Water Resource Protection: Laws, Regulations, and LID

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Protection of Public Water Resources

- As part of the Federal Clean Water Act 1972, USEPA requested states to develop designated uses for waters of the state (lakes, reservoirs, rivers, streams, estuaries and wetlands) and establish criteria that would protect those designated uses.
- If designated use was not being met, appropriate corrective action was to be implemented.

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State Surface Water Designated Uses

- Class I – Potable Water Supplies
- Class II – Shellfish Propagation or Harvesting
- Class III – Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife
- Class IV – Agricultural Water Supplies
- Class V – Navigation, Utility and Industrial Use

F.A.C. Chapter 62-302 Surface Water Quality Standards
http://www.dep.state.fl.us/legal/rules/shared/62-302.pdf

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Who's Responsible for Stormwater Regulation?

- Under the Florida Water Resources Act of 1972, the Florida Department of Environmental Protection (FDEP) is responsible for administering the state's stormwater management plan.
- FDEP has delegated authority to the five regional Water Management Districts (WMDs) to regulate stormwater discharges.

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Guidance for Water Quality Protection 62-40 F.A.C.

- Primary goal is to **maintain, to the maximum extent practical, during and after construction and development, the pre-deelopment stormwater characteristics of a site**
- The performance standard for **erosion and sediment control during construction is to retain sediment onsite**, with a backstop that no discharge shall violate the state's water quality standard for turbidity.
- The stormwater treatment performance standard requires **removal of at least 80% of the average annual pollutant load for stormwater discharges to Class III** (recreational) waters.
- A **95% removal level was set for stormwater discharges to sensitive waters** such as potable supply waters (Class I), shellfish harvesting waters (Class II), and Outstanding Florida Waters (OFWs).

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Water Quality Requirements for Issuance for Stormwater Permits 40C-42.023 F.A.C

The applicant must provide reasonable assurance that the system:

- Will not result in discharges from the system to surface and ground water of the state that cause or contribute to violations of state water quality standards…;
- Will be capable of being effectively operated and maintained…

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Presumptive Criteria for Water Quality

- Demonstrate the system provides water quality treatment (retention, underdrain, exfiltration, wet detention, swales, or dry detention) in accordance with 40C-42.026 F.A.C. .
- Last significant update was in 1991.

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Water Quality Criteria for Alternative Treatment Systems

An affirmative showing by the applicant that the system design will provide treatment equivalent to retention systems described in paragraph (2)(b)1., above, will create a presumption in favor of satisfying the standards in paragraphs 40C-42.023(1)(a), F.A.C.

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Water Quality Criteria for Impaired Water Bodies

If the receiving water body has been determined to be impaired, the applicant must demonstrate that the project will result in a net improvement for the parameter for which the water body is impaired pursuant to 12.2 A.H.

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Method for demonstrating a net improvement

- Determine the existing loading (Pre) from the site on an average annual basis.
- Determine the expected loading after the project is constructed and subtract expected removal that will occur as a result of water quality treatment of stormwater runoff (Post).
- Demonstrate that Post < Pre

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Assessment of State Water Quality

- Biannual evaluation of state water quality
- 305(b) list sent to USEPA indicating those water bodies that “potentially do not attain” designated use.

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What if a Water Body is Listed? (303(d) list)

- **Strategic Monitoring**, verification of listing as impaired and to collect data for TMDL development
- **Develop and Adopt TMDL**, prioritization of impaired waters then development and adoption of TMDL for basin.
- **Developing Basin Management Action Plan (BMAP)**, plan specifying how pollutant loadings from point and nonpoint sources of pollution will be allocated and reduced in order to meet TMDL requirements.
- **Implementing Watershed Management Plans**
- **Iterative Process**

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Strategy

- New Development
  - Must meet permitting criteria and prevent water quality violations
- Existing Development (prior to water quality rules and regulations)
  - TMDL/BMAP process
  - Retrofits
  - NPDES

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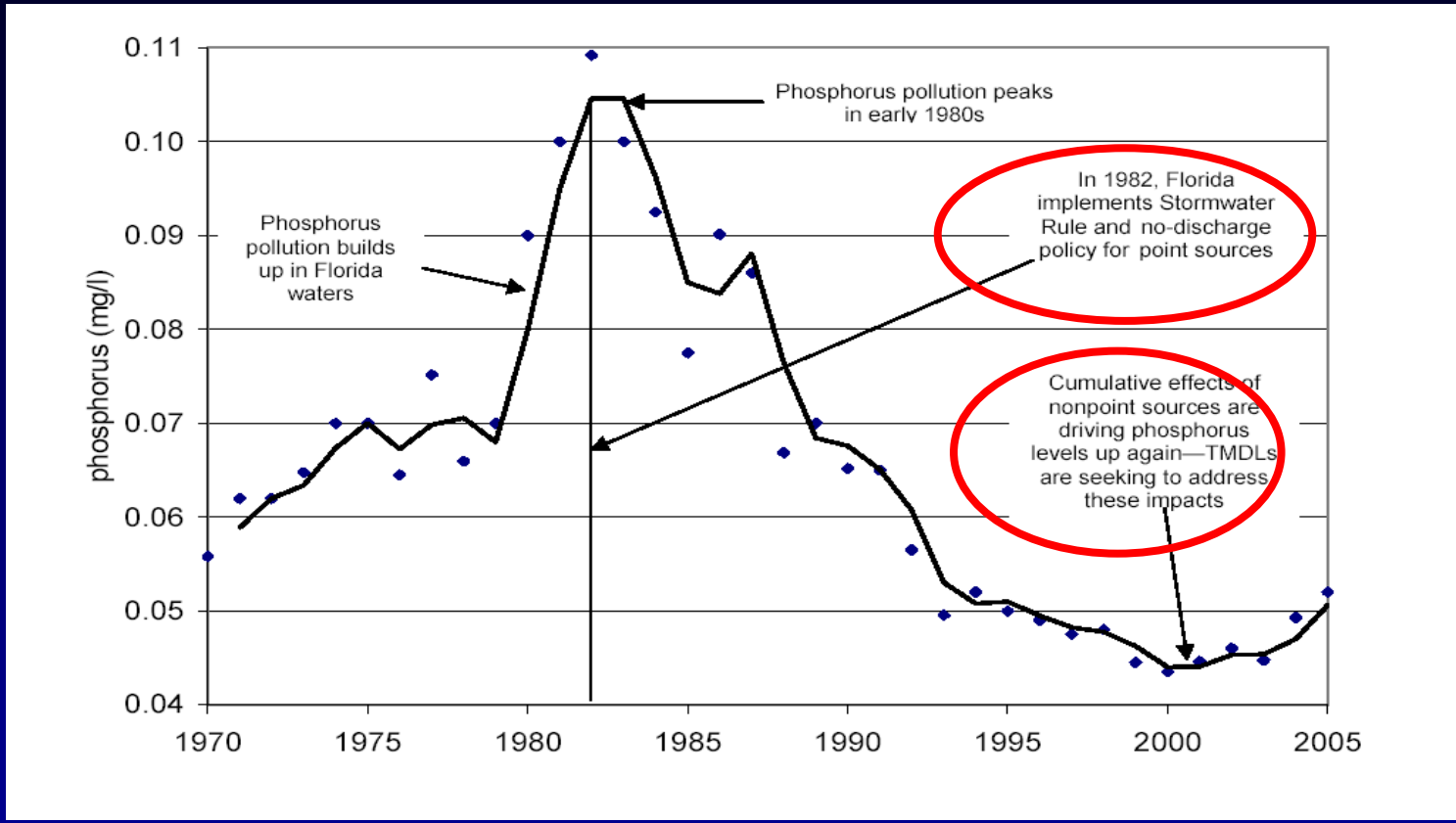
Effect of Cumulative Nonpoint Sources



"After trending downward for 20 years, beginning in 2000 phosphorus levels again began moving upward, likely due to the cumulative impacts of nonpoint source pollution associated with increased population and development."

FDEP Integrated Water Quality Assessment for Florida:2006 305(b) Report and 303(d) List Update

Prevention is Key

- No quick fix once water body is impaired – often difficult to improve an impacted system and it will likely take an extended period of time.
- Prevention cost (infrastructure and practices up front), will be significantly less than implementation of same infrastructure and practices after TMDL listing.

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Surface Water Management Characteristics of a Typical Development

- System is designed in accordance with the presumptive criteria in 40C-42 F.A.C. (retention, wet detention, underdrain, swales, etc.)
  - Dry retention for A/B soils
  - Wet Detention for C/D soils
- Curb and gutter conveyance to a centralized (one or two pond) system that is usually located at the “bottom of the hill”

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Surface Water Management Characteristics of a Typical Development

- Advantages
  - Good data on removal efficiencies
  - Familiar design techniques
  - Minimal maintenance
  - Compliance is easily verified
- Disadvantages
  - Can significantly alter the hydrology of the area

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Low Impact Development (LID)

- Source Control (Florida Friendly Landscaping, Reductions in Fertilizer Use)
- Preservation of Open Space
- Low Impact Construction Techniques
- Stormwater Reuse (Cisterns, Green Roofs, Re-use vs. Wet Detention)
- Distributed Stormwater Management Systems (Treatment Train Approach)
- Pervious Concrete/Pavement

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How does Low Impact Development (LID) Fit in?

- LID practices may be utilized to bridge the gap between conventional treatment capabilities and the load reductions needed for post <= pre.

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Challenges for utilizing LID/alternative methods for meeting Permitting Criteria

- Alternative treatment systems must demonstrate water quality treatment equivalent to retention to receive the presumption
- Discharges to Impaired Waters must demonstrate net improvement
- Need to have estimates for removal efficiencies for various types of BMP's implemented as a part of the LID design.

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Challenges for utilizing LID/alternative methods for meeting Permitting Criteria

- Need assurances that the system will be properly operated and maintained in perpetuity.
  - Swales/Rain Gardens/Bio-filtration systems must not be filled or altered in a way that adversely changes storage and treatment capabilities
  - Access easements and entity to monitor and repair as needed
  - Proper Installation and long term maintenance of pervious/porous pavement to ensure effectiveness

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What has been done to meet the challenges?

- ERP Streamlining Rule Amendments allow for staff issuance of permits utilizing alternative treatment methodologies
- Use of Vegetated Natural Buffers to treat large lot subdivisions
- Increased use of Stormwater Re-use
- New Research in treatment efficiencies of various WQ BMPs

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On the Horizon

- Continued Research on LID efficiencies
- Development of Statewide Stormwater Rule
  - Pre/Post Loading Analysis
  - Will Utilize LID Practices
  - Provide quantification of LID treatment efficiencies
- Designation of LID resource person in each Service Center
- Possible expedited review of LID permit applications

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