

Contractors Training for Aboveground Stormwater Facility Maintenance

Spring 2018

Presented by:

Steve Pullum

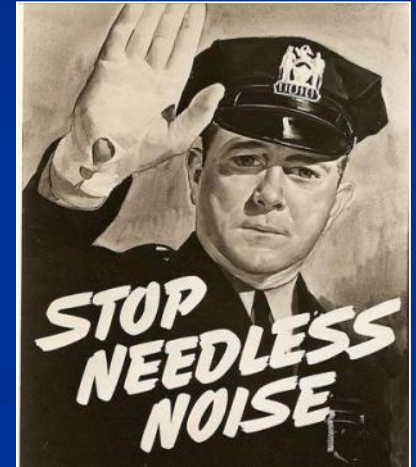
Purpose of Training

- 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	23406	
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	50	
Code		
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 -

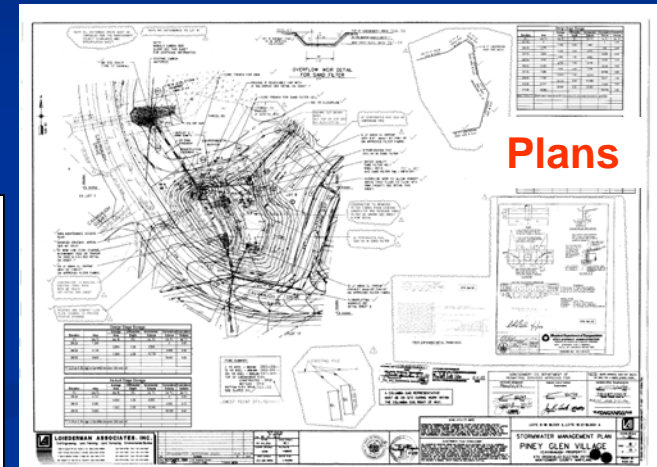
Facility Data

Infor EAM STORMWATER INSPECTION AND MAINTENANCE WORK ORDERS

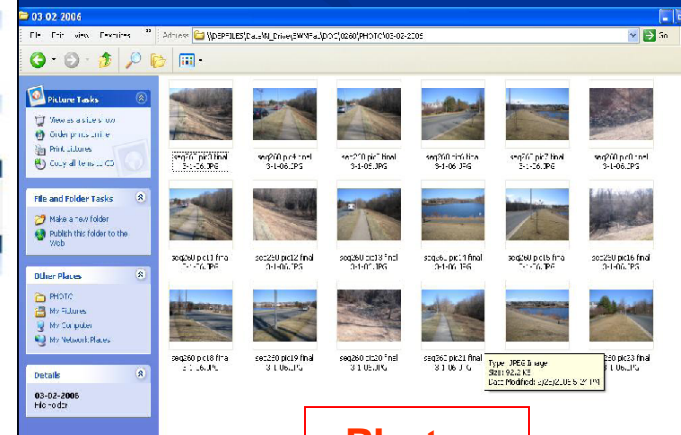
Work Order	84802 (DEP) Non-Structural PDGN Repairs: Manchester Farm Comm Assoc	Scheduled Start Date	03/26/2014
Status	Pre-Released	WO Type	REP
Parent Work Order		Class	AGNS
Department	SWM-RESID-DEP Residential Maintained by DEP	Priority	
WM Code		Warranty	N
Cost Code		Safety	N
Problem Code		Equip Criticality	
Reported By		Assigned To	
Standard WO	REPWOAGPDGN PDGN 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) 12:34: 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		
QA/QC Reviewer	Fleagle, G		
Maintenance Level	ROUTINE		
Activities			
Activity	Trade	Est. Hours	People
5	INSP	0	1
			Task
			F-INSP
			Description
			Final inspection required by DEP once repairs completed
10	CMAINT	0	1
			Task
			N-DP01
			Description
			Remove undesirable vegetative growth in dry pool
INSP01 (11/22/2013) 12:34: - 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 09:35 Montgomery County Government - Maryland Page 1

Work Order



Plans

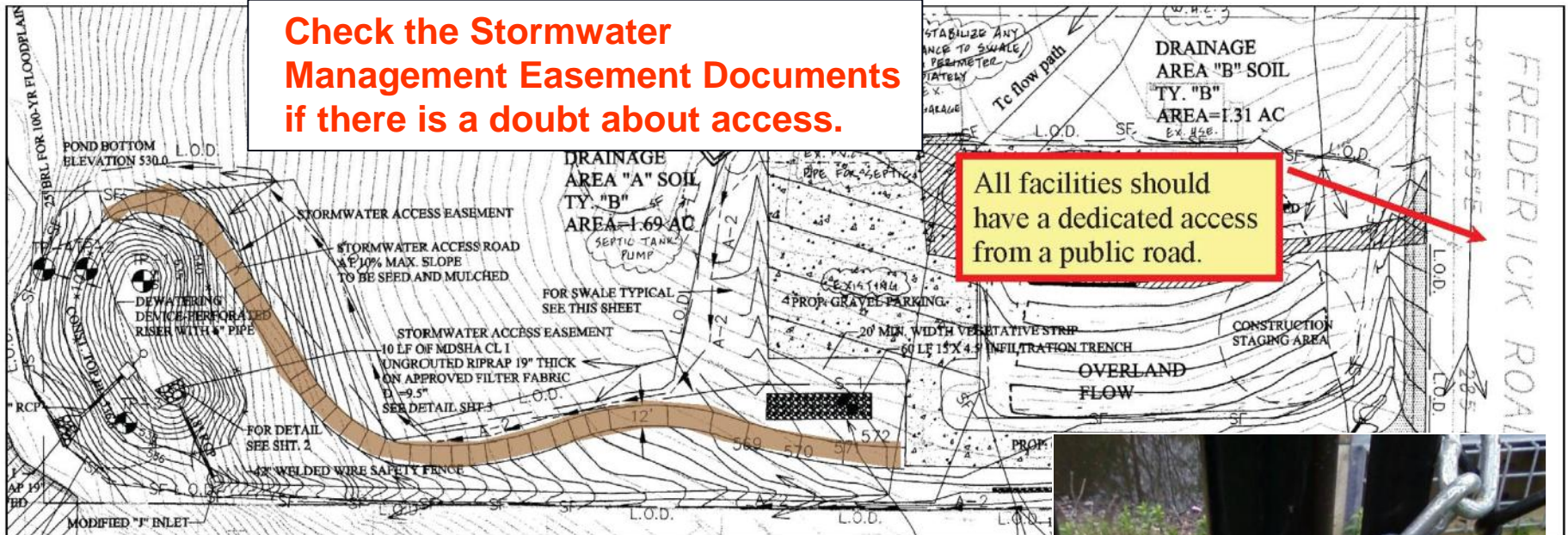


Photos

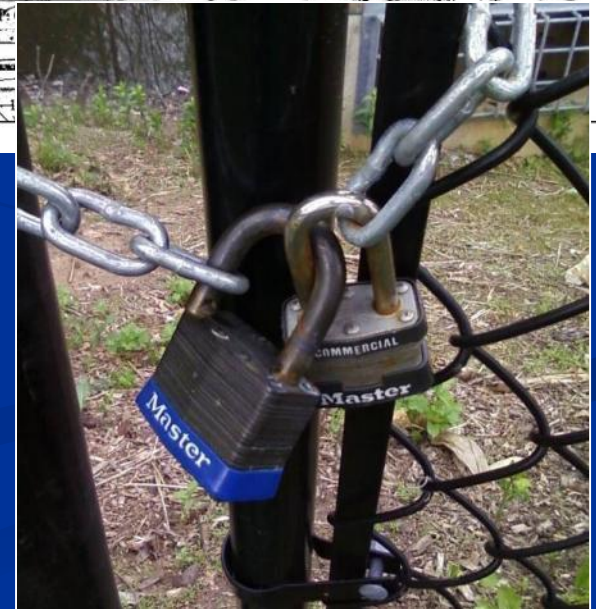
Facility Maintenance Access

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 More 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 Pre-Released	Scheduled Start Date	03/26/2014	WO Type	REP
Status		Class	AGNS	Priority	
Parent Work Order		Warranty	N	Safety	N
Department	SWM-RESID-DEP Residential Maintained by DEP	Equip Criticality		Assigned To	
PM Code		Assigned By			
Cost Code					
Problem Code					
Reported By					
Project					
Standard WO	REPWOAGPDQN PDQN Repairs:				
Equipment	11214 (DEP) Manchester Farm Comm. Assoc Reg	Estimated Hours	0		
Location	INSP-REG03 (DEP) Inspection Region 3	Estimated Cost	0.00		
Equipment Manufacturer		Actual Cost	0.00		
Equipment Model		Date Completed			
Equipment Serial Number					
Date Started					
Equipment Custom Fields					
Sequence Number	3305				
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5	INSP	0	1	F-INSP	Final inspection required by DEP once repairs completed
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Montgomery County Asset 10995



10995 05172012 001



10995 05172012 002



10995 05172012 003



10995 05172012 004

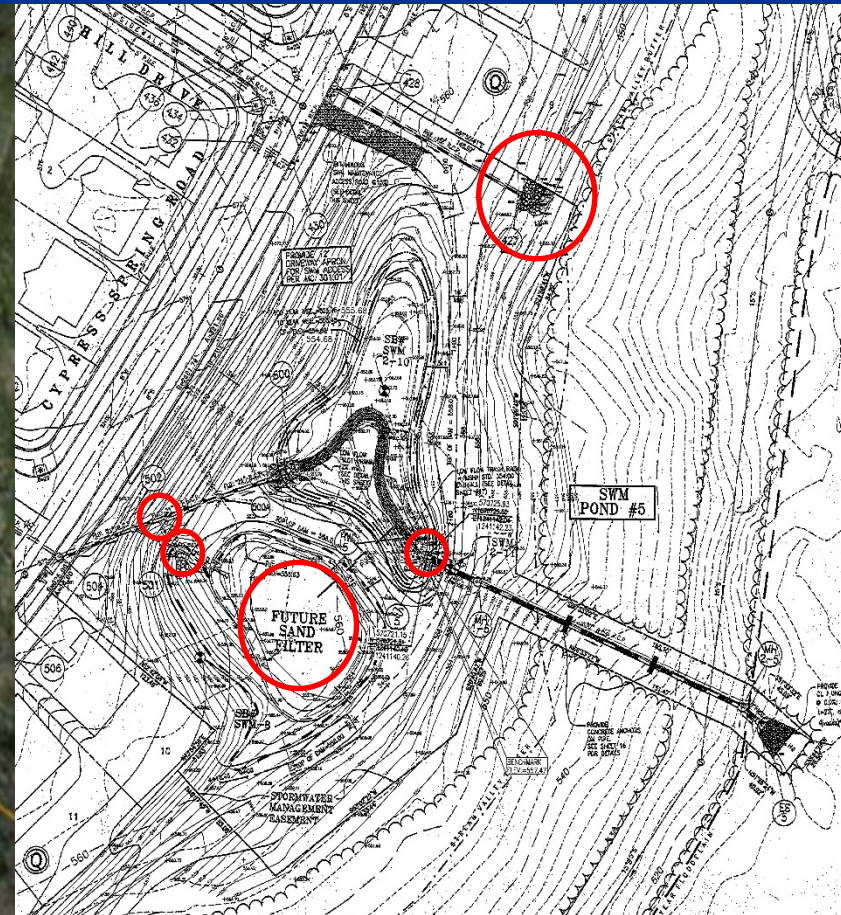
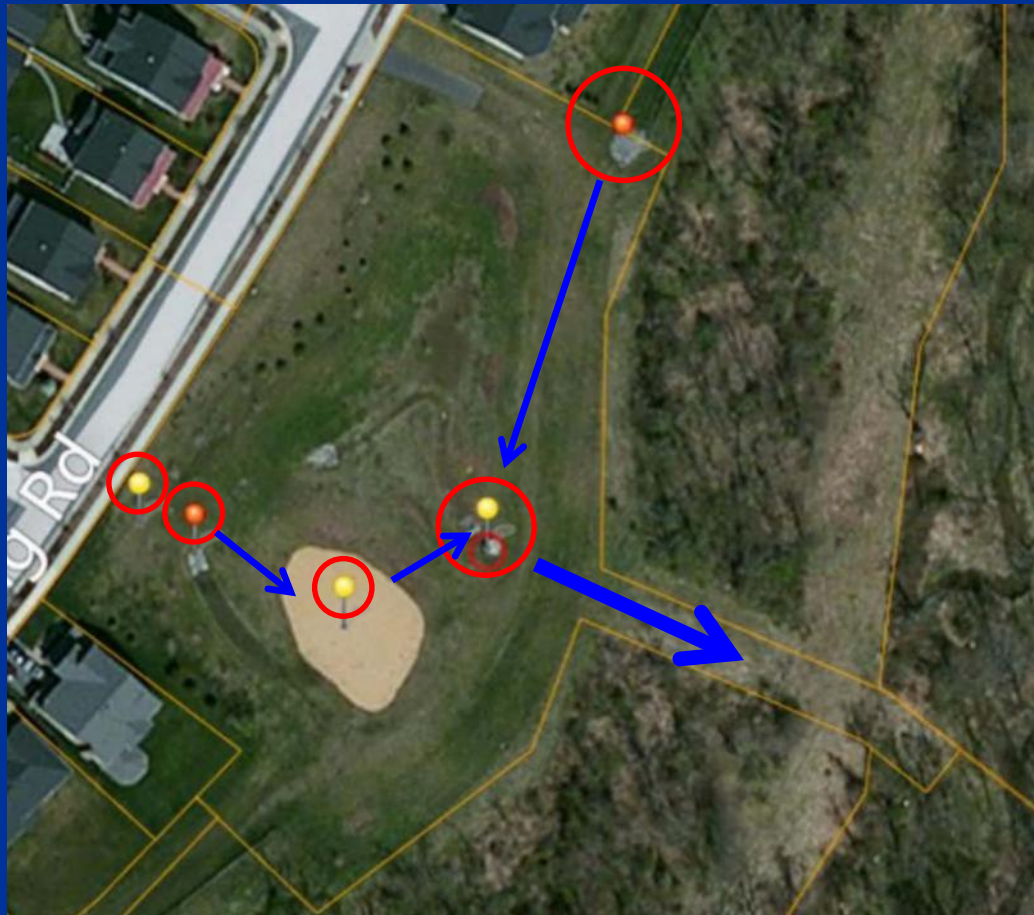


WORK ORDER PHOTOS

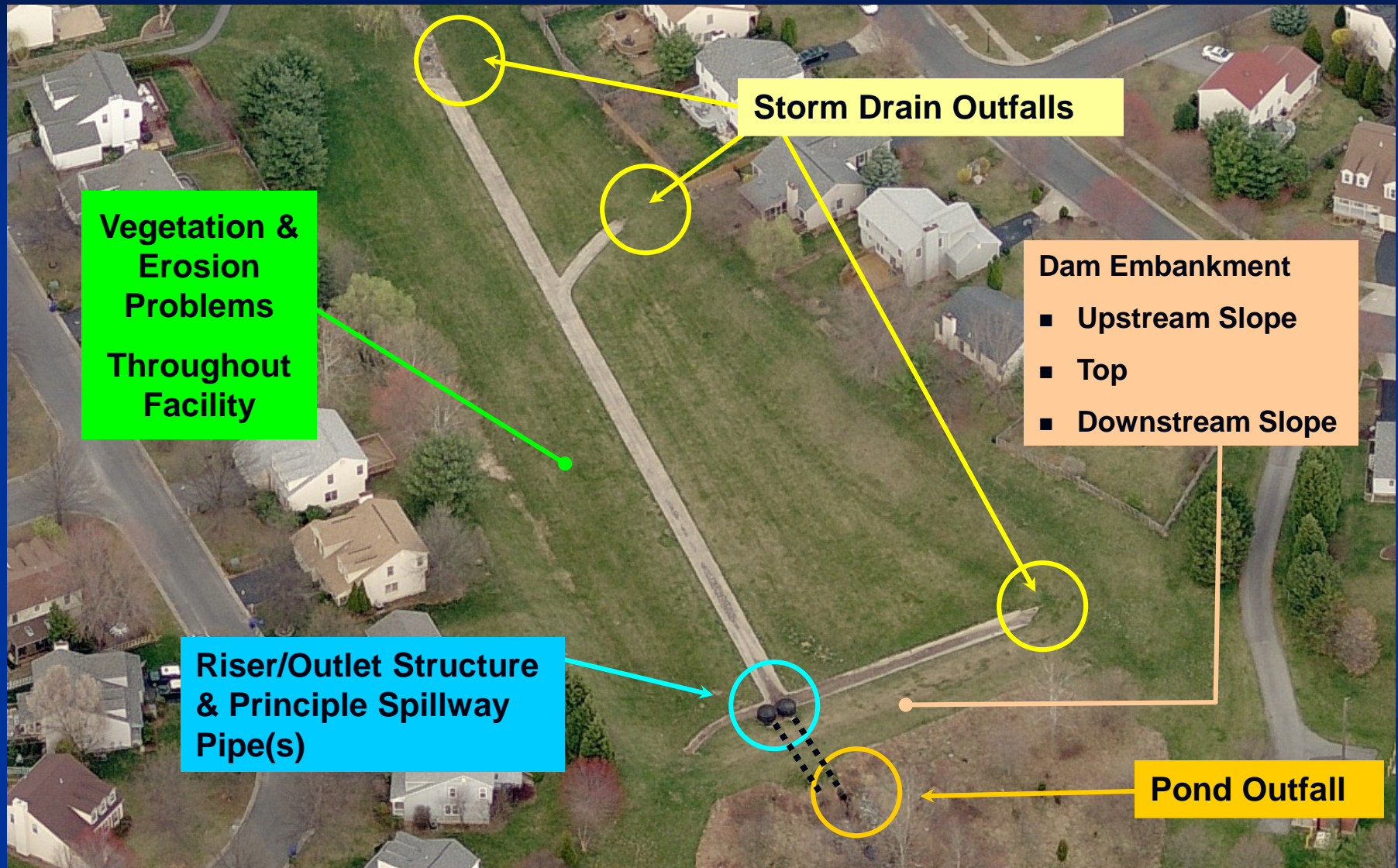
Electronic Repair Report (e-mail attachment)
from MC.Stormwater@montgomerycountymd.gov

“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

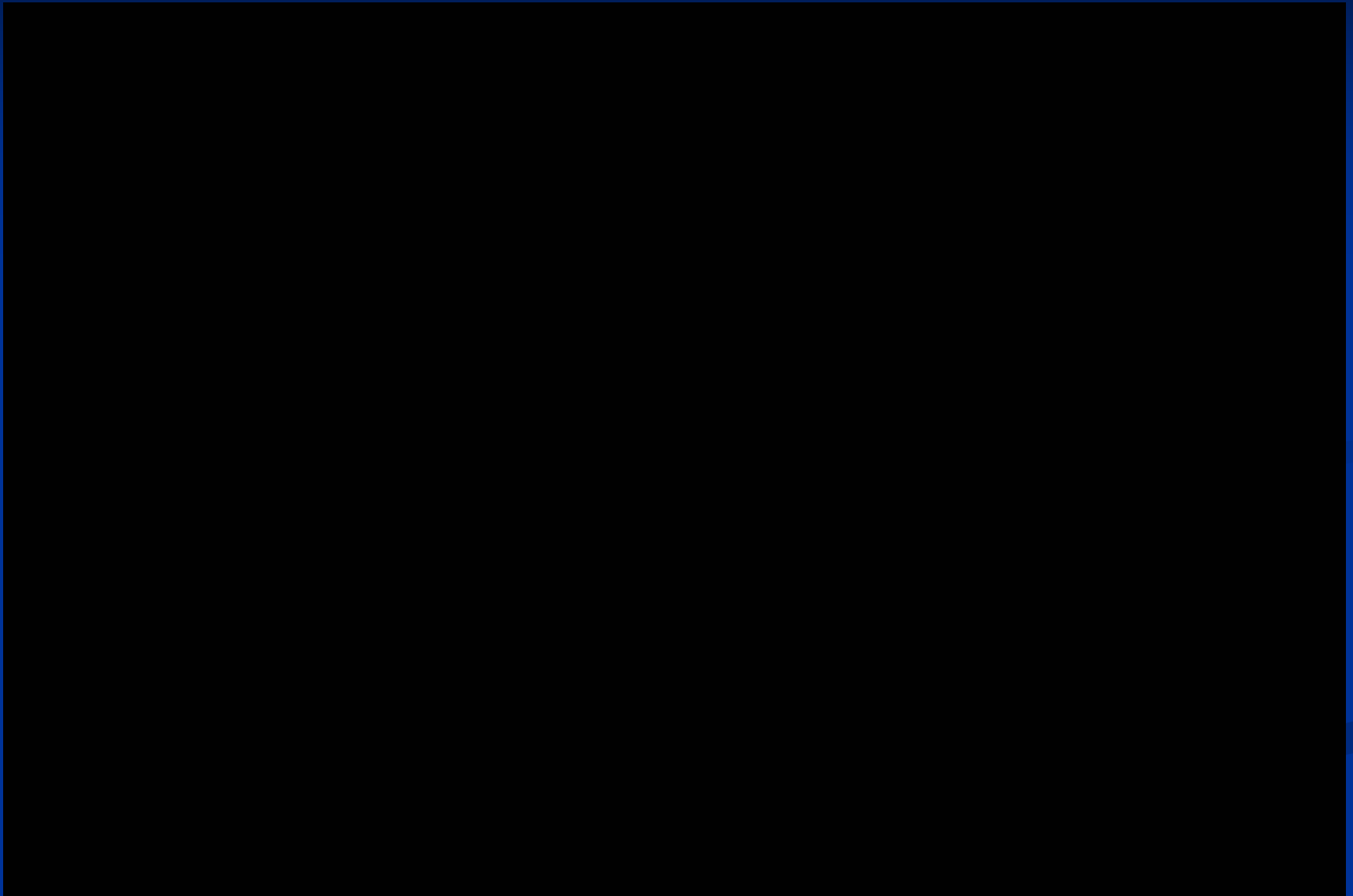
- Woody vegetation
- Trash removal
- Aesthetics

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



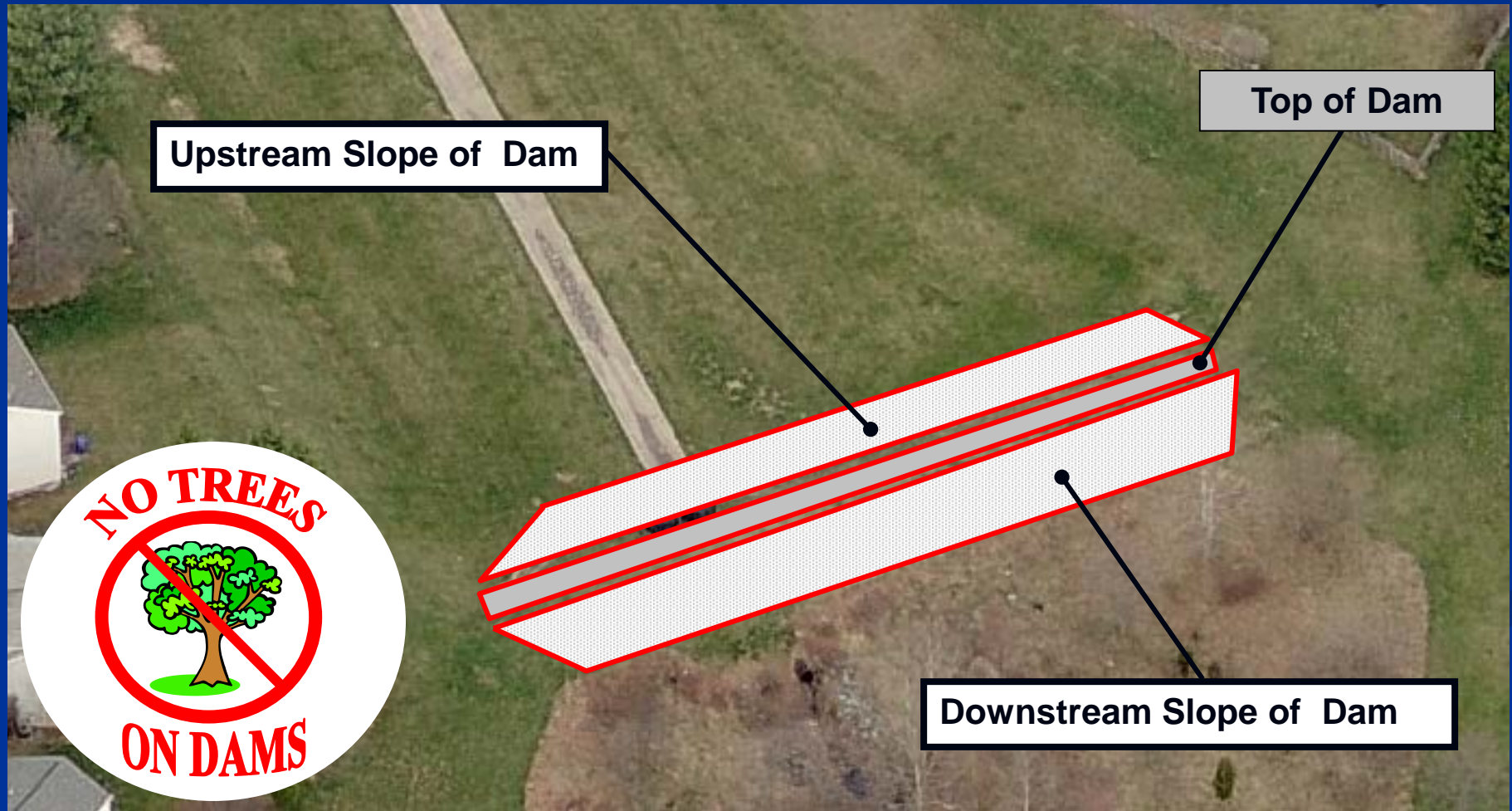
Pond Maintenance



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

**Clear All Vegetation within 25 feet radius of
Riser Structure & Outfall Channel**



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)



Class Participation Time

Typical Problems



What is the problem and what is the structure?

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 with
metal pipes



Typical Problems



Trash rack corrosion

What are the problems?



Concrete spalling

Typical Problems



Outfall channels
What are the
problems?
Clogged pipes



Typical Problems

Outfall Problems



Outfall Erosion



Typical Problems

Animal Burrows



Note:
Punxsutawney
Phil's
Cousins



Don't Be A Victim of Neglect



Warehouse buildings damaged by dam breach as a result of storm

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

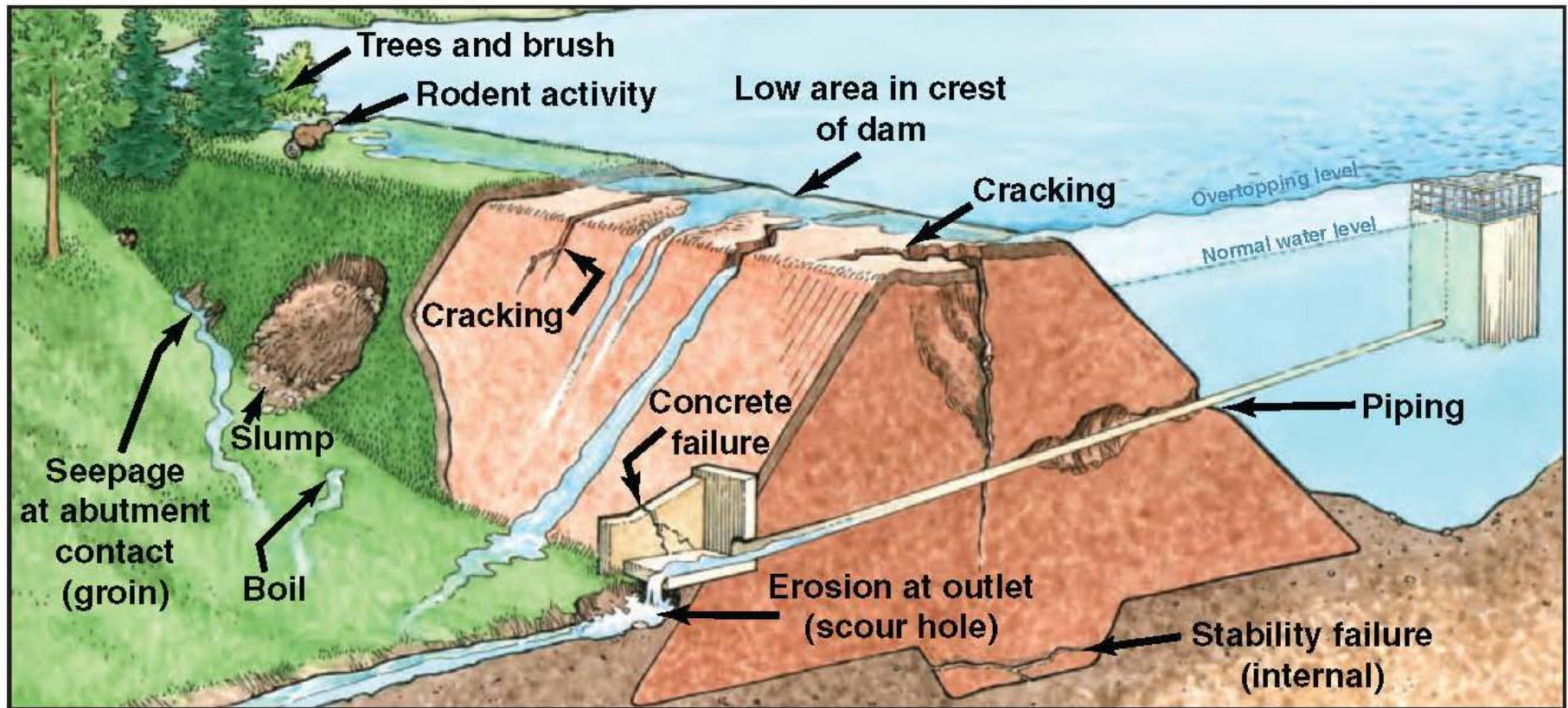


Lawsuit seeks \$844K in damages from 2015 flooding

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

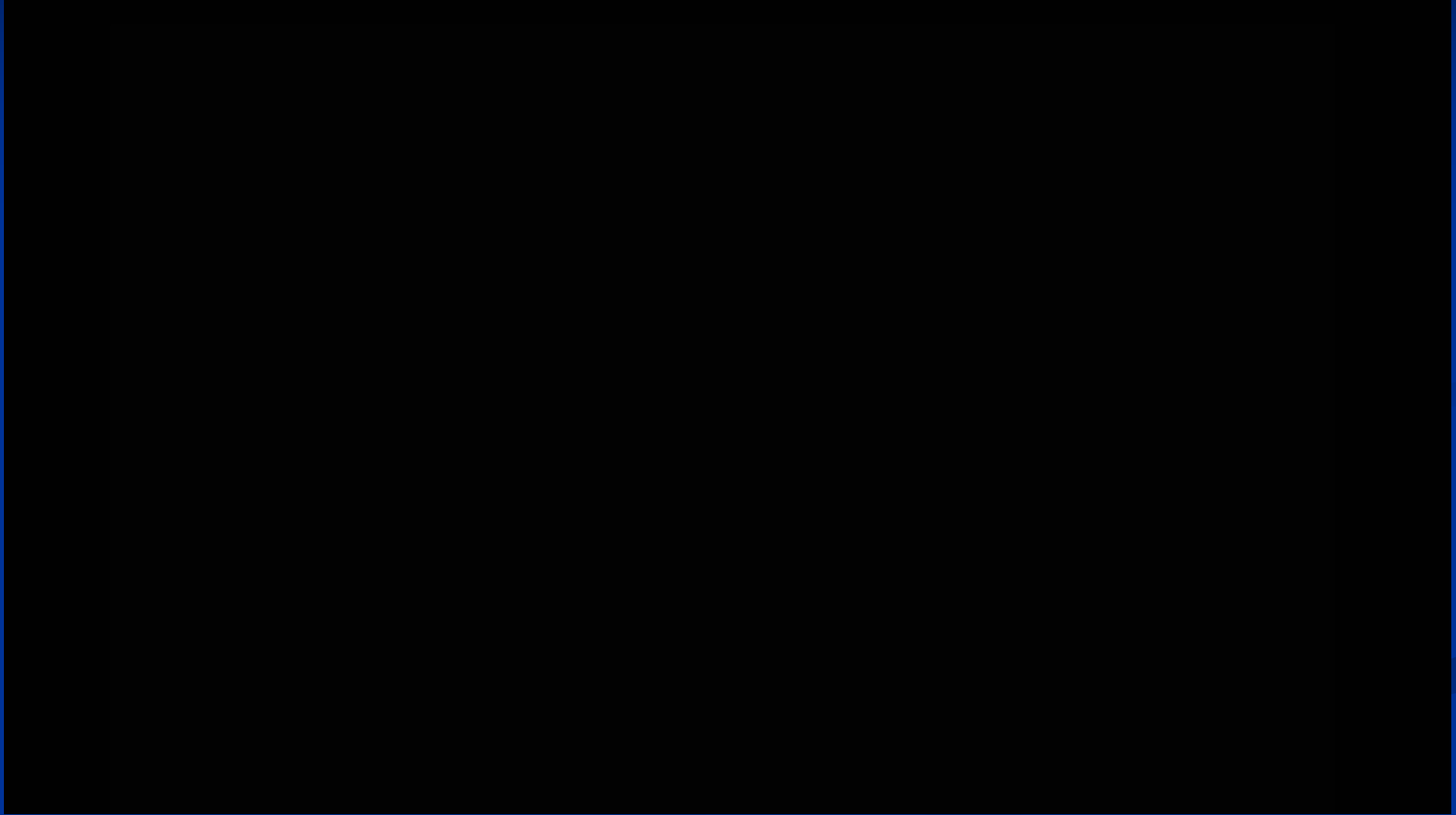


This void
likely
started as
an animal
burrow.

** 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

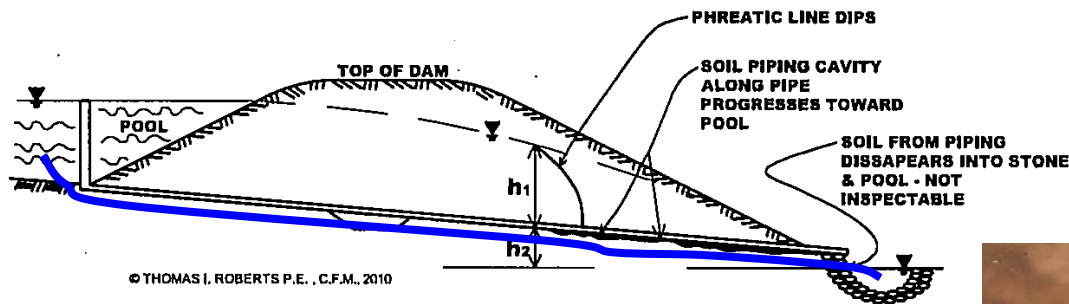


**** Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.***

Serious Problems Requiring Immediate Attention *

“Piping” Through Dam Embankments

SOIL PIPING ALONG CONDUIT



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

Resultant Partial
Dam Collapse



“Before”

Recent Piping Problem

“After”



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



Serious Problems Requiring Immediate Attention *



SINKHOLE

***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 *

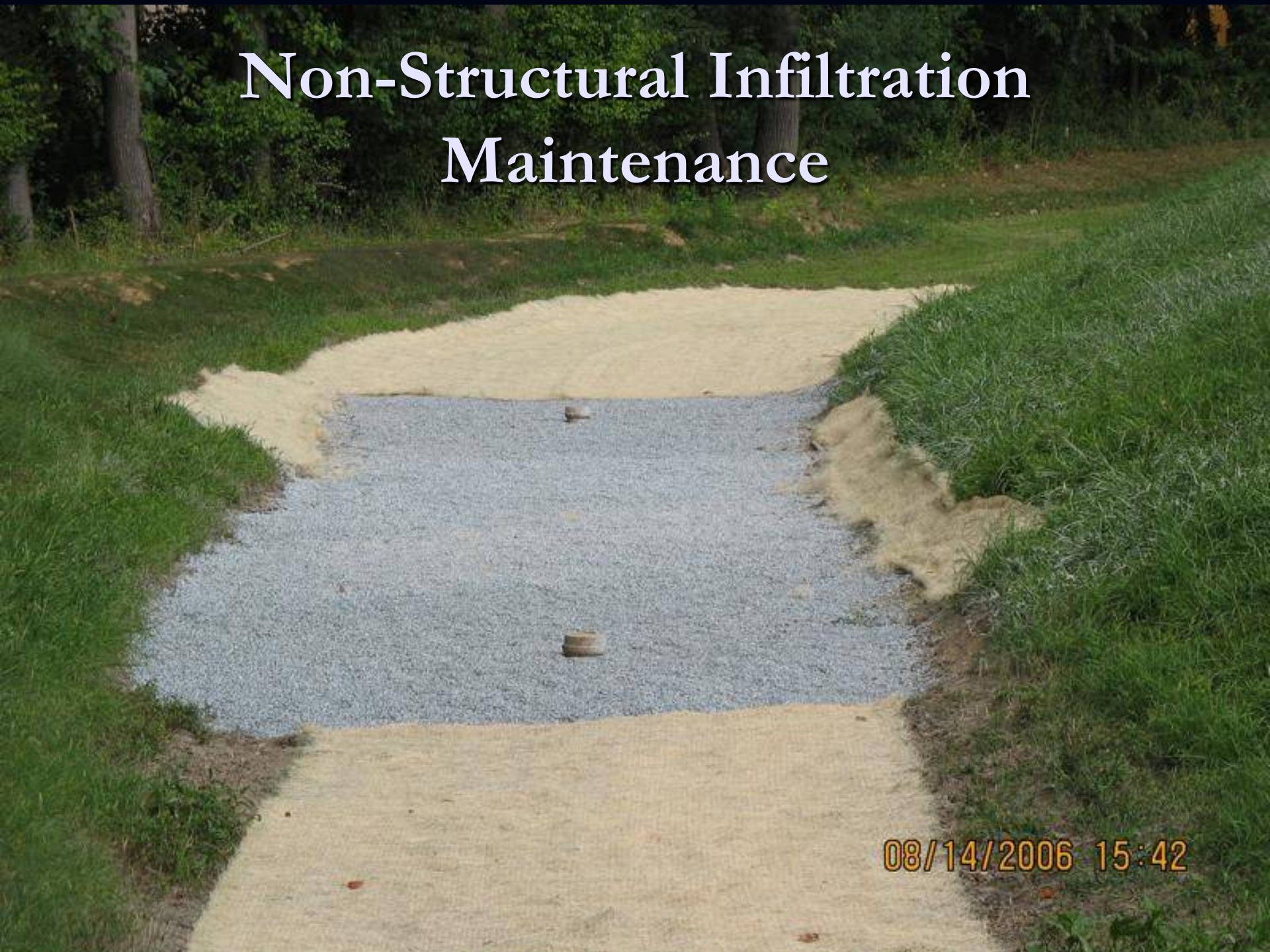


Old
Pipe

New Plastic
/ HDPE
Pipe



Non-Structural Infiltration Maintenance



08/14/2006 15:42

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. Thibley

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 M. Pullum

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?