Planning for Water Resource Sustainability

Stormwater and Planning Working Together

March 10, 2009

Outline and Credits

- Two Planning and Stormwater Interactions
  - Codes and Standards Evaluation
  - New Stormwater Controls and Redevelopment
- Center for Watershed Protection
  - *Managing Stormwater in Your Community Chapter 3*
  - Codes and Ordinance Worksheet.

Stormwater and Water Quality

- Impervious Cover
- Antidegradation
- Stormwater Controls
  - Peak Flow Control
  - Water Quality Treatment
  - Volume Reduction

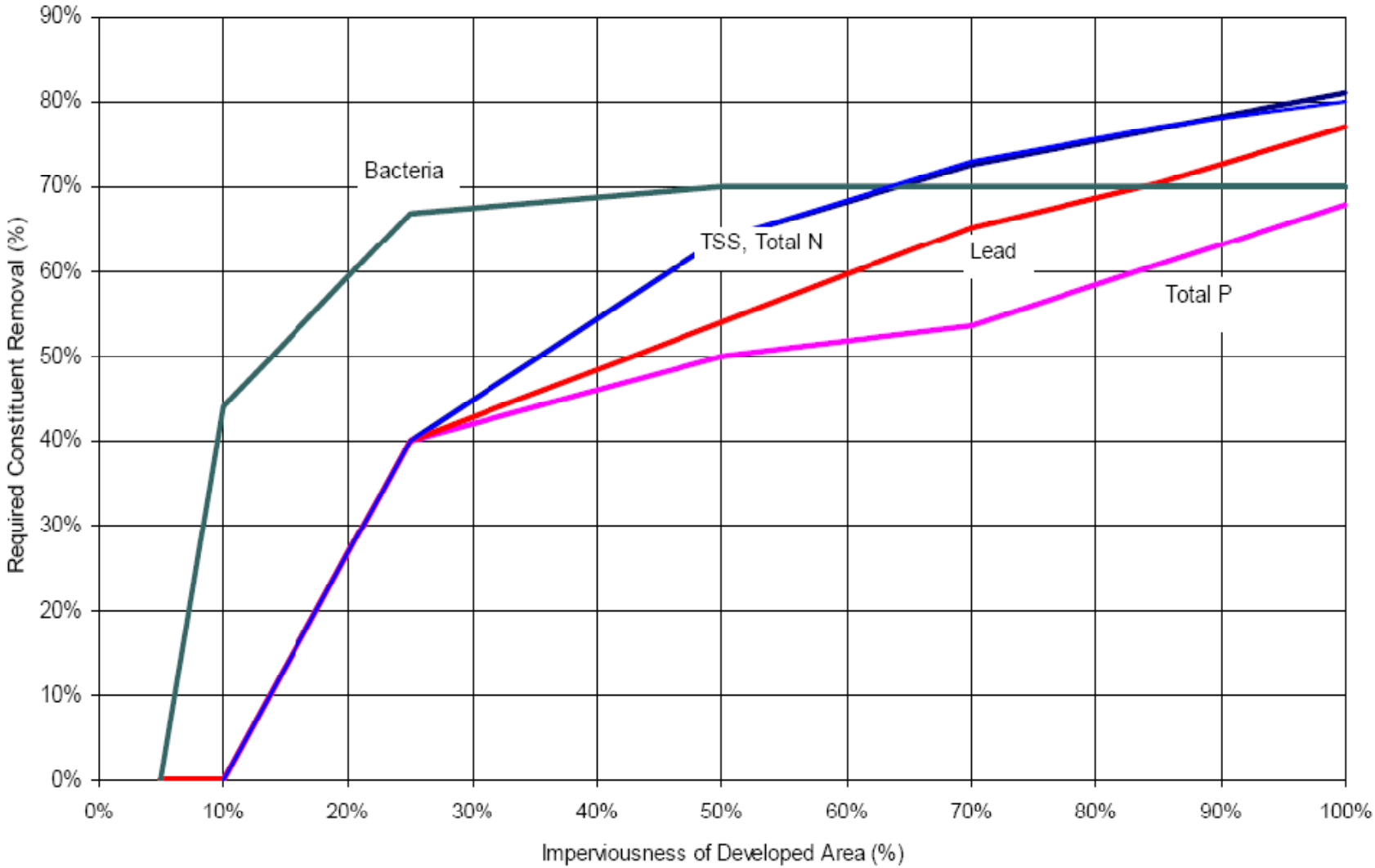

Figure 3-5. Pollutant Removal Required to Meet Antidegradation Goal.

Stormwater and Water Quality

- Impervious Cover
- Antidegradation
- Stormwater Controls
  - Peak Flow Control
  - Water Quality Treatment
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Levels of SW Control

- Site Based
- District or Neighborhood
- Regional or Watershed

Impacts of Watershed SW Control

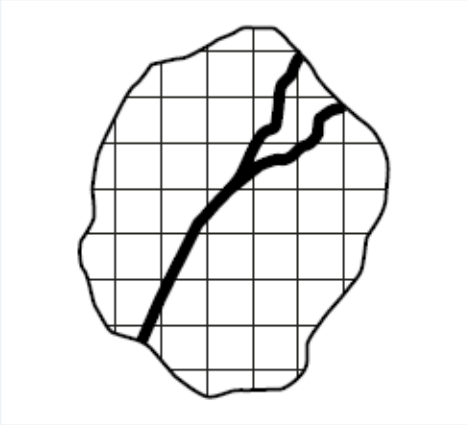
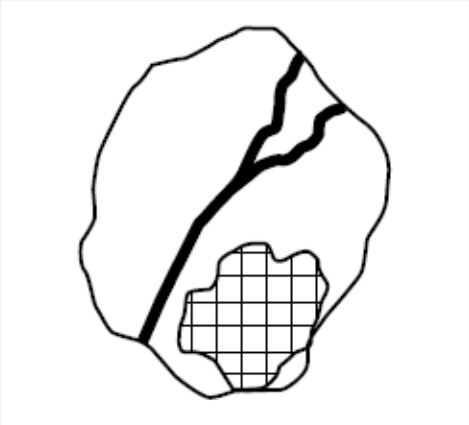
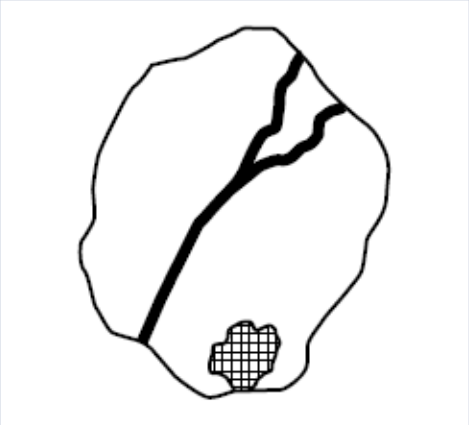
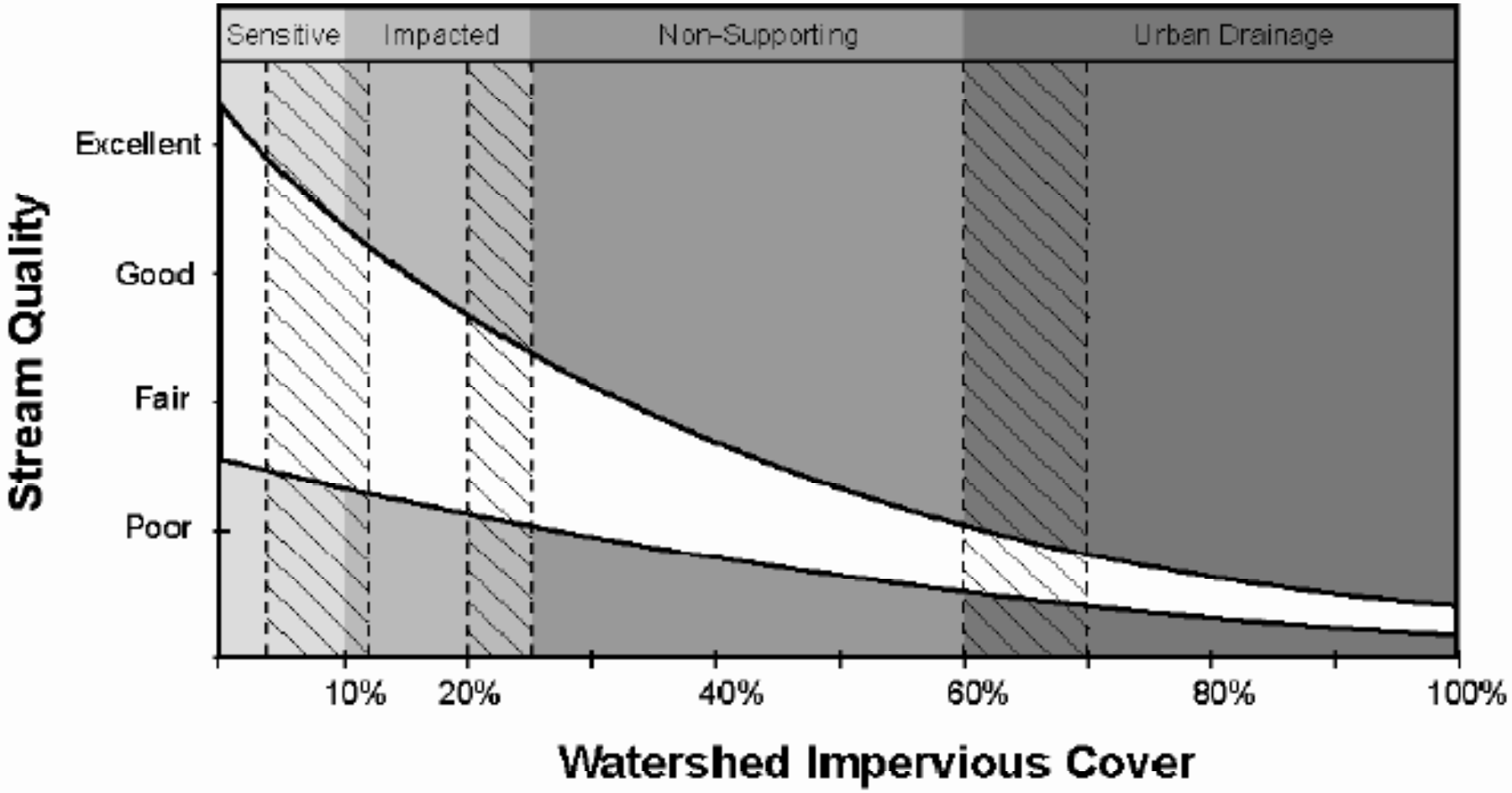
Scenario A	Scenario B	Scenario C
		
10,000 houses built on 10,000 acres produce:	10,000 houses built on 2,500 acres produce:	10,000 houses built on 1,250 acres produce:
10,000 acres x 1 house x 18,700 ft^3/yr of runoff =	2,500 acres x 4 houses x 6,200 ft^3/yr of runoff =	1,250 acres x 8 houses x 4,950 ft^3/yr of runoff =
187 million ft^3/yr of stormwater runoff	**62 million ft^3/yr of stormwater runoff**	**49.5 million ft^3/yr of stormwater runoff**
Site: 20% impervious cover	**Site: 38% impervious cover**	**Site: 65% impervious cover**
Watershed: 20% impervious cover	**Watershed: 9.5% impervious cover**	**Watershed: 8.1% impervious cover**

Figure 3.1. Watershed impervious cover at different development densities (Source: U.S. EPA, 2006a)

Linking Stormwater to Land Use

- Four Steps Managing Stormwater in Your Community
  - Understand Role of Impervious Cover
  - Examine and Evaluate Land Use Codes
  - Develop Relationships with Land Use Planners
  - Use Watersheds as organizing Units for linkage

Impervious Surface Model



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Examining Land Use Codes

- Stormwater Implementation Team
- Tool 4 Codes and Ordinance Worksheet
  - 22 development features focusing on
    - Roads/parking lots and driveway
    - Lot size/shape/density/appearance
    - Incorporation of natural and open spaces
- Planning/Stormwater Joint Meeting
  - Three Towns and County Completed Worksheet

Evaluation Lessons Learned

- Scores were all low
- Opportunities
  - Parking
  - Road Width/Turning Radius
  - Open Space
  - Land Conservation Incentives
  - Modification of Existing Properties
  - Need for different Rural and Urban Standards

Nitrogen Control Experience

- SW Utility Board Requested Controls for Nitrogen
- Required Controls limited impervious cover.
- Efforts to apply Controls to Redevelopment lead to objections.
- Phased approach – First Phase May 2008 (LID requirements)

Applying the Fourth Step

- Use Watersheds as Organizing Units for linkage
- Nitrogen Solution
  - Redevelopment Requirements different
    - Required to address impairments
    - Other pollutants (nitrogen) to Maximum Extent Practicable
  - Nitrogen Requirements in New Development should be incentive for Redevelopment

Volume Control Opportunities

- Better Map at SW website
- http://www.bcgov.net/Stormwater/Manuals Plans.php

Summary

- Stormwater Management needs to be engaged with Planning
  - In Setting Regional and Subdivision Requirements impacting Impervious Cover
  - In Watershed Protection Efforts
  - In Supporting Smart Growth and Denser Development in Urban Cores
  - Suggesting Opportunities for Better Stormwater Management

Questions

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