

Commercial Ponds: Maintenance & Issues

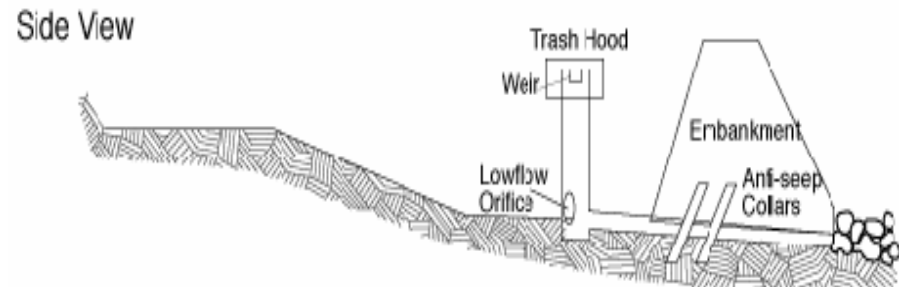
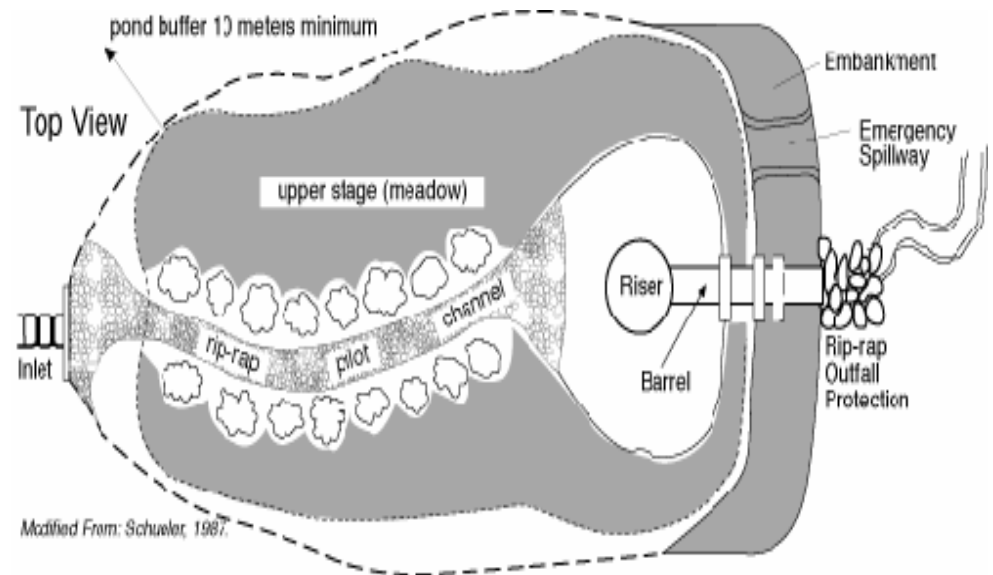


Presented by:
Prince William County Public Works

Storm water Facilities

Prince William County has record of:

- 450 Commercial SWM/BMP facilities
- Wet ponds
- Dry ponds
- Sand filters
- Underground filters (Stormceptor, etc.)
- Other



Dry Pond/ Wet Ponds

Dry Pond Facilities

- Used in smaller drainage areas
- Smaller land area
- Less effective pollutant removal
- Extended Detention (BMP)
48 – 72 hrs Detention
- Fencing/signage required
- Easier maintenance



Dry Pond/ Wet Ponds

Wet Pond Facility

- Larger drainage area
- Permanent pool of water
- Aesthetically pleasing
- Water level rises with storm
- Better sediment/ pollutant removal
- Signage required
- No fencing required

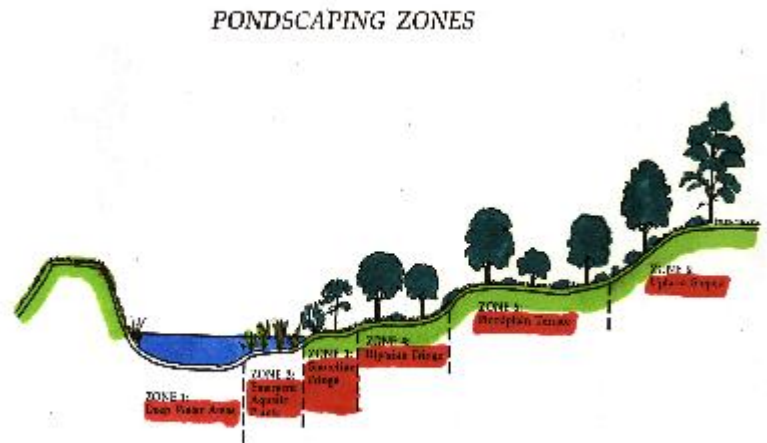


Prince William County Commercial Ponds

- **Maintenance Issues**
 - Annual Inspection
 - Mowing/Trash removal/Algae
 - Sedimentation
 - Woody overgrowth
 - Trees in Pond
 - Embankment
 - Erosion-Groundcover-Rodent Holes
 - Fence/ Safety/Signage

Prince William County Commercial Ponds

- Other Concerns/
Issues
 - Trash & Debris
 - Algae
 - Safety concerns
 - Easements*
 - Around SWM facility
 - Access to facility
- *(Alterations require
Public Works
approval)**



Maintenance Agreements

EXHIBIT 2

STORMWATER MANAGEMENT/BMP FACILITIES MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this ____ day of _____, 19__ by and between _____, hereinafter called the "Landowner(s)", and the Prince William Board of County Supervisors, hereinafter called the "County". "Landowner(s)" also includes its (their) successors and assigns.

WITNESSETH, that

WHEREAS, the Landowner owns certain real property described (Insert Parcel Identification Number) as recorded by deed in the land records of Prince William County, Virginia, Deed Book ____ at Page ____ , hereinafter called the "Property"; and

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, Site/Subdivision Plan (PWC File Number) hereinafter called the "Plan", which is expressly made a part hereof, as approved or to be approved by the County, provides for detention of stormwater within the confines of the property; and

WHEREAS, the County and the Landowner, agree that the health, safety, and welfare of the residents of Prince William County, Virginia, require that on-site stormwater management/BMP facilities be constructed and maintained on the property; and

WHEREAS, the County requires that on-site stormwater management/BMP facilities as shown on the Plan be constructed and adequately maintained by the Landowner;

- Agreement between PWC & Property Owner
- Recorded Document
- SWM/BMP facility constructed & maintained per plan
- As-Built Plan needed
- Annual inspection by Professional Engr (PE)
- Inspection/Maintenance schedule submitted to PWC

Maintenance Inspection Form (County Inspection)

County: Stafford
 Pric: William County Environmental Services Phone - (703) 792-5764
 Storm Drainage Inspection Group Fax - (703) 792-5763
 14877 Dumfries Road, Manassas, VA 20112

POND MAINTENANCE INSPECTION FORM

COUNTY POND # _____ Inspection Date: _____
 Subdivision Name: _____ Weather: _____
 ADC Map #: _____ Inspector: _____

Street Access: _____ Is access good? YES If not, why? _____

Is facility inspectable? YES If not, why? _____
 Property Classification: Residential Commercial Government: (County) _____
 Type of Pond: Wet Pond Dry Pond Wetland Marsh Infiltration Basin Special Structures

1. General Inspection Items Comments / Specific Locations

Safety / Warning signs posted?	Na	No	Yes	Minor Rep	Major Rep	(if not, how many signs need to be posted?)
If fence installed, is it in good condition?	Na	No	Yes	Minor Rep	Major Rep	(if pad lock replaced, give key to owner.)
Any encroachments in easement area?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Public hazards? Litter? Resident complaints?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Are all structures shown in County GIS?	NO	YES	if NO, list and report all missing structures to GIS			

2. Principal Spillway Pipe(s) / Outfall Channel Comments / Specific Locations

Spillway pipe built according to plans?	Yes	No	Pipe Diameter?	Confined space?		
Woody growth within 5' of outfall pipe or endwall?	Na	No	Yes	Minor Rep	Major Rep	(if Major Rep, did you paint mark area?)
Is outfall channel functioning?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Erosion problems? Any undercutting?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Excessive sediment deposits and litter?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv

3. Upstream and Downstream Dam, and Basin Embankment Comments / Specific Locations

Woody growth or unauthorized plantings on dam?	Na	No	Yes	Minor Rep	Major Rep	(if Major Rep, did you paint mark area?)
Grass vegetation adequate on dam?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Cracking, bulging, sloughing or animal burrows?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Erosion and/or loss of dam material?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Seeps, leaks, and soft, boggy areas?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Emergency spillway clear of obstruction or trees?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv

4. Toe and Chimney Drains Functioning? Comments / Specific Locations

Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
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5. Pond Basins - Wet and Dry Ponds Comments / Specific Locations

Woody growth or undesirable vegetation in basin?	Na	No	Yes	Minor Rep	Major Rep	(if Major Rep, did you paint mark area?)
Visible pollution and/or litter problem in pond basin?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Sediment / debris accumulation in pond basin?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Shoreline erosion or embankment erosion?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
High or low water pool levels (wet ponds only)?	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Vegetation not adequate in basin? (dry ponds)	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv
Pilot channels silted or standing water? (dry ponds)	Na	No	Yes	Minor Rep	Major Rep	Mon/Inv

Covers Inspection of SWM features:

- Riser/Control Structure
- Pipes
- Embankment
- Erosion
- Sedimentation
- Fences
- Emergency Spillway
- Etc.

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Not Applicable (Na) - Inspection item does not apply. Monitor/Investigate (Mon / Inv) - If potential problem exists, needs further study
 Minor Repair (Minor Rep) - Repairs to be completed by Drainage Inspection Crew.
 Major Repair (Major Rep) - Repairs referred to ES Operations or approved contractor.
 NOTE: Major Repair for tree removal - If trees > 12" diameter or hanging over residences or electrical lines.

Inspection Report

Inspection report details:

- Cleaning, reconstruction, maintenance & repairs needed
- Submitted by specified date (such as 6/30/05) each year
- If landowner fails to inspect/ maintain facility—County may enter property, perform work and charge landowner

Property Owners Maintenance Responsibilities



Short Term:

Annual inspection
(each year)

- Follow up report submitted to DPW each year
- Debris removal
- Mowing
- Safety concerns
- Embankment/Dam

Property Owners Maintenance Responsibilities



Long Term:

- Dredging
- Structure repairs
- Embankment
(compaction, seeps,
etc.)
- Major vegetation
removal
- Spillway Pipe/ Outfall
Channel
- Erosion

Inspection Report

Proactive Approach

- Highlights problems early on
- Less costly repairs
- Safety issues & repairs highlighted
- Avoids failure
- County compliance



Problem Prevention

- **Sediment/ Nutrient reduction**
 - Filter strips
 - Fertilizer reduction
- **Aeration**
- **Trash removal (debris rack)**
- **Woody vegetation removal (periodic)**
- **Adjacent property impact**



Algae Problems

- Excess nutrients cause algae growth
- Prevention
 - Grass/vegetation filter strips can filter nutrients
 - Nutrient Management (IPM)
- Removal
 - Chemical
 - Mechanical



FILAMENTOUS ALGAE

Litter & Debris

- Clogs BMP control
- Can cause back-up of water & dam deterioration
- Degrades aesthetic qualities
- Decomposes slowly
- Physical danger to vegetation and wildlife

Safety

Safety - Water rises rapidly

Fencing - Minimum 4 foot high chain link fence

Gate - 15 foot wide gate with lock where the access road enters the facility

Signage - Warning signs

Access Road - VDOT standards

- Access < 10% slope- 6" gravel
- Access >10% slope -asphalt

