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.

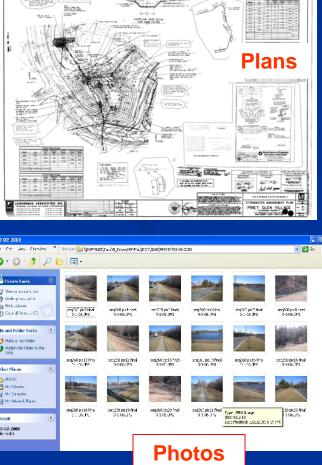
Infor EAM		List of Ec	uipment Details		
Equipment Type Class	11411 [Crabbs Branch Asset	Regional]	Category	In fee EA	M
Department Manufacturer	SWM-DEP [Owned & M		Status	Infor EA	M STORM
Serial Number Location	INSP-REG02 [Inspectio	n Region 2]		Status	Comm. Assoc Pre-Released
Sequence Number Sediment Control Permit #	259 9001180692	Use	r Defined Fields	Parent Work Order Department	SWM-RESID-DEP
Stormwater File Number Access Street ADC Map Book Owner Property Management Co. Property Street Address	Redland Rd 23H06 MCG DEP Redland Rd	Facility		PM Code Cost Code Problem Code Reported By Project	
Property Gty Transfer Date Property Tax ID Property Description Easement Liber/Folio Covenant Liber/Folio Amended Covenant L/F	Rockville 01990426 Regional	Facility Data			REPWOAGPDGN 11214 (DEP) INSP-REG 03 (DEP
GIS Drainage Area (Acres) Run Off Curve Number Permit Approval Date Total Site Drainage Area MD North (MD N)	95 07/01/1980 590 475			Equipment Serial Number Date Started	
MD East (MD_E) State Watershed Number MOP Land Use/Cover Code MDE Structure Type Property Zipcode	475 750 02140206 50 WP 20855			Sequence Number Sediment Control Pr Owner Property Manageme Access Street ADC Map Book	
Remarks Add GIS DA. AMB [Origina	lly Maintained by WMD}	Structure_Details: High Hazard Da	m	WSP01 [11/22/201	
03/30/2009 09:17		Montgomery Co	ounty Government - N		inspection due to ext r, etc.). Remore veg ne Fleagle

03/19/2014 09:38

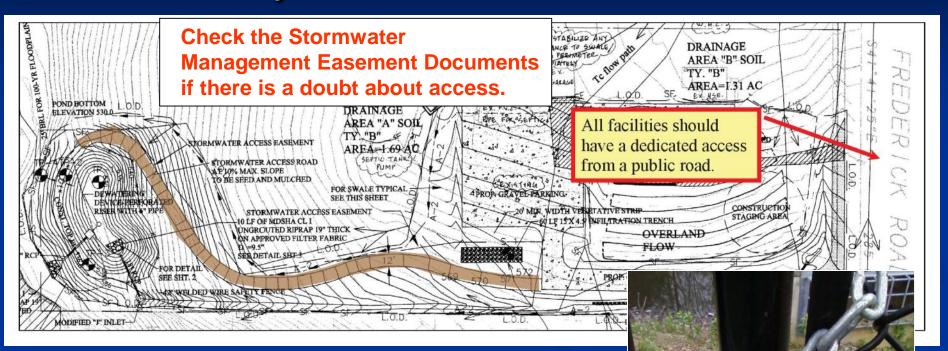
Corrent Assoc Date Insise PPE Relations WD Type REP rent Work Class AON3 def Class AON3 gratment SWM-RESID-DEP Residential Maintained by DEP Priority gratment SWM-RESID-DEP Residential Maintained by DEP Priority st Code Warranty N Safety N st Code Warranty N Safety N ported IDP RESP/CRICeINP Assigned To Assigned To Safety N ported IDP RESP/CRICEINP Marchedor Farm Corm. Assoc Regrated Names 0 0 0 0 0 0 0 0 0 0 0 0	and the second second	-11-1			ION AND MAINTENANCE		INTOP	₹.
ener Mork der Class AONS Class AONS Class AONS Class AONS Class AONS Class AONS Ploating Class AONS Ploating Class AONS Ploating Class AONS Warched ESC AONS Warched Farm Corren Assoc Reg Insoction Region 3 Estimated Hours 0 RepVolation Corrent Assoc Reg Insoction Region 3 Estimated Cost 0 0 RepVolation Cost 0 RepVolation Cost 0	Work Order			ictural: PDO	N Repairs: Manchester Far		03/26/2014	
ter stream i SVM-REBID-DEP Residential Maintained by DEP Priority Warrandy N S State Code Survey Reg International Person I State Code State C	tatus	Pre-Released	1			WO Type	REP	
i code softed By softed By so	arent Work rder					Class	AGNS	
int Code bolem Code ported By - Ansigned To ported By - Ansigned To ported By - Ansigned To andraf WO proted By - Ansigned To andraf WO protect By - Ansigned To ansigned To NISP-RE003 (OEP) PDON Repairs Marcheoter Farm Corrm. Assoc Reg Insoection Repairs Insoection Repairs Insoection Repairs Insoection Repairs Marcheoter Farm Corrm. Assoc Reg Insoection Repairs Marcheoter Repa	epartment	SWM-RESID	-DEP Re	sidential Mai	ntained by DEP			
sharen Code gentar VYO gentar VY	M Code							
parted By i Assigned Ta Assig							N	
janet Mangened Region State PEPWOAGPDON PDON Repairs Manchaster Farm Corrm. Assigned By PEPWOAGPDON PDON Repairs Manchaster Farm Corrm. Assist Reg Industry Manchaster Farm Correct Manchaster Farm								
markar OWD PEPVOLAPOPIDAL PODN Repairs: winnenet NISP-RE003 (OEP) Mancheder Farm Comm. Assoc Reg Inspection Region 3 Inspection Region 8 Inspection Region Region 8 Inspection Region Re								
upunced coltanian upunced upunced scaltanian upunced scaltanian upunced scaltanian upunced scaltanian upunced scaltanian upunced scaltanian scaltanian upunced scaltanian scaltani scaltani scaltanian scaltanian scaltanian scaltanian scaltania		DEDMOROD	DON PD	ON Depairer		Assigned By		
pigment midfacture mindfacture mindfacture mindfacture midfacture	quipment	11214 (DEP)		wini repairs.		n. Assoc Reg		
vide vignend Serial vignend Vignend vignend Vignend vi	quipment lanufacturer					Estimated Hours	0	
minime i Batrian	quipment lodel							0.00
Equipment Custom Fields Equipment Custom Fields Superior Number Super	quipment Serial lumber							0.00
samore Number 3006 mer Control Person Person State S	ate Started					Date Completed		
simeri Control Ferm I ≠ 9503150001 meri Ganzal Manchester Farm CA spenty Management Group Associates see Steele Found and Futuring VPA Sheque Road VPA Sheque Ro					ipment Custom Fields			
SPOT [F1222017 12:24]: SPOT [F1222017 12:24]: Salto partimining and the bio-enformer vegetation and wondy growth through out enfore facility (dam embankments, basin, argrency gathwar, etc.). Remove vegetation and re-inspect. Photos 5-8 Store Huff. S. Grein Preagle Photos - Huff. S. Grein Preagle Photos - Huff. S. Grein Preagle Photos - Huff. S. Grein Preagle Trade Facility (dam embankments, basin, ROUTINE	wher roperty Managerr ccess Street DC Map Book	nent Co.		The Mana Steeple Ro	gement Group Associates			
abb to perform inspection. Inde to extreme vegetation and woody growth through out entire facility (dam embankments, basin, streers, sallway, etc.), Remore vegetation and re-inspect. Photo 5-9 Stree Huff, S. Gwei Flaggie EP Engineer WHELXN01 outracted Inspector Flaggie alitenance Level ROUTINE ACTIVITIES Tativity Trade Est. Hours Req. Task Description Trade Est. Hours Req. Task Description Final Inspection required by DEP once repart compiled CMAINT 0 1 N-DP01 Remove uncestrate growth in dr pool Street June 1 - N-DP01 Remove uncestrate growth in dr pool Street June 2 - Note Street Stre				We	rk Order Comments			
EP Engineer VHELAW01 ontracted inspector Huit S ACC Reviewer Fleagle_G aintenance Level ROUTINE TMMY Trade Est. Hours Req. Task Description INSP 0 1 F-INSP Final Inspection required by DEP once repair concroled of Reviewer and the second s	inable to perform mergency spillwa	inspection due w, etc.). Remo		on and re-ins	pect. Photos 5-8	out entire facility (dam emba	nkments, basin,	
ontracted inspector Huff_S ADC Reviewer Fleight_G aintenance Level ROUTINE Activities SitMty Trade Est. Hours Roet Feld NSP 0 1 F-INSP Final Impection required by DEP once repart completed CMAINT 0 1 N-DPD1 Remove undestrative vegetative growth in dr pool SP07 [ff1222013 12:34]:					fuci Gater Deninter Fronda			
ADC Reviewer Fleagle_G aintenance Level ROUTINE Tivity Trade Est. Hours Res, Task Description INSP 0 1 F-INSP Final Inspection required by DEP once repairs compiled CMAINT 0 1 NDP01 Remove undestrable vegetable growth in dr pool SP07 [ff/222073 73:34]:								
alintenance Level ROUTINE Activities Activit								
Activities Tixity Trade Est. Hours: Req. Task Description INSP 0 1 F-INSP Final Inspection required by DEP once repars: comprised CMAINT 0 1 NDPD1 Remove undestrable vegatable growth in dr pool SP07 [ff:22:0273 73:34]: 1 NDPD1 Remove undestrable vegatable growth in dr pool								
People Description INSP 0 1 F-INSP Final Inspection required by DEP once repara completed CMAINT 0 1 N-DPD1 Remove undestrable vegatative growth in dr pool SP01 [f1222013 12:34] Homose undestrable vegatative growth in dr pool Not interpretention and woody growth through out entire facility (dum embanisments, basin,					AND THE REAL PROPERTY OF			_
Trade Est. Hours Reg. Task Description INSP 0 F-INSP Final Inspection required by DEP once repars completed CMINT 0 NDP01 Remove undestrable vegetable growth in dr pool SP01 [f12:22073 12:34]: Inable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin, not inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin,				Deeple	Activities			
INSP 0 1 F-INSP Final inspection required by DEP once CMAINT 0 1 N-DP01 Remove undestrable vegatative growth in dr pool SP07 [17:22:2073 12:30]	clivity Trad	ie .	Est. Hour		Task	Description		
repars completed CMAINT 0 1 N4DP01 Remove undestrable vegetative growth in dr pool spool ff/22/2013 13:342: Inable to perform inspection due to extreme vegetation and woody growth through out entite facility (dam embankments, basin,				1			by DEP once	
pool SP01 [11/22/2013 13:34]: Inable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin,	INSE						-	
Inable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin,	INSF	UNT	0	1	N-DP01		etative growth in	i dry
ergency spilway, etc.). Remove vegetation and re-inspect. Photo's 5-8	0 CMA					out online facility (done and	animante hagis	10
	CMA SP01 [11/22/20 Inable to perform	m inspection du				i our errire racinity (dannen in	animitatino, walon	
	CMA SP01 [11/22/20 Inable to perform	m inspection du				roa ensie raulay (dan ensi	animi normo, wabii	

Montoomery County Government - Marvland

Page



Facility Maintenance Access



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

Work Order	84802 (DEP) Non- Comm. Assoc	Structural: PDQN	Repairs: Manchester Farm	Scheduled Start Date	03/26/2014	
Status	Pre-Released			WO Type	REP	
Parent Work Order				Class	AGNS	
Department	SWM-RESID-DEP	Residential Maint	ained by DEP	Priority		
PM Code Cost Code				Warranty Safety	N N	
Problem Code				Equip Criticality	19	
Reported By				Assigned To		
Project				Assigned By		
Standard WO	REPWOAGPDQN	PDQN Repairs:				
Equipment	11214 (DEP)		Manchester Farm Comm. As	soc Reg		
Location	INSP-REG 03 (DEP)		Inspection Region 3		121	
Equipment Manufacturer				Estimated Hours	U	
Equipment Model				Estimated Cost		0.00
Equipment Serial Number				Actual Cost		0.00
Date Started				Date Completed		
			ment Custom Fields			
Sequence Number Sediment Control Permit # Owner		3305 9503150001 Manchester Farm CA				
Property Managem Access Street	ent Co.	The Manage	ment Group Associates d and Furlong Way			
ADC Map Book		18A03				
		Worl	k Order Comments			

Work Order User Defined Fields

Activities

Description

nnol

repairs completed

Final Inspection required by DEP once

Remove undesirable vegetative growth in dry

Task

F-INSP

N-DP01

Unable to perform inspection due to extreme vegetation and woody growth through out entire facility (dam embankments, basin,

WHELAW01

Fleagle_G

ROUTINE

People

Huff S

Est. Hours Req.

emergency spillway, etc.). Remove vegetation and re-inspect. Photos 5-8

Montgomery County Asset 10995





10995 05172012 001

10995 05172012 002





10995 05172012 003

10995 05172012 004



10995/11 SINIA FALLSENDY (HON) LOUIR DUTFALL FROM POND

03/19/2014 09:38

DEP Engineer

Activity

10

QAQC Reviewer Maintenance Level

Contracted Inspector

Trade

INSP

INSP01 (11/22/2013 13:34):

CMAINT

Montgomery County Government - Maryland

Page 1

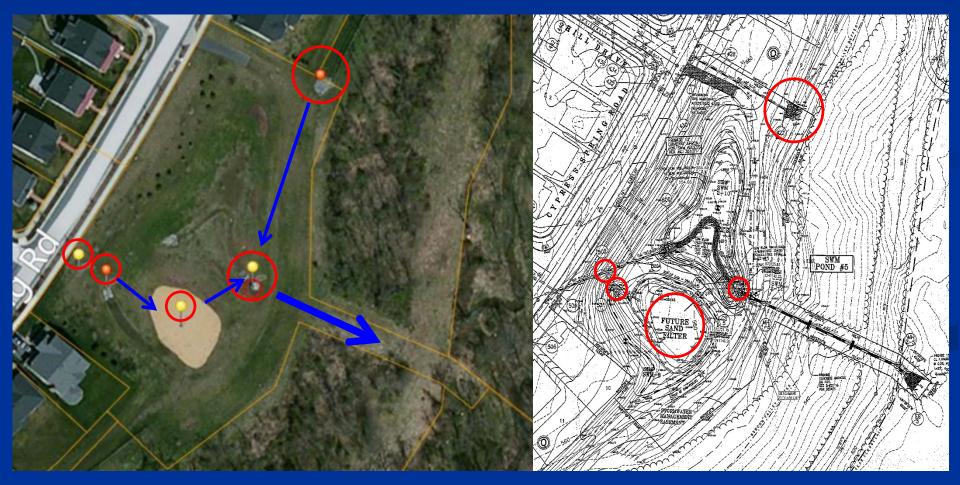
WORK ORDER PHOTOS

Electronic Repair Report (e-mail attachment)

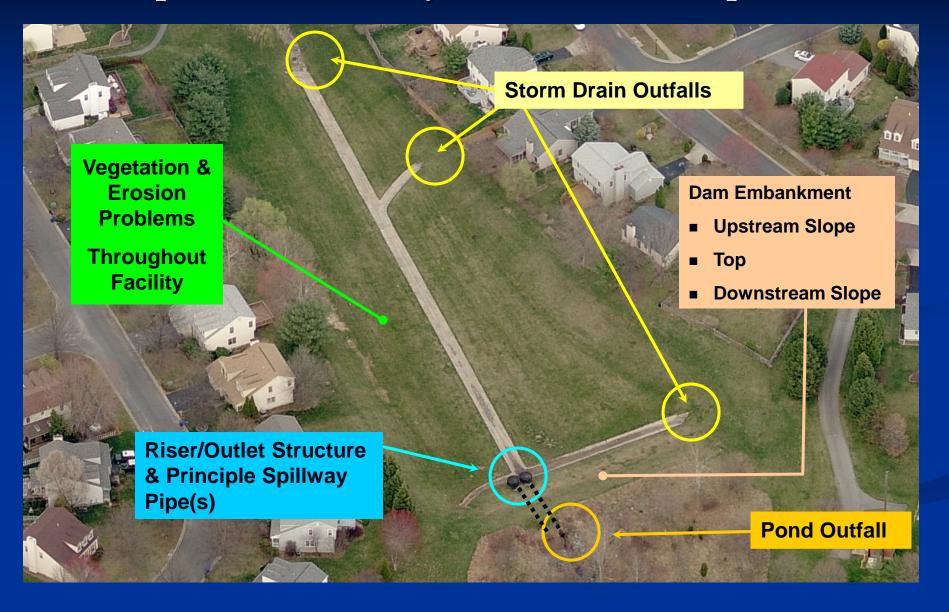
from MC.Stormwater@montgomerycountymd.gov

"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 vegetationTrash removalAesthetics

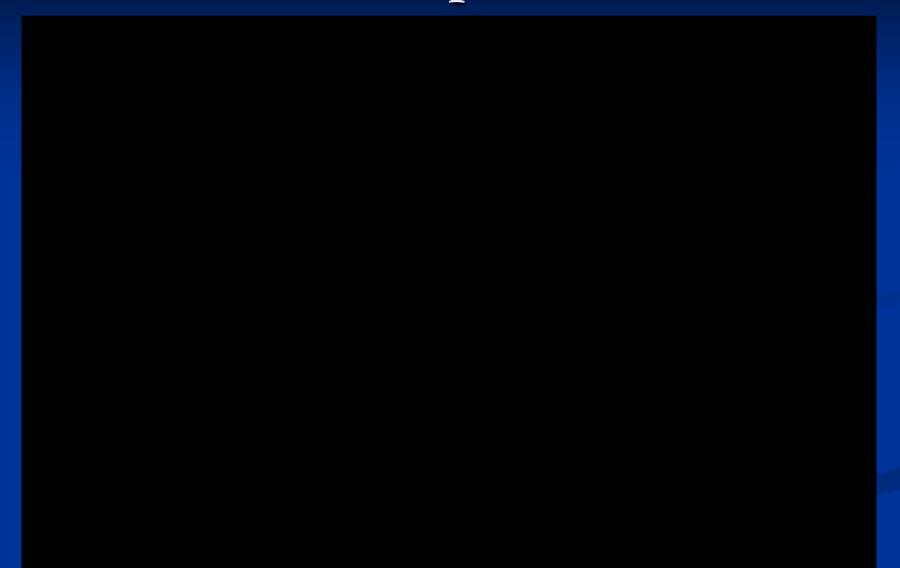
Structural Maintenance

- Concrete repairs
- Riser/Control Structure and Barrel (pipe) repairs
- Blocked low flow

- Animal burrows
- Minor sediment removal
- Sand filter tilling



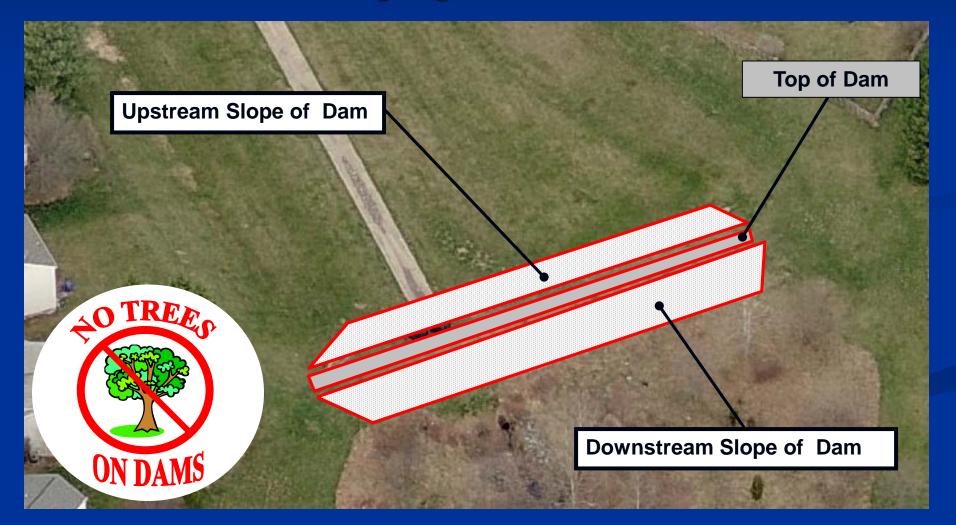
Perfect to Imperfect Dam



Pond Maintenance

Mowing: Twice A Year (Minimum)

 \star Once in the Spring \star Once in the Fall

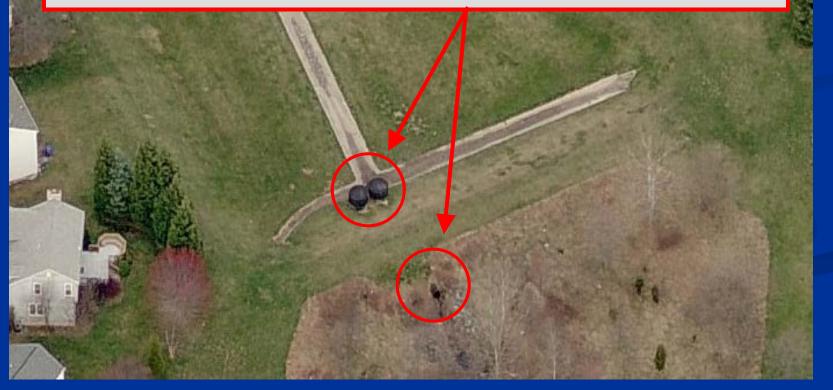


Mowing: Twice A Year (Minimum)

★ 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 <u>less than eight inches</u> (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







Dry Pond (Trees Removed from Dam)



Class Participation Time





What is the structure?





What are the problems? and beaver activity





What is the problem? Overgrown vegetation









Rühate is Scholerted metal pipes





Trash rack corrosion

What are the problems?







Outfall channels Whal afesilte problems? Clogged pipes



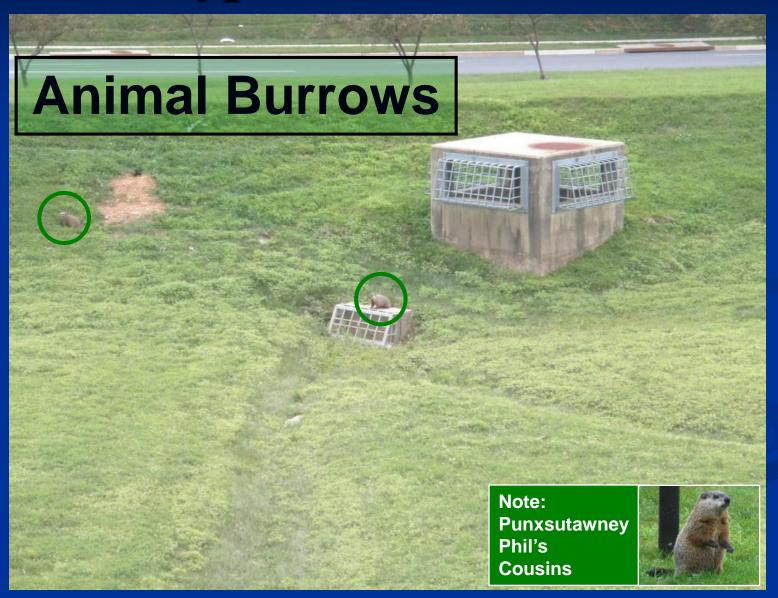




Outfall Problems



Outfall Erosion



Don't Be A Victim of Neglect



Lawsuit seeks \$844K in damages from 2015 flooding

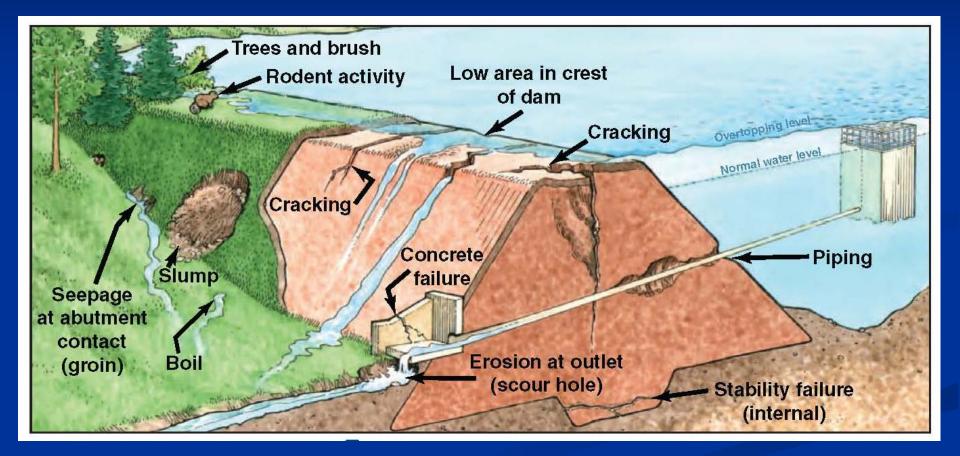


Warehouse buildings damaged by dam breach as a result of storm

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



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





Deteriorated/Rusted Risers

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



Failed & Leaking Joints in Pond Outfall Pipes & Barrels

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

Obvious Pollution

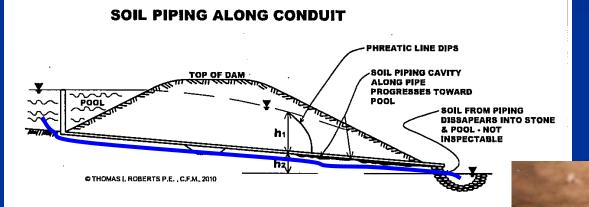




* Contact Us, MC.DEP, As Soon As Possible if any these conditions are discovered.

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

Resultant Partial Dam Collapse



Recent Piping Problem



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

"After"





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



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 *





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



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



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





Infiltration

Trench









Sand Filter Basin







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

laiah Loggott County Executive Robert Hayt Director

March 20, 2009

First Aquarios 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,

Stophum m. Rellum

Stephen Pullum, Stormwater Facility Inspector Surrowater Facility Maintenance Program Notification of satisfactory maintenance and repair is generated and e-mailed to the property owner.

 Wintershed Managemeint Division

 255 Rockville Fike, Snite 120 • Rockville, Maryland 20850 • 240-777-7700 • 240-777-7715 FAX

 www.menrgomerycountymd.gov

LET'S WORK TOGETHER AS A TEAM!



Questions?