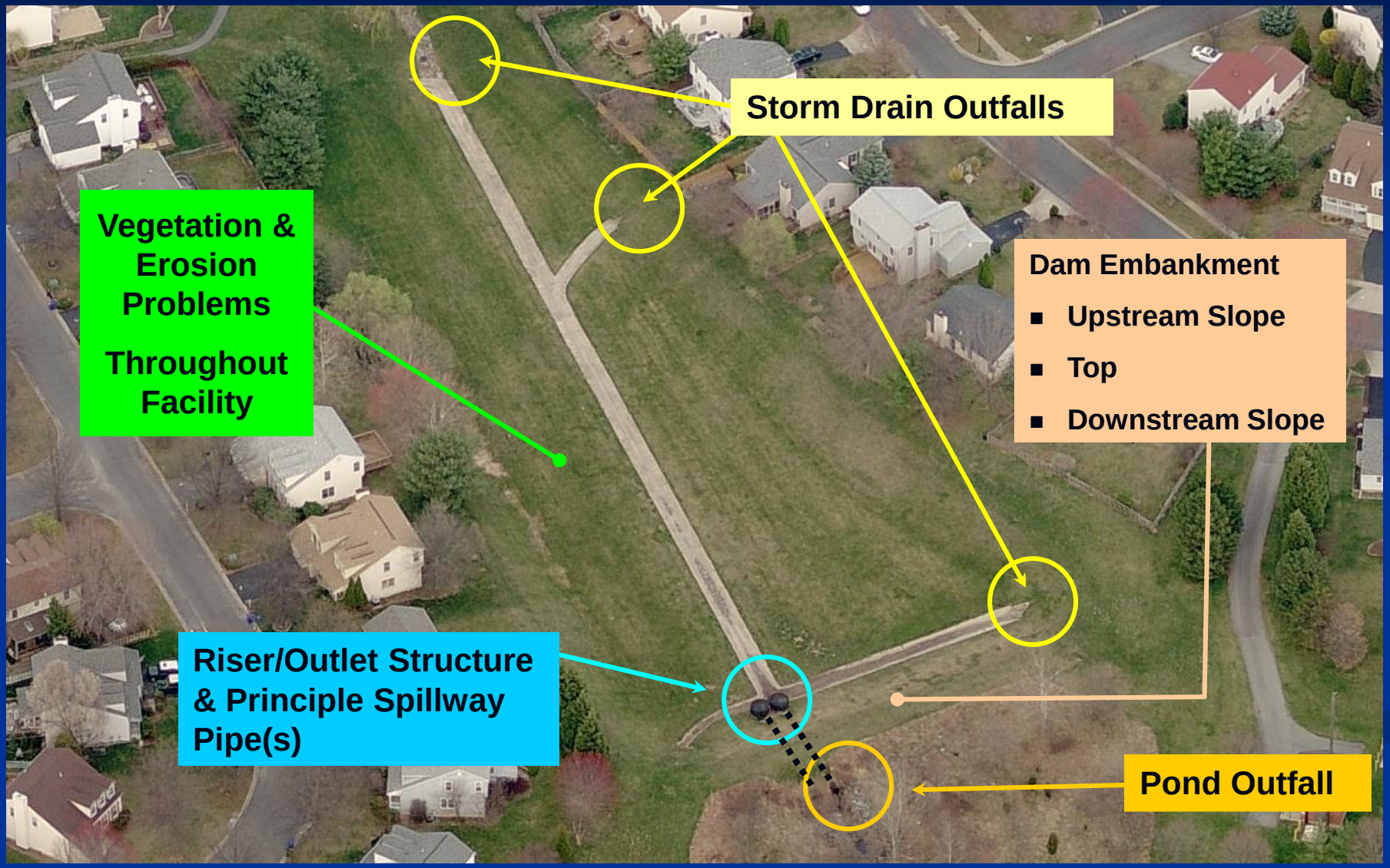
“Treatment Trains”

“ Treatment Trains” are a series of In-Line stormwater structures to provide for the control of the quality and quantity of stormwater.





Inspection of Facility Includes All Components



Aboveground Maintenance Procedures

- Pre-bid meeting is recommended
- Pre-Construction is REQUIRED

Work descriptions on the work orders are often very brief.

Site conditions may have changed because of storm events or other reasons between the time of inspection and the time the work is to be done.

For this reason, do not prepare bids from information on the Work Order alone.

Non-Structural Maintenance

- Landscaping
- Mowing
- Over grown vegetation

- Woody vegetation
- Trash removal
- Aesthetics

Structural Maintenance

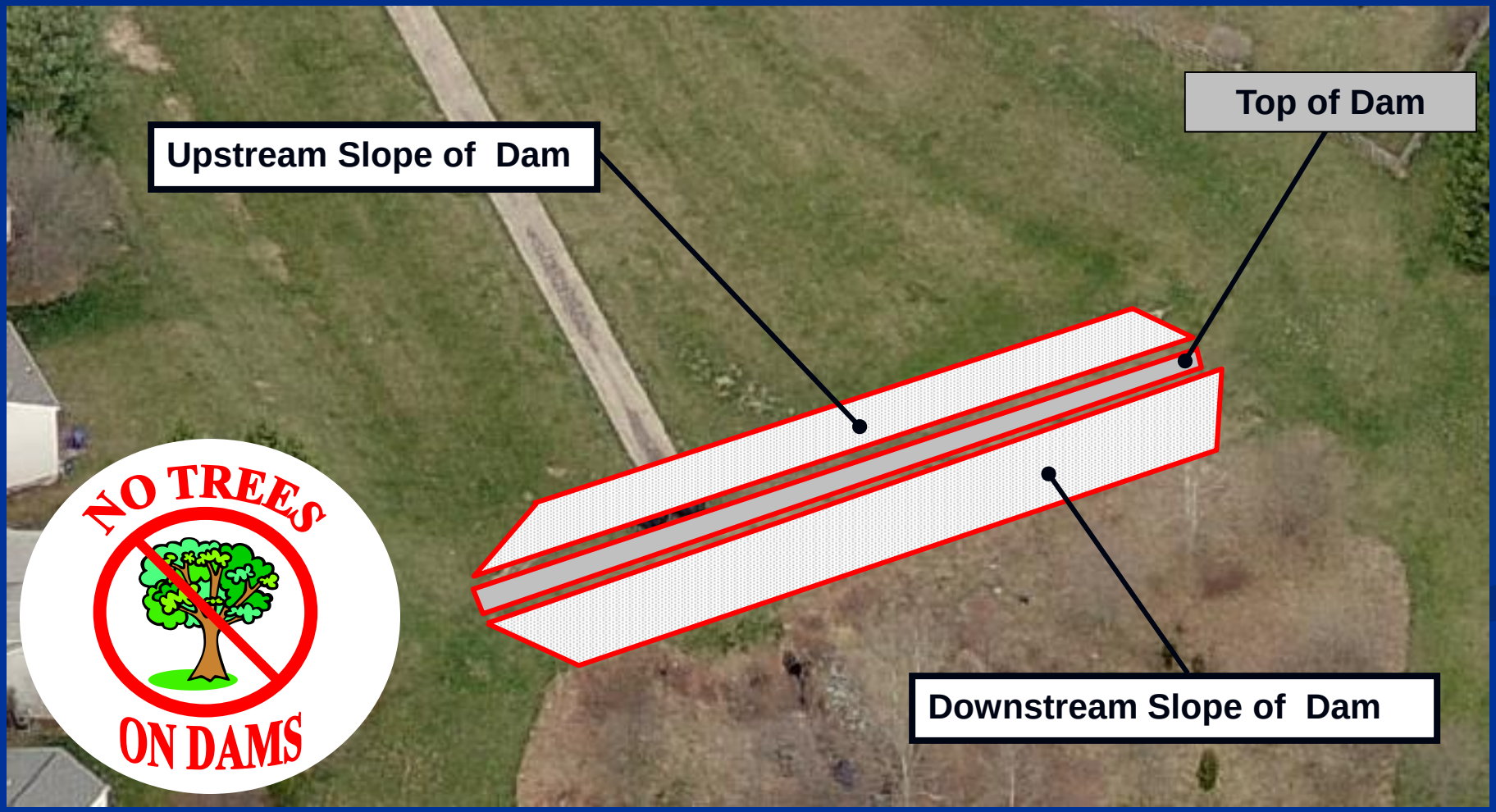
- Concrete repairs
- Riser/Control Structure and Barrel (pipe) repairs
- Blocked low flow
- Animal burrows
- Minor sediment removal
- Sand filter tilling

Perfect to Imperfect Dam

Pond Maintenance

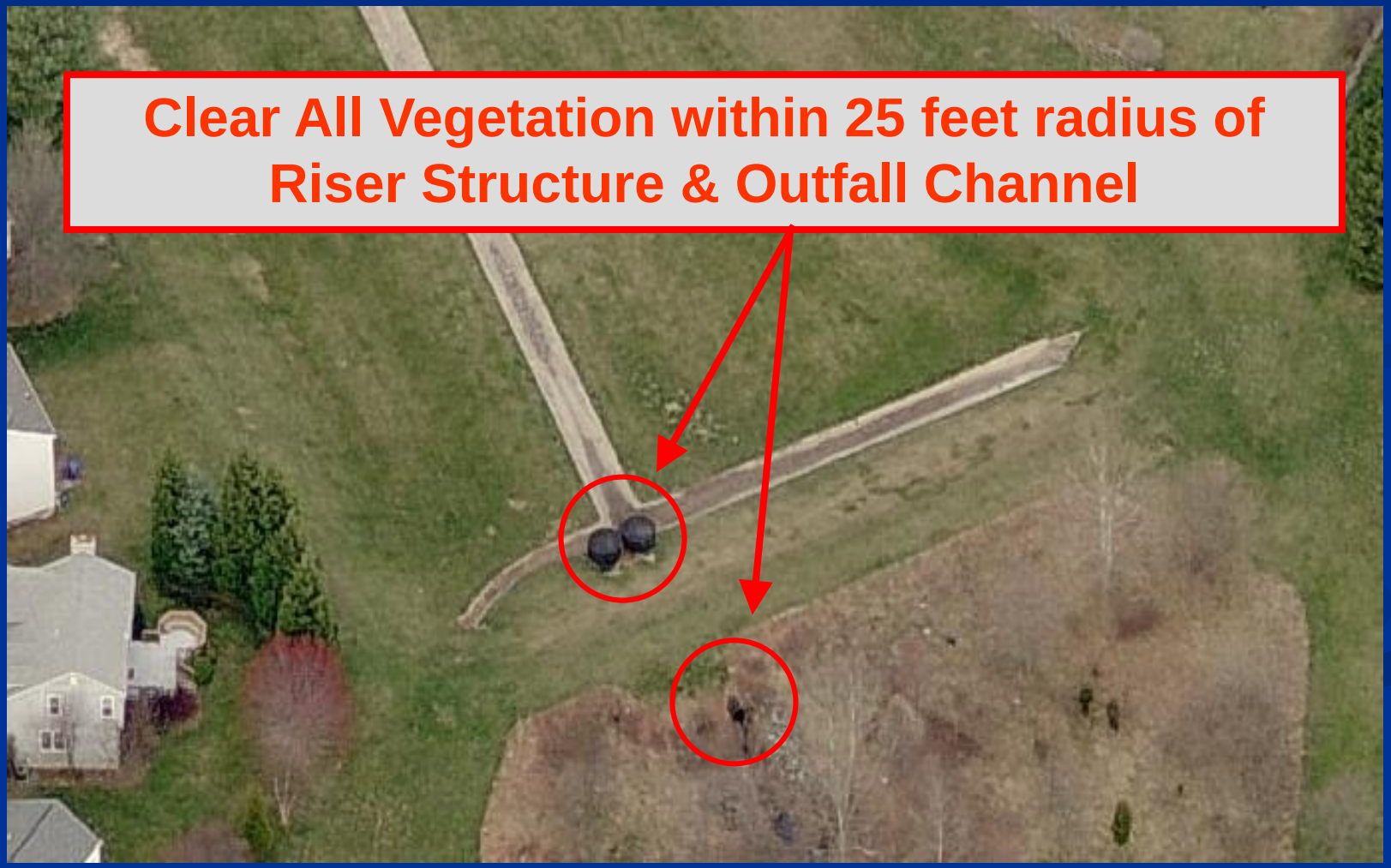
Mowing: Twice A Year (Minimum)

★ Once in the Spring ★ Once in the Fall



Mowing: Twice A Year (Minimum)

★ Once in the Spring ★ Once in the Fall



Mowing & Woody Vegetation Control
(Perform at least twice a year)

- 25 feet around the control structure
- Inlet channels in pond
- Channels, headwalls, and pipes into pond area
- Outlet channel
- Remove & dispose all cut vegetation

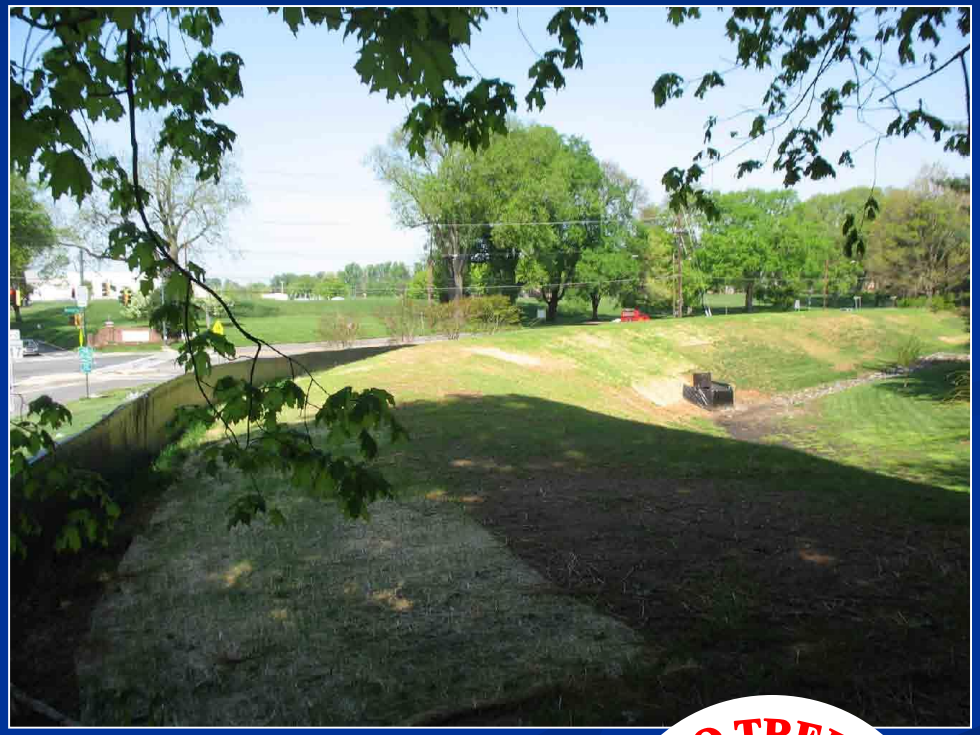
Woody Vegetation Cutting & Removal
(Perform at least twice a year)

REMOVE ALL TREES from dams but consult with MC.DEP first.

- **Flush cut trees with a diameter *less than eight inches (8”) in diameter* leave in place and treat with a silvicide.**
- **For trees *greater than eight inches (8”) in diameter*,**
  - **remove all woody material to 24 inches below the ground surface**
  - **Backfill void with approved soil. Compact and stabilize with grass (seed & straw mulch/mulch blankets) .**

Before

After



Dry Pond

(Trees Removed from Dam)

NO TREES ON DAMS

Class Participation Time

Typical Problems

What is the problem and what is the structure?

Clogged culvert structures

Typical Problems

Large woody debris
What are the problems?
and beaver activity

Typical Problems

What is the problem?
Overgrown vegetation

Typical Problems

What is the problem?

Rusted & deteriorated metal pipes

Typical Problems

Trash rack corrosion

What are the problems?

Concrete spalling

Typical Problems

Outfall channels full of silt

What are the problems?

Clogged pipes

Typical Problems

Outfall Problems

Outfall Erosion

Typical Problems

Typical Problems

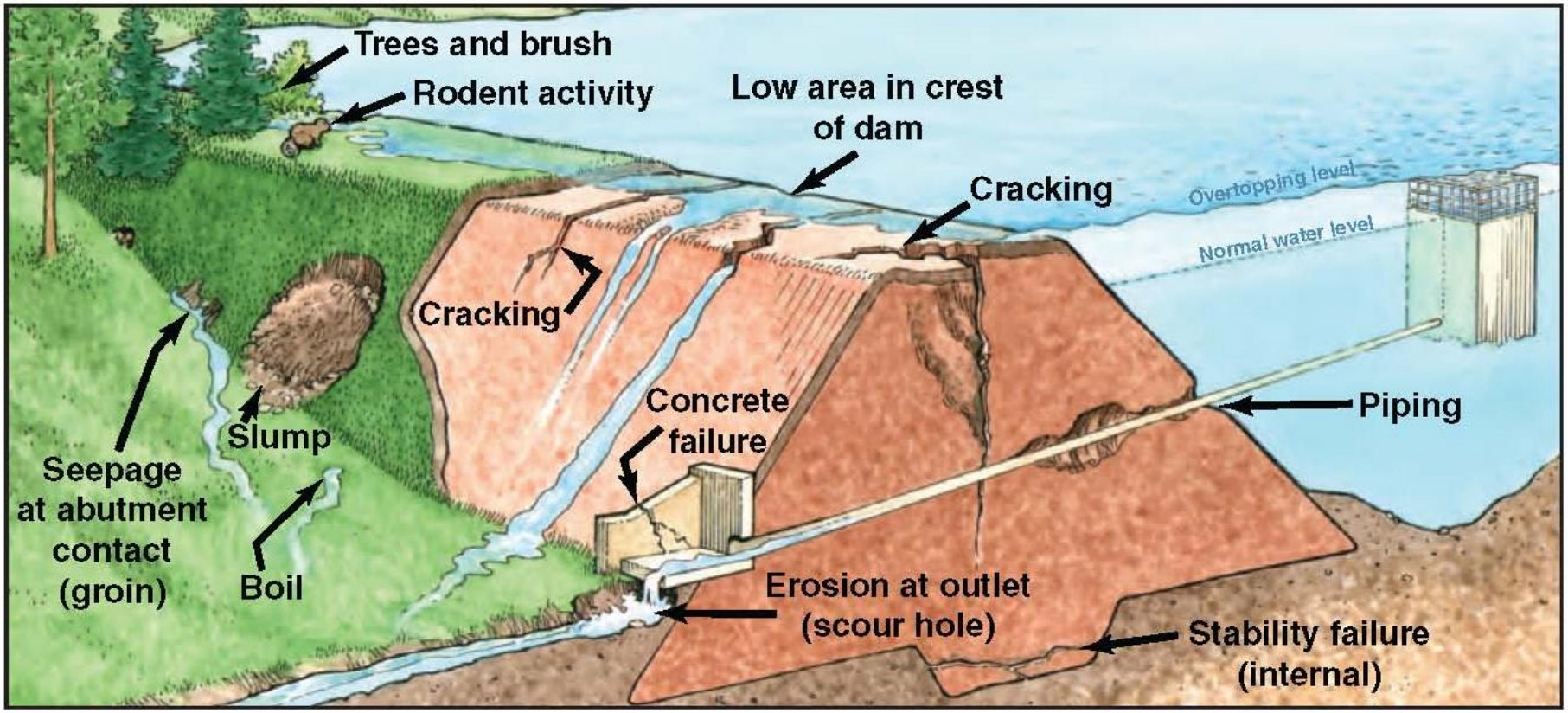
Warehouse buildings damaged by dam breach as a result of storm

By MIKE PERSLEY mpersley@newspost.com Sep 30, 2015

Lawsuit seeks $844K in damages from 2015 flooding

By Brandi Bottalico bbottalico@newspost.com Dec 4, 2016

Serious Problems Requiring Immediate Attention



** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.*

Serious Problems Requiring Immediate Attention *

Sink Holes On Dam Embankments

Trash & Debris in Outlet/Riser Structures & Missing Manhole Covers

**** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

Obvious Structural Failures

Beaver Lodges that Block Primary Outlet Works

**** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

Holes or Voids In Dam Embankments

This void likely started as an animal burrow.

**** Contact Us, MC.DEP, As Soon As possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

Seepage Through Dam Embankments

Serious Problems Requiring Immediate Attention *

Deteriorated/Rusted Risers

**** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

Failed & Leaking Joints in Pond Outfall Pipes & Barrels

**** Contact Us, MC.DEP, As Soon As possible if any these conditions are discovered.***

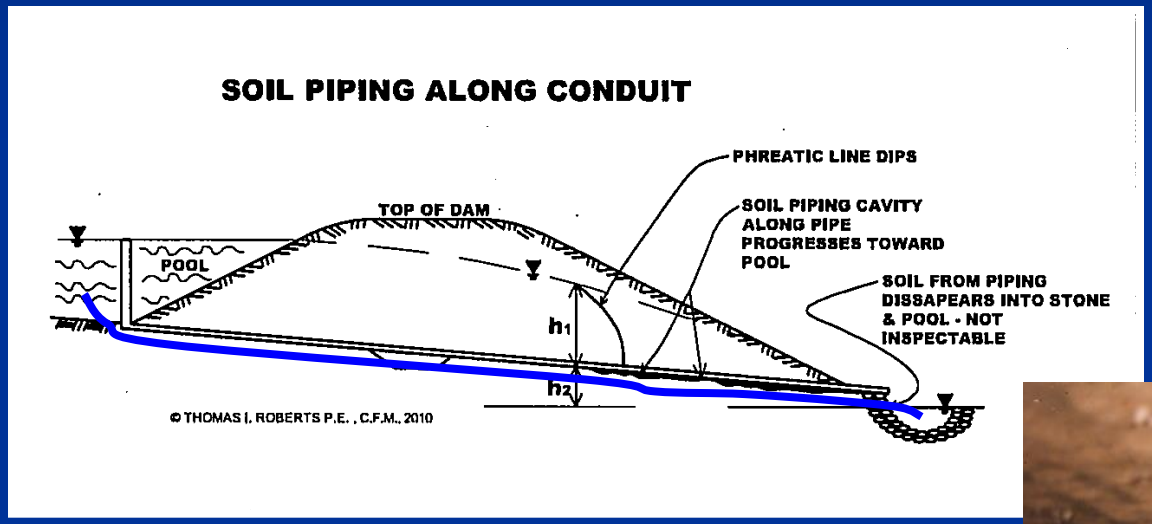
Serious Problems Requiring Immediate Attention *

Obvious Pollution

**** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

"Piping" Through Dam Embankments



Daylight

** Contact Us, MC.DEP, As Soon As possible if any these conditions are discovered.*

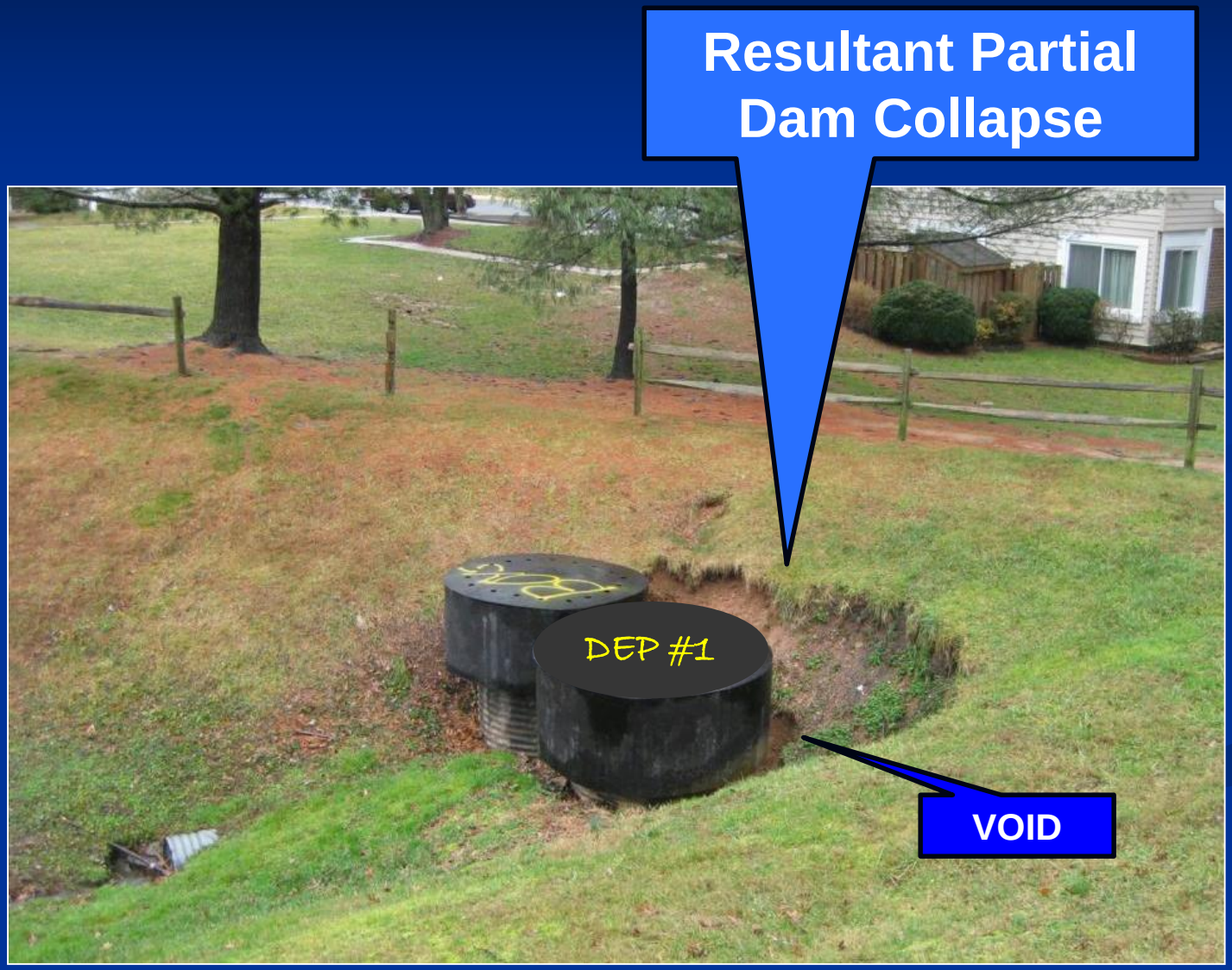
Recent Piping Problem

Void in Upstream Face of Dam

Water enters void and travels along outside of pipe and erodes interior of dam

"Before"

Recent Piping Problem



"Before"

Recent Piping Problem

"After"

This is only a temporary repair to prevent complete dam failure.

Serious Problems Requiring Immediate Attention *

Where did the soil & stone go?

*** Contact Us, MC.DEP, As Soon As Possible if you discover such a condition or sinkhole.***

Serious Problems Requiring Immediate Attention *

Into the pipe below

*** Contact Us, MC.DEP, As Soon As Possible if you discover such a condition or sinkhole.**

“Sinkhole” Investigation

“Sinkhole” Investigation

Excavated the ‘sinkhole’ to an approximate depth of 20 feet. Excavation exposed the pipe with a hole in it.

“Sinkhole” Investigation

The next step was to perform a closed circuit television (CCTV) inspection.

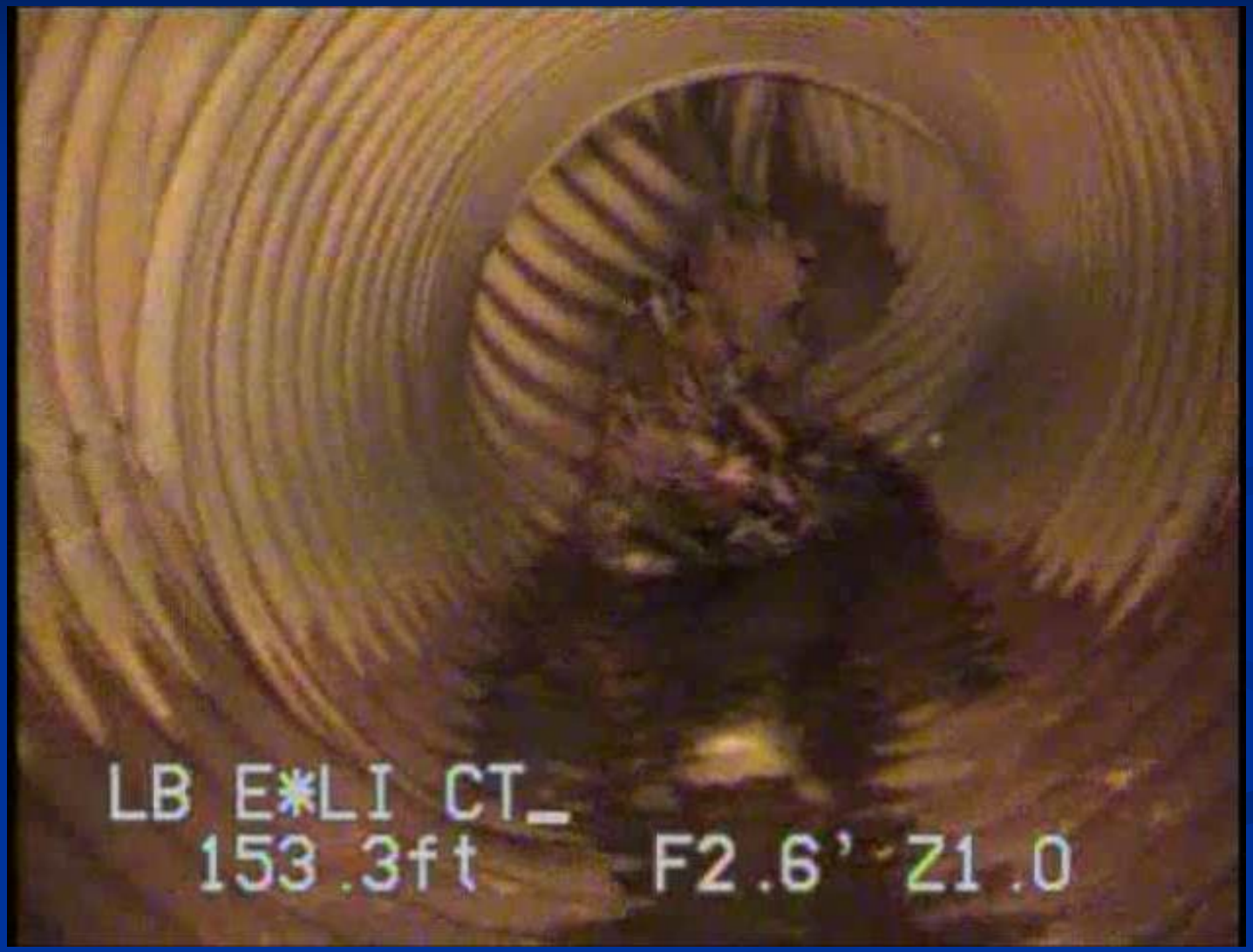
"Sinkhole" Investigation

Camera Entering Pipe

Camera Controls & Video Monitor

“Sinkhole” Investigation

CCTV Video Clip

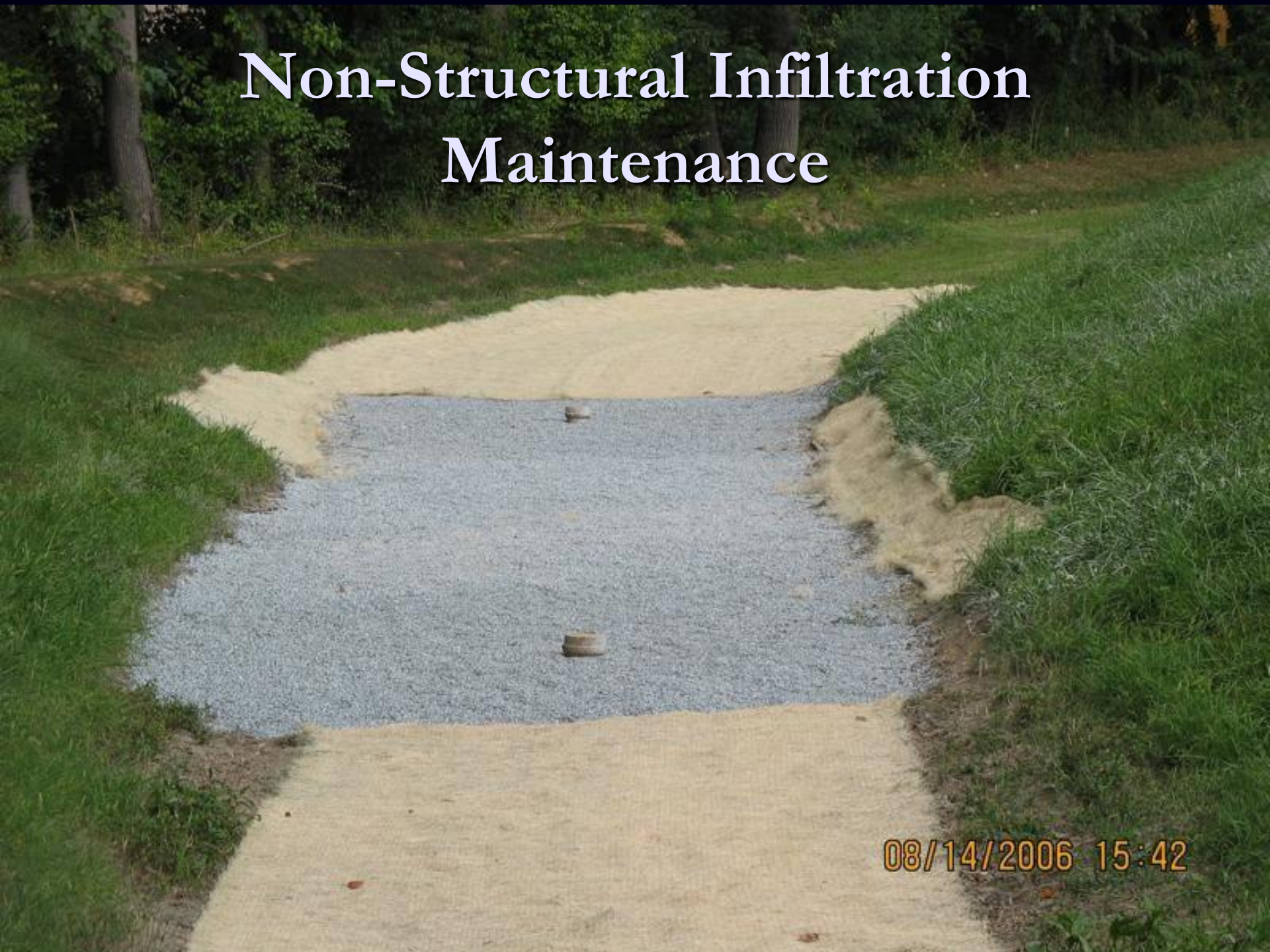


Serious & Deteriorated Pond Outfall Pipes & Barrels May Require Complete Removal & Replacement and/or Relining *

Old Pipe

New Plastic / HDPE Pipe

Non-Structural Infiltration Maintenance



Non-Structural Infiltration Maintenance

Sand Filters

- Prevent cut grass from blowing onto sand filter during mowing
- Discourage children from playing with the sand and damaging and removing the plastic caps

Non-Structural Infiltration Maintenance

Sand Filters

Primary Problem: Vegetative Encroachment

Non-Structural Infiltration Maintenance

Sand Filters

Sand Filter Repairs:

1. Remove Vegetation
2. Rake/Till Surface Sand Layer
3. Remove and Replace Top Layer of Sand if significantly contaminated.

Structural Sand Filter Maintenance

Kitchen Grease In Storm Drain Problem

Primary Problem: Grease Inundation from Improper Disposal & Handling

Non-Structural Infiltration Maintenance

Sand Filter: Grease Issue

Sand Filter Repair:

1. Removed all media
2. Excavated areas around perforated underdrain pipe
3. Replaced all sand
4. Stabilized sides with erosion control product and seeding

Before

After

Sand Filter

Non-Structural Infiltration Maintenance

Infiltration Trenches

- Prevent cut grass from blowing onto the trench during mowing
- Discourage children from playing with the stones and damaging and removing of the plastic caps.

Before

After

Infiltration Trench

Before

After

Sand Filter Basin

Mowing

Blow Grass Clippings Away from Ponding Areas & Filter Media In Infiltration Facilities Such As Sand Filters and Stone Infiltration Trenches.

Fall Leaf Clean-Up

Remove Leaves from Surface of Filter Media

(e.g., sand, stone, mulch, etc.)

What happens if maintenance procedures are not followed?

- The DEP Inspector may issue a civil citation to the owner if the required repairs and maintenance is not completed within the compliance date.
- Call Ed Edmiston @ 240-876-0032 or Steve Pullum @ 240-832-1894 if there is a delay in the schedule to request an extension.
- If the extension is approved, the DEP Inspector will fax or e-mail an extension approval letter.

Final Inspection

- The MC.DEP must be notified so that a final inspection can be conducted so the Work Order may be closed or "finalized".

  Steve Pullum or Ed Edmiston for a final inspection.
- If maintenance and repair work is satisfactory:
  - The results of the final inspection are put into the MC.DEP database.
  - The MC.DEP Inspector will issue an Inspection Report to the property owner stating the work is complete and acceptable.

Final Inspection

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Isiah Leggett
County Executive

Robert Hoyt
Director

March 20, 2009

First Aquarius Homes Assoc
c/o Miss. Hubley

Asset Number (s):10977
Work Order Number (s): 33471
Sequence Number(s): 1065
Property Address: Homecrest Road

Dear Sir or Madam:

On 3/19/09 the Department of Environmental Protection performed an inspection on the stormwater facility listed above. Our inspection confirms that the facility has met all repair requirements and no further action is required at this time. The facility work order was finalized on 3/20/09. Thank you for your cooperation and assistance in completing this project.

Please continue routine maintenance as necessary to maintain the facility(ies).

If you have any questions, please feel free to contact me at 240-777-7780.

Sincerely,

Stephen Pullum, Stormwater Facility Inspector
Stormwater Facility Maintenance Program

Watershed Management Division
255 Rockville Pike, Suite 120 • Rockville, Maryland 20850 • 240-777-7700 • 240-777-7715 FAX
www.montgomerycountymd.gov

Notification of satisfactory maintenance and repair is generated and e-mailed to the property owner.

LET'S WORK TOGETHER AS A TEAM!

Questions?