

# A Citizen's Guide to Stormwater Ponds

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# What is a stormwater system?

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- Simply put, a stormwater system is a tool for managing runoff from rainfall.
- When rainwater lands on impervious surfaces, it flows in to grates, swales, and ditches that send water into your neighborhood's stormwater pond.



# Why do we need stormwater controls?

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- Prevent urban flooding
- Slow runoff velocity
- Remove pollutants
- Without a stormwater system, runoff flows to the nearest water body without treatment, carrying litter, oil, fertilizers, pesticides, pet wastes, and sediments.



# History of Stormwater Systems

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- Wetlands once covered more than half of the state.
- Unfortunately, more than half of our original wetlands have been destroyed for agriculture, subdivisions, and other development.





# History of Stormwater Systems

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- As development increased and more paved areas covered the land, stormwater became the primary source of water pollution in Florida.
- In the early 80's, the Florida Legislature passed laws requiring the treatment of stormwater.



# Types of Stormwater Systems

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- **Retention System:** Designed to allow water to seep through the soil into the groundwater. No direct discharge to surface waters.



# Types of Stormwater Systems

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- **Swale:** A linear retention system that holds water during and immediately after a storm.





# Types of Stormwater Systems

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- **Detention System:** Designed to discharge runoff through an outlet structure to adjacent surface waters. Can be wet or dry.





# Littoral Shelf

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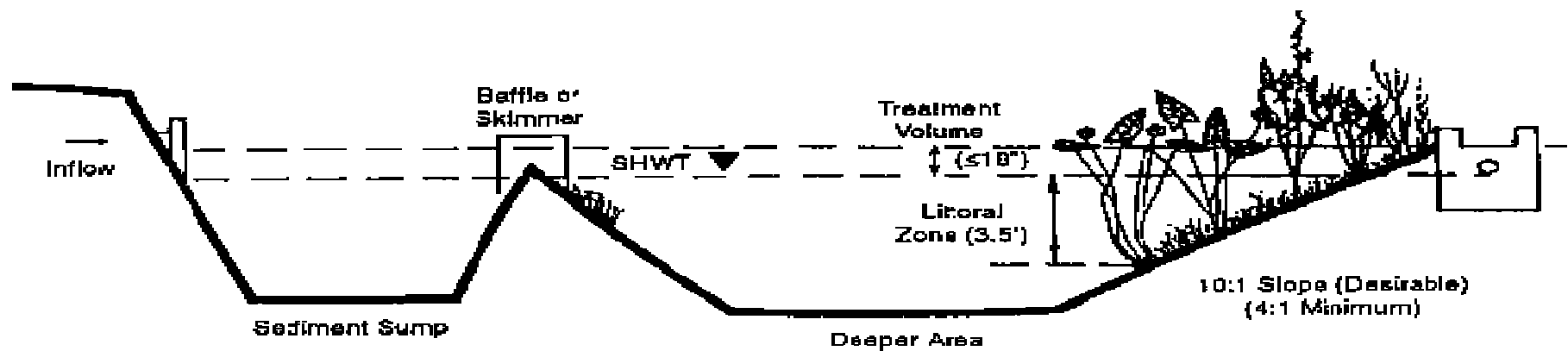
- Shallow area in the pond where vegetation grows.
- 35% of pond per SWFWMD criteria (65% open water)
- Filter out pollutants
- Reduce algae growth by absorbing nutrients
- Provide wildlife habitat



# Important Note

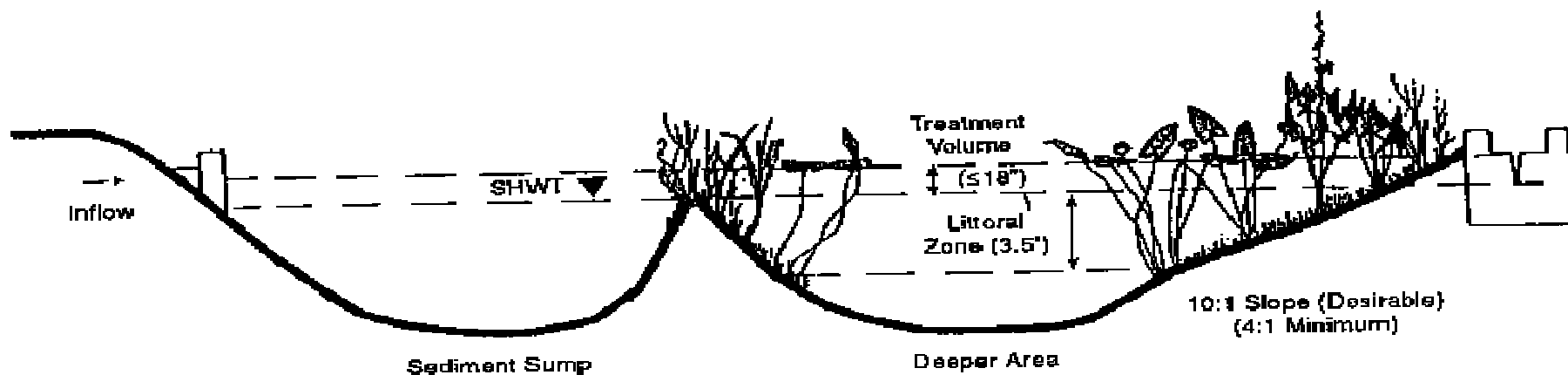
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- The removal of littoral shelf vegetation (including cattails) from permitted wet detention ponds is prohibited unless approved by the permitting agency.
- Removal includes dredging, herbicide application, cutting, and introduction of grass carp.



**Outfall Structure with Bleed-Down Orifice**

SHWT – Seasonal High Water Table



**Outfall Structure with V-Notch Weir**

SHWT – Seasonal High Water Table



# Responsibility for Stormwater Systems

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- In Florida, the responsibility for permitting systems rest with the water management districts, or, in some cases, with the Florida Department of Environmental Protection.
- After developers complete construction of a system, the responsibility for maintaining the system transfers to homeowners or property owners associations.
- The permit has operating conditions once transferred to operations.

# Pond Maintenance

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- The upkeep and maintenance of the system becomes the responsibility of the homeowners association, not the water management district, city, or county.



# General Maintenance

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- Permit familiarization
  - Refer to O & M permit and design plans at Southwest Florida Water Management District.
  - Use plans for maintenance activities and to ensure pond is maintained per design specifications.
- Systematic routine maintenance
  - Perform regular maintenance. It's cheaper than letting the system fail, requiring a complete re-build.



# Inspections

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- Ponds should be inspected monthly or quarterly and after every large rain event. Inspections should include an assessment of aquatic weeds, the removal of trash and debris, and a check for erosion or sedimentation.



# General Maintenance

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- Structures, inlets, and piping
  - Inspect monthly or quarterly- repair/ replace deteriorating assets.
- Petroleum or hazardous materials
  - Do not dispose of these in any stormwater system.
  - Do not allow pond to discharge if sheen or presence of hazardous chemicals are observed.

# Presence of Sheen

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# General Maintenance

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- Accumulated pond sediment
  - Remove sediments every 10-25 years.
  - Contaminated with heavy metals, pesticides, phosphorous, hydrocarbons, etc.
  - Florida solid waste rules define stormwater pond sediments as solid waste.
  - Must conduct waste determination and dispose of at a proper facility. For residential areas, lined Class I landfill is appropriate.

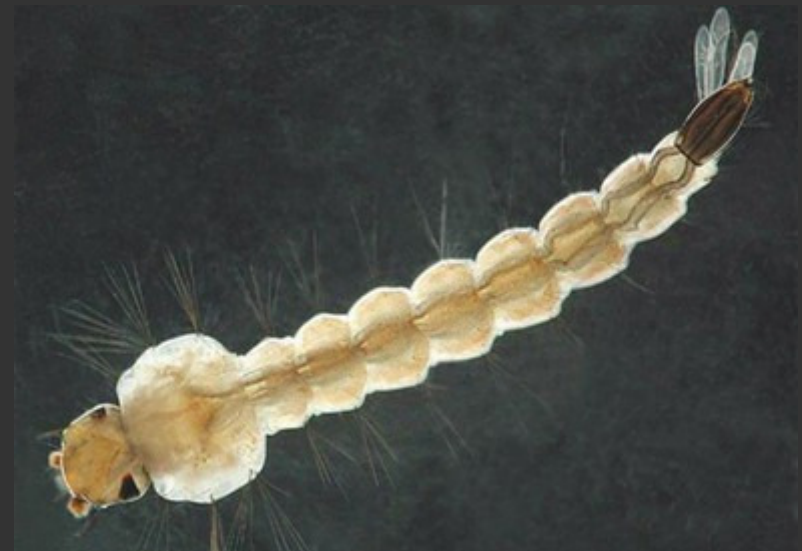
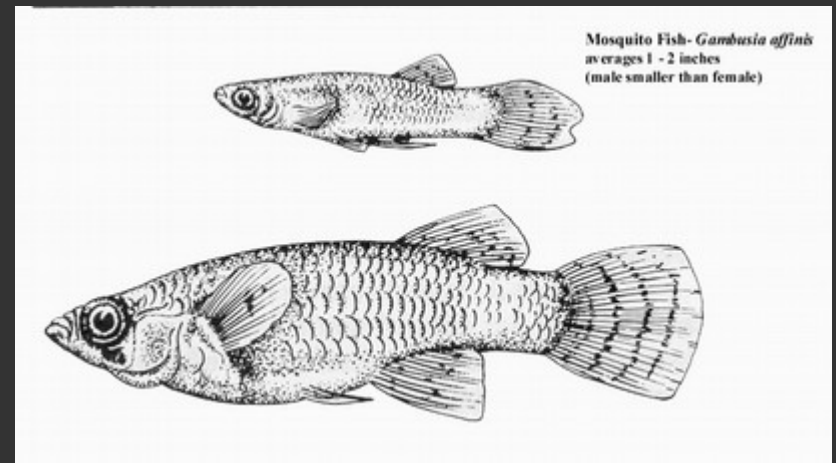
# General Maintenance

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- Repair or maintenance activity
  - Use care to avoid causing erosion.
  - Use care to avoid altering the system. Any alteration to the system will require SWFWMD approval.

# General Maintenance

- Mosquito Control- Wet Systems
  - Remove excessive organic debris.
  - Clear obstructions that cause stagnant water.
  - No water lettuce or water hyacinth
  - Gambusia minnows (mosquitofish)



# General Maintenance

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- Retention Ponds
  - Maintain healthy sod coverage and height.
  - Do not fertilize.
  - Keep inflow clear.
  - Flush filter media.





# General Maintenance

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- Detention Ponds
  - Maintain healthy sod and mow zone.
  - Limit fertilizer use around pond (buffer zone at least 15 feet wide).
  - Keep outfall clear.
  - Monitor sediment buildup and littoral health.
  - Harvest excessive invasive vegetation.
  - Do NOT introduce prohibited aquatic plants.

# Prohibited Aquatic Plants

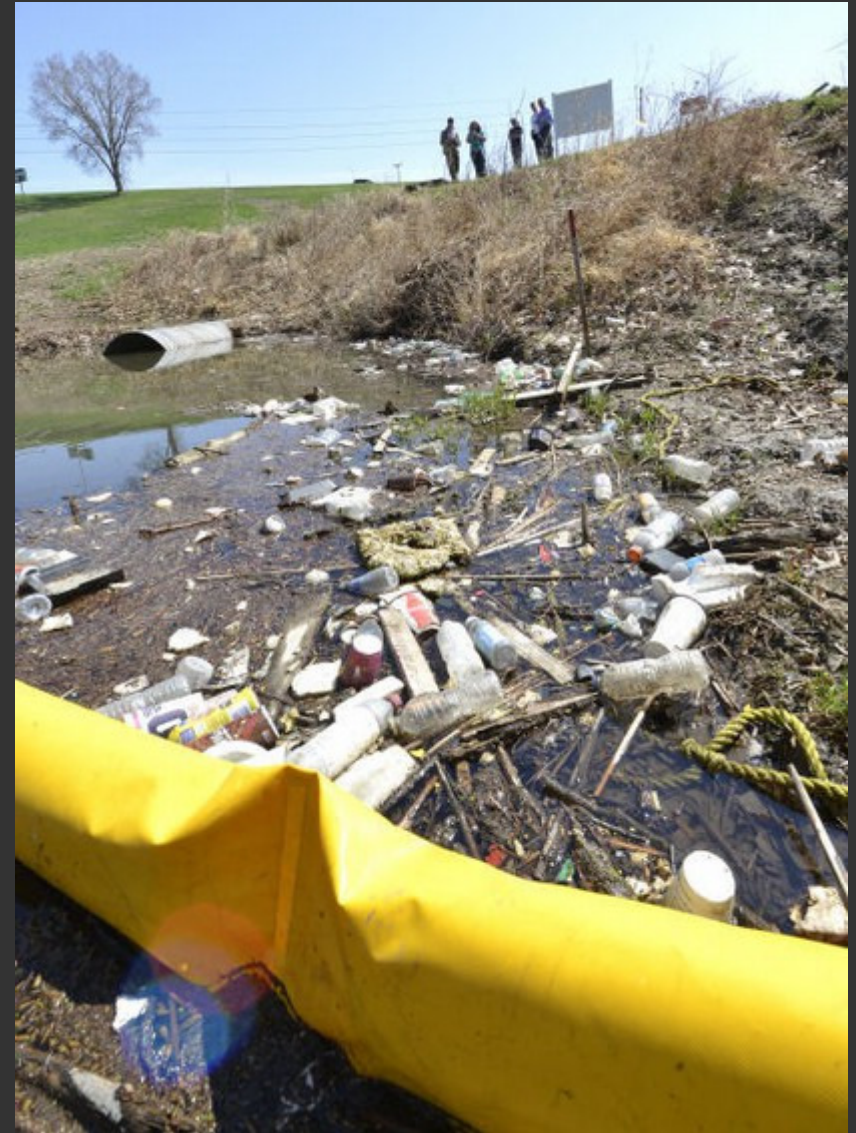
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- Alligatorweed
- Aquarium watermoss
- Eurasian watermilfoil
- Hydrilla
- Water spinach
- Water hyacinth
- Water lettuce
- West Indian marsh grass



# Common Pond Issues: Trash and Debris

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# Common Pond Issues: Trash and Debris

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# Common Pond Issues: Erosion and Sedimentation

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# Common Pond Issues: Slope Destabilization

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# Common Pond Issues: Failing Infrastructure

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# Common Pond Issues: Vegetation Overgrowth

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# Common Pond Issues: Vegetation Overgrowth

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# Common Pond Issues: Vegetation Overgrowth

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Chemicals should be used as a last resort and should be applied by a certified operator. Applying chemicals to the whole pond will result in depleted oxygen that may result in fish kills.

# Conclusion: What You Can Do to Protect Your Pond

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- Limit fertilizer use: Greening your lawn greens your pond.
- Inspect your pond.
- Learn to ID the aquatic plants in your pond.
- Maintain your pond **before** issues arise.
- Keep grass clippings and leaves out of storm drains.
- Properly dispose of all chemicals.
- Wash your car at a car wash.
- Clean up after your dog.
- Properly maintain septic systems.

# Illegal Discharges

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## Pinellas County

- (727) 464-4425
- 24 hr hotline (727)464-5060
- Stormwater Education website-

[www.pinellas.wateratlas.usf.edu/StormwaterEd/](http://www.pinellas.wateratlas.usf.edu/StormwaterEd/)

## City of Largo

- (727) 587-6713
- 24 hr hotline (727) 587-6718
- Website-[www.largo.com/stormwater](http://www.largo.com/stormwater)





# Illegal Discharges- Spills

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- Petroleum spills greater than 25 gallons or any spills into waterways, hazardous chemical spills, and all spills threatening human health or environment.
- Florida Department of Environmental Protection  
State Watch Office
  - 1-800-320-0519
- National Response Center
  - 1-800-424-8802

# Resources- Publications

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- *How to Operate & Maintain Your Stormwater Management System*, SWFWMD.  
[https://www.swfwmd.state.fl.us/files/database/site\\_file\\_sets/33/HowToOperMaintSMSinternet.pdf](https://www.swfwmd.state.fl.us/files/database/site_file_sets/33/HowToOperMaintSMSinternet.pdf)
- *Stormwater Systems in Your Neighborhood*, SWFWMD.  
[http://www.swfwmd.state.fl.us/publications/files/stormwater\\_systems.pdf](http://www.swfwmd.state.fl.us/publications/files/stormwater_systems.pdf)
- *Stormwater Ponds: A Citizen's Guide to Their Purpose and Management*  
<http://manatee.ifas.ufl.edu/soils/PDFs/stormwater-ponds-a-citizens-guide.pdf>