

**A REVIEW OF STORMWATER ORDINANCES  
FROM ALASKAN AND OTHER SMALL COMMUNITIES FOR  
POSSIBLE APPLICATION TO SITKA**  
*with recommendations for strengthening stormwater controls*



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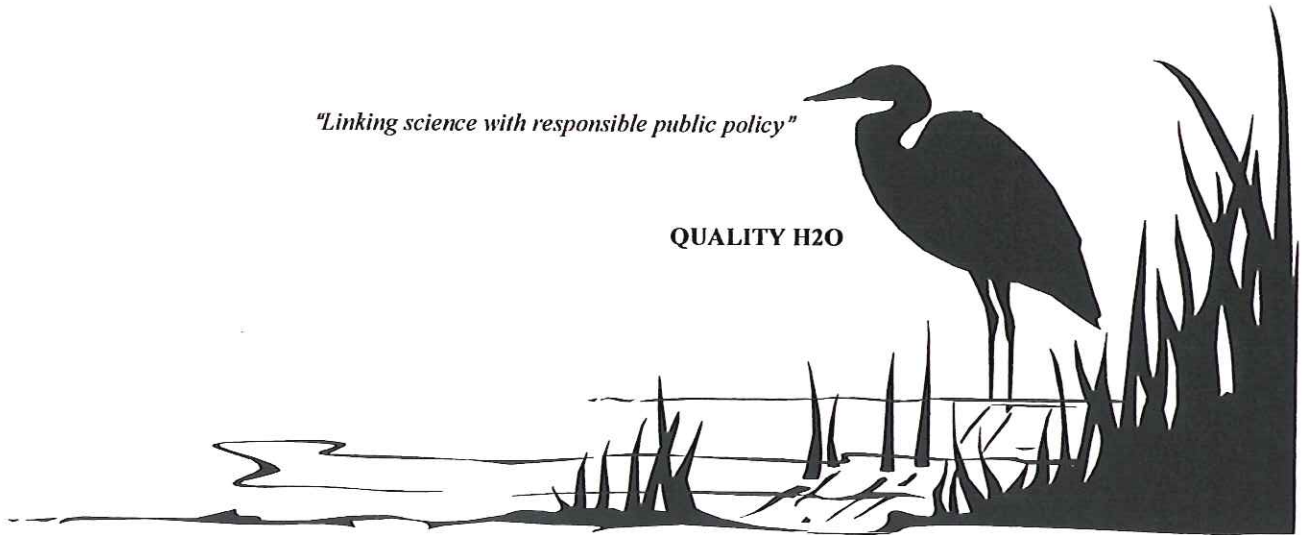


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*"Linking science with responsible public policy"*

QUALITY H2O



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## *A Review of Stormwater Ordinances from Alaskan and other Similar Communities for Possible Application to Sitka*

### Introduction

Stormwater runoff is our nation's most common cause of water pollution and is a challenge to control. In Sitka, considerable rainfall and snowmelt runs off streets, parking lots, lawns and construction sites to waterbodies. Effective stormwater management can be time consuming and costly.

In an effort to focus attention on these issues, and the City and Borough of Sitka (CBS) has completed a number of stormwater projects since 2002. With support from Section 319 ACWA grants issued by the Alaska Department of Environmental Conservation (ADEC), the CBS completed the *Stormwater Control Strategy and Action Plan for the Swan Lake Watershed* in June 2002 and the stormwater brochure *A Contractor and Citizen Guide to Reducing Stormwater Pollution* in June 2004. Many operation and maintenance improvements in managing stormwater have focused on the Swan Lake watershed, including regular street, catch basin and culvert cleanouts, storm drain stenciling, completion of a Ditch Maintenance Plan that emphasizes retention of grassy swales, and written procedures for municipal stormwater O & M practices.

Stormwater ordinances are one of several tools that can be used to manage stormwater. CBS voluntarily uses the elements of its *Stormwater Control Strategy and Action Plan for the Swan Lake Watershed* to guide a range of stormwater management tasks.

One of the recommendations in the 2002 *Stormwater Control Strategy and Action Plan for the Swan Lake Watershed* was to "evaluate stormwater ordinances at a future date that could lead to consolidated regulatory requirements in one place for CBS and developers. Reviewing model ordinances for similar sized communities as Sitka would be a necessary first step prior to seriously pursuing an ordinance".

Task 3 of the FY05 Swan Lake workplan is "Review stormwater ordinances from similar communities for possible application to Sitka", with an evaluation as follows:

*Description:* This task is listed in the *Swan Lake Stormwater Control Strategy (2002)*. While Sitka is exempt from formally adhering to the EPA Phase II stormwater regulations due to its small population, pollution controls are still of benefit despite its size. Reviewing model stormwater ordinances for similar sized communities would have value as a necessary first step to considering an ordinance. Such an ordinance could consolidate regulatory requirements in one place for CBS and developers. A contractor would complete this review and provide a report with recommendations to the municipality.

*Product:* Report summarizing findings on small community stormwater ordinances"

### Approach, Scope and Limitations

The review approach involved web searches and review of Alaskan municipal and other small community ordinances, thorough review of EPA Region 10 on-line materials, library searches of pertinent Alaskan municipal codes, and other, non-regulatory controls for stormwater. Common elements were identified in ordinances and equivalent protections reviewed. Funding mechanisms – such as forming a stormwater utility for assessing monthly fees similar to water and sewer services, or assessing a fee based on area of impermeable surface – were also examined.

Materials from larger communities with comprehensive stormwater programs and ordinances (such as Bellevue, Washington) – while not comparable in population to Sitka – offered insights into the development and scope of ordinances and funding mechanisms and summarize the necessary elements for successful local stormwater regulatory efforts.

Interviews were held with key CBS staff to discuss the issue, expectations from the evaluation, any political constraints to adoption, and elements (e.g. funding) that could support the effort in the future.

In an effort to limit the scope of the review to a manageable size, Alaskan communities, followed by Northwest communities in Washington and Oregon, were targeted due to climatic similarities. National model ordinances were also reviewed independent of community size.

### What constitutes a stormwater ordinance?

Local regulations are a key part of urban runoff programs, particularly for communities exempt from federal EPA stormwater regulations. Elements variably addressed by Alaskan communities include operation and maintenance, design specifications for constructing stormwater improvements, funding mechanisms, maintenance agreements, easements and permits and/or stormwater or subdivision plan reviews. Stormwater operation and maintenance ordinance language is typically not “stand alone”, rather, it is one of several elements of a local stormwater ordinance.

A review of Alaskan and other community stormwater ordinances typically reveals that *multiple* sections of each municipality’s code relate to stormwater management or nonpoint source pollution control. In essence, the use of the plural term “stormwater ordinances” is more applicable than the singular term “stormwater ordinance”.

For this review, the term “stormwater ordinance” refers to a comprehensive treatment of all aspects of stormwater management, usually under a single chapter in municipal code. Contrastingly, the term “stormwater ordinances” is used to refer to nonpoint source pollution or stormwater-related elements spread throughout multiple chapters and sections of the code. These chapters/sections may include storm drainage, standards for snow disposal, drainage standards, erosion and sedimentation control, and revenue.



The Environmental Protection Agency (EPA) recognizes the political reality of developing and revising municipal codes to specifically address stormwater controls by offering *multiple* model ordinances to protect water quality and local resources. These model ordinances include: stormwater control operation and management; erosion and sediment control; post construction controls; illicit discharges; and aquatic buffers.

The key benchmark in the review of Alaskan and other communities is *whether the municipal code adequately addresses the fundamental elements for stormwater control, independent of whether that community has adopted a single, comprehensive stormwater ordinance.*

*How does Sitka currently manage stormwater?*

An important task in the *Stormwater Control Strategy and Action Plan for the Swan Lake Watershed* was an assessment of CBS' current stormwater controls against federal EPA regulations and guidance for Phase II communities. Sitka has a separate stormwater system, distinct from its sanitary sewer system. The Public Works Department manages stormwater. While CBS is not subject to the Phase II requirements based on its small population, and therefore not required to adopt a municipal-wide stormwater management program or a stormwater ordinance, this assessment is germane to the task of evaluating current stormwater controls in place.

The CBS currently addresses a number of the EPA's minimum elements and subelements for an approvable stormwater management plan. Others are either partially addressed or not addressed. *Table 4* (see Appendix) assesses the relative degree to which the CBS addresses each of the six regulatory elements of a complete stormwater program. It briefly analyzes those stormwater activities currently followed by the municipality.

These six federal elements include public education and outreach, public involvement and participation, detection/elimination of illegal discharges, control of construction site stormwater runoff, post-construction stormwater controls for new developments, and good housekeeping and pollution prevention for municipal operations affecting stormwater quality. A "report card" completed in June 2002 indicated most EPA requirements were "adequately addressed" or "partially addressed" with its current stormwater management approach. A stormwater ordinance was one element that CBS has not yet addressed.

Sitka does not have a "stand alone" stormwater ordinance at present. The CBS also does not currently have a stormwater utility as a means of generating revenues to manage stormwater operation and maintenance activities. However, the CBS municipal code contains several sections related to controlling nonpoint source pollution from urban and community development sources. This multi-faceted approach is typical of most communities in Alaska. These codes address controlling erosion and nonpoint source pollutants such as sediment, road salts, heavy metals, petroleum hydrocarbons, nutrients, and pathogenic bacteria from subdivision development and grading operations.

Sitka's municipal code table of contents is organized into 23 Titles, with relevant stormwater Titles as follows:

Title 4. Revenue and Finance  
Title 9. Health and Sanitation  
Title 14. Streets and Sidewalks  
Title 15. Public Utilities  
Title 19. Building and Construction  
Title 21. Subdivision Code  
Title 22. Zoning

Specific sections within CBS codes bearing on stormwater management include:

- A Watershed Control Program (Section 15.02.010-.120)
- Excavation and Grading Standards (19.01)
- Private extensions of water, wastewater and stormwater utilities (15.12).
- Major subdivision preliminary plat submission requirements (21.32.040)
- Street arrangement (21.24.080)
- Major subdivisions – easements (21.32.140)
- Compliance with standards specifications and subdivision agreements (21.40.020)
- Easements (21.40.030)
- Additional design and construction standards (21.40.130)
- Fees (21.52.140)

Chapter 19.01.013 (Adoption of Excavation and Grading Standards), as augmented by building department policy, speaks to stormwater runoff and erosion control. Department policy and grading permit application handouts also include a copy of a Contractor's Stormwater BMP brochure. Title 21.52.140 authorizes fees to be collected for subdivision plat applications and variances.

Chapter 21.40.020 in the Subdivision Code states that "Construction shall be completed in compliance with the city and borough of sitka standard construction specifications . . . And any signed subdivision agreement between the city and borough of sitka and the property owner."

Drainage easements in subdivisions are provided for in Chapter 21.40.030, Section D. A stormwater or drainage easement or right-of-way is required where a subdivision is traversed by a watercourse, drainageway, channel or stream. Low lying lands along watercourses subject to flooding or overflowing during storm events must be preserved and retained in their natural state as drainageways. Section 21.40.130 states that "Drainage Plans shall be prepared by the applicant for minor and major subdivisions when they are determined to be necessary by the municipality. The plans shall be approved by the municipality prior to final plat approval."

Subdivision plat submission requirements (21.32.040-160) include standards for drainage and slope with respect to floodplain and flood hazard areas. No formal erosion or



sedimentation plan is required in ordinance, but is referenced as a condition of the CBS' proposed Subdivision Agreement (October 31, 2002).

*Summary findings on community stormwater ordinances in Alaska*

A review of Alaskan local ordinances relating to stormwater and nonpoint source pollution control shows some consistent trends. *No Alaskan community of Sitka's size (8,000+) has adopted a comprehensive, standalone stormwater ordinance consolidated in a single chapter of its municipal code.* Communities with a population less than 10,000 are exempt from EPA's Phase II regulations mandating a stormwater management plan and compliance with the federal Stormwater NPDES permit. Moreover, they are not obligated to develop an ordinance. These factors serve as a disincentive to amending the municipal code to specifically address stormwater.

Nationally, stormwater ordinances receive increased attention in direct proportion to their population, water quality problems that need managing, and whether the community is legally bound to comply with EPA Phase I or Phase II stormwater requirements. Anchorage stands out in this regard. It is the only community in Alaska subject to Phase I requirements. No Alaskan community is subject to EPA Phase II stormwater requirements.

Starting in the late 1990s, the State of Alaska's Coastal Nonpoint Source Pollution Program (aka Section 6217 program) provided some incentive for the State of Alaska and its communities to adopt management measures for urban and community development. Alaska formally adopted these measures in 2000 as part of the Alaska Coastal Clean Water Plan, a nonpoint source pollution control strategy for coastal communities. Many of these measures relate to stormwater controls. The Department of Commerce at [www.commerce.state.ak.us/dca/nonpoint/ord.cfm](http://www.commerce.state.ak.us/dca/nonpoint/ord.cfm) maintains a summary of municipal nonpoint source pollution ordinances, with useful links to municipal code sections and a summary of each relevant code.

Many Alaskan communities with Title 29 planning and zoning authority have adopted individual codes covering a variety of categories (Health and Sanitation, Storm Drainage, Erosion and Sedimentation Control, Streets and Highways) that, collectively, address stormwater management in the absence of a comprehensive ordinance. A summary of community stormwater controls is provided below.

The *City of Homer* code (under Street Design and Construction Standards) adopts by reference a Design Criteria Manual for Streets and Storm Drainage under Chapter 11.04.058. A Drainage and erosion control section (11.04.080) establishes standards for road drainage and erosion control. It requires necessary storm drainage facilities ...."to convey stormwater efficiently", establishes minimum culvert diameters, and requires ditch lining to prevent ditch erosion. Some site development activities require a Storm Water Protection Plan to be developed and followed.

In anticipation of being required to comply with Phase II EPA stormwater regulations for Municipal Separate Storm Sewer Systems (MS4s), the *City and Borough of Juneau* has been developing a stormwater management program that will protect water quality and control flooding. The CBJ addresses stormwater in several chapters of its municipal code. Juneau does not have a stand-alone stormwater ordinance. The Building Code (Chapter 19.03) adopts the UBC Appendix 33, Excavation and grading standards, by reference. Health and Sanitation (Title 36) provides for a waste management utility. A Drainage plan is required (49.35.510) to be submitted by developers for approval by the director of engineering and must include the “calculated increase in stormwater runoff resulting from the proposed development”. Also, “any improvements required due to increased flows shall be included as part of the subdivision improvements”.

In FY02, the City and Borough of Juneau was awarded a Section 319 grant from ADEC for a project entitled “Storm Water Management Development”. The project developed accurate maps of stormwater flows at 2-foot vertical contours that are linked to the CBJ’s Geographic Information System. Stormwater structures were accurately located, mapped and described. A Stormwater GIS base map was completed and water quality monitoring initiated on five salmon streams heavily impacted by stormwater runoff.

EPA recently determined that the City and Borough of Juneau is not subject to federal Phase II stormwater NPDES permit requirements and is not a regulated small MS4 due to topography and that population density is spread out over a large area.

The *City of Fairbanks* was awarded \$125,000 in FY02 for developing an accurate map, inventory and model of the City’s stormwater drainage system as a foundation for continued development of a stormwater management program. It was expected to aid Fairbanks in achieving eventual compliance with Phase II NPDES requirements for stormwater improvements. However, since 2002, Fairbanks has been determined not to be a “Phase II MS4” community subject to EPA stormwater NPDES permit requirements.

The *Kenai Peninsula Borough* code of ordinances (14.06.150) includes Road construction standards – Drainage and culvert material. Outfalls are required to prevent excessive siltation of riparian habitats and channel erosion. Minimum culvert diameters and specific standards for materials are cited.

The *City of Palmer* in the Matanuska-Susitna Borough (under Chapter 12.12 Street Improvements) includes this drainage section: “An adequate drainage system, which may include necessary storm drainage facilities, drain inlets, manholes, culverts, ... shall be required in all subdivisions. This system shall take into consideration the preservation of designated high quality wetlands critical to the water table levels and wildlife habitat”. Section 12.12.070 requires an “Erosion and sedimentation plan” to be submitted to the city manager for approval before any recontouring or denuding of lands. Plans must include “adequate measures for control of erosion and siltation”, with control measures that disturb the smallest practicable area of land for the shortest period of time, install sediment basins, replace groundcover, be fitted to the topography and soil conditions, and



retain and protect natural vegetation. Maximum slopes shall not exceed 50 percent unless deemed necessary by the city.

The code for the *Ketchikan Gateway Borough* includes several stormwater drainage requirements. Section 55.51.030, Drainage, includes these subsections. (a) *Storm drainage* requires subdivision plats to provide for storm runoff channels or basins separate from a sanitary sewer system. (b) *Accommodation of upstream drainage areas* requires culverts or other drainage facility to be large enough to accommodate potential runoff from the entire upstream drainage area. Evaluating effects on downstream drainage areas is also required and no subdivision will be approved unless adequate drainage is provided to the entire watercourse.

The *Municipality of Anchorage* takes the most comprehensive approach to stormwater regulation of all Alaskan municipalities. This is not surprising, given Anchorage's large population and expanse, and that it was the first – and only – community in Alaska required to comply with EPA's Phase I stormwater NPDES permit requirements beginning in 1998. The municipality maintains a stormwater program, has a comprehensive – or omnibus – stormwater code, and collects fees from permit and system plan reviews and inspections to partially pay for operation and maintenance costs. The Project Management and Engineering Division administers the stormwater program, with a staff of five professionals at an estimated annual budget of \$300,000 (Steve Ellis, personal communication). Large stormwater capital improvement projects are budgeted separately and managed by the Public Works Department.

The majority of Anchorage's stormwater ordinances are included under Title 21 (Land Use Planning), and specifically in Chapter 21.67 (Water Pollution Control). This section was added to the code in 2000 to consolidate required stormwater runoff and system plan review functions, fees, and inspections in one place. Stormwater requirements previously found in Title 15 were moved to this new chapter. Stormwater runoff restrictions and system plan review (21.67.050) requires the development and use of a Storm Water Treatment Plan Review Guidance Manual, adopted by reference into code. It is used to review and approve all stormwater runoff system plans. Gathering new information on storm water conditions may be required by the director before approving a plan. The applicant shall pay a fee to the department for each site-specific plan review. Vegetated buffers are required to be retained for land clearing on undeveloped lots greater than two acres.

A number of other sections in Title 21 - Land Use Planning - also address stormwater. Section 21.05.115 Implementation – Anchorage Wetlands Management Plan ensures the design and placement of roads and structures will not interfere with natural drainage through hydrologic studies, or be mitigated to maintain this function. Site plan reviews fall under 21.15.030. Stream protection setbacks (21.45.210) of a minimum 25-foot width along either side are required along all streams and their tributaries. Prohibited activities in the setbacks include vegetation clearing, grading or excavation, paving or vehicle storage, channel alteration, or storage of hazardous materials. Permitted uses include trails, utilities, drainage structures and rip-rap for bank stabilization, stream



restoration and maintenance facilities, and revegetation activities. A list of streams protected by the stream protection setbacks is included in ordinance.

The Storm drainage code (21.45.230) requires a site drainage plan addressing surface water and roof drainage effects prior to issuing a building or land use permit. Drainage system standards (21.85.140) require installation of a drainage system to include necessary storm drain facilities, drain inlets, manholes, culverts and other appurtenances.

Snow disposal sites (21.50.270) include a requirement that a licensed engineer shall prepare a drainage and water quality plan to analyze the effects of snow disposal on subsurface and surface water quality and identify mitigation measures to reduce impacts.

The Erosion and sedimentation control section (21.85.180) requires a plan to be submitted and approved by the department of public works for all grading, excavation and vegetation removal. The plan shall conform to the guidelines and policies in the report "Soil Erosion and Sediment Control (1978)" and disturb the smallest practicable area of land for the shortest period of time, include sediment basins, provide for new stormwater and water quality control measures, replacement of groundcover, fitted to the topography and soil conditions, and retention and protection of natural vegetation. Sediment, oil and greases, and other pollutants should be removed from runoff using appropriate water quality control measures, including desilting basins, oil/water separators, and infiltration devices. Maximum slopes shall not exceed 50 percent unless deemed necessary by the municipal engineer. Construction "shall not adversely affect spawning of anadromous fish, or significantly reduce upstream fish passage through the creation of excessive in-stream velocities".

In 2001, the Municipality of Anchorage received a Section 319 water quality grant from ADEC to conduct a study on the need, practicality and application of a Storm Water Utility, which is a fee-based approach to funding stormwater programs. Community education and public feedback and examination of utility operation and rate structures were focused on to help the Municipality make a decision on whether to form a Utility or pursue other funding options. Public understanding and acceptance is a key element. After the study was completed, the Municipality made the decision not to pursue utility formation. The issue may be taken up later. Stormwater program funding relies principally on fees charged for building permits and system plan reviews, and site inspections. Residential inspection fees range from \$175 to \$200; commercial inspection fees run about \$600. Fees do not cover the entire cost of the program. No stormwater tax or assessment is currently levied in monthly sewer/water utility bills to pay for the program. Some funds are provided to the municipality by ADOT&PF, as the State of Alaska owns road utilities and are co-permittees with the municipality under the federal Phase I NPDES stormwater permit.

*Model stormwater ordinance language for CBS consideration:*

Many examples of stormwater ordinances exist for “lower 48” communities. They include comprehensive ordinances (Atlanta, GA) to the more typical hodgepodge of sections in their codes. Good examples of model language are available from the University of Tennessee’s Municipal Technical Advisory Service, the U.S. EPA, and Kitsap County, Washington.

*Comprehensive stormwater ordinances* typically include the following elements:

- Purpose, definitions and administration
- Permits and plan reviews
- Erosion and sediment control
- Stormwater system design and management standards
- Stormwater system operation and maintenance practices
- Illicit discharges
- Inspections
- Enforcement
- Penalties
- Fee structures

The U.S. Environmental Protection Agency (EPA) website provides model ordinances for seven categories: aquatic buffers, erosion and sediment control, open space development, stormwater control operation and maintenance, illicit discharges, post-construction controls, and source water protection. Of these seven, stormwater control operation and maintenance and erosion and sediment controls appear the most relevant for Sitka. Copies of these two model ordinances are included in the Appendix. They provide detailed language for CBS consideration. A fact sheet on Illicit Discharges and links to several example community ordinances is also provided in the Appendix.

Multiple references provided at the end of this report give detailed information on stormwater ordinances, and utility formation and operation.

The next section examines a variety of innovative approaches to stormwater management. These include forming a stormwater utility, performance bonds, use of stormwater maintenance agreements with private parties, and stormwater operating permits. Some of these approaches are included in ordinance; others are not.

*Other innovative approaches to stormwater management*

Some communities in the United States are managing stormwater through a series of innovative approaches that improve on-site handling. Using created wetlands to treat stormwater is an example. The U.S. Green Building Council (USGBC) has introduced standards for environmental soundness. Techniques used to meet these standards include incorporating green roofs and rain gardens, building vegetated swales and wetlands, paving parking lots with pervious asphalts, and reusing stormwater for



irrigation. The concepts are used in new design and construction as well as retrofitting developed areas.

Anchorage has employed these concepts to the Creekside Town Center. It is a collaboration between the City of Anchorage, the Cook Inlet Housing Authority, and the Venture Development Group. Wetlands are used to treat stormwater runoff on-site. Chester Creek will be restored, parks established for recreation, vegetative buffer zones, and floodplain and wildlife habitat improved. State grants help fund the project.

### *1. Stormwater Utilities*

Most municipal stormwater programs and activities are funded from a general tax fund or property taxes. Some local governments are turning to formation of a stormwater utility to fund stormwater management and water quality programs.

A stormwater utility is a special assessment district created to generate funds specifically dedicated for stormwater management. Users pay a stormwater fee, usually monthly. Funds support the operation, maintenance and upgrades of existing storm drain and ditch systems, develop flood control measures, drainage plans, and water quality monitoring and protection, administrative costs and construction of capital improvements. Stormwater utilities are typically created with two separate ordinances to establish the utility and set the rate structure.

Considerable public education and interaction is a necessary first step to “sell” the public on the need for a stormwater utility and, importantly, acceptance of a new monthly stormwater fee on their utility bill. Users have to be convinced that the utility is worth the price. Clearly communicating to customers what the revenue goes for and about the services delivered help to get acceptance for user fees. The amount people pay and how it is calculated are critical pieces of information. Explaining the difference between “fees” and “taxes” is also important.

Stormwater utilities are viewed as providing a degree of fairness lacking in tax-based systems. The people who benefit are the ones that pay. Fees collected are dedicated to stormwater. In 2005, the EPA estimated the number of stormwater utilities nationally at more than 400, with high numbers in Washington, Oregon and California. It is projected that over 2,500 will exist within the next 10 years (Stormwater Journal, 2005).

Municipalities generally have the authority to collect fees – defined as a charge for a specific service – but not the authority to assess taxes. Having a clear Stormwater Plan in place to demonstrate how the monies will be spent helps defend a fee-based utility. Some communities (e.g. Eugene, Oregon) have formed the utility at the same time they adopted a comprehensive Stormwater Management Plan. On a national average, the time to successfully establish a utility usually takes from 14-24 months. In Bellevue, Washington’s case, it took seven years.

Most stormwater utilities base fees in part on the percentage of impervious cover of developed lands. The Equivalent Hydraulic Acres (EHA) method multiplies the pervious and impervious areas of developed or undeveloped land by a runoff factor or coefficient, adds the results, and multiplies the total by a water-quality factor to determine the fee (Stormwater Journal, 2005). This bases the fee on the relative runoff contribution of the parcel. This method is often applied only to commercial properties, with a simple flat rate charged for residential properties. The city of Griffin, Georgia charges a residential fee of \$2.95 per month. The Auburn, Washington stormwater utility charges a monthly flat rate of \$9.90. Utilities often “piggyback” their fees onto an existing water and sewer utility bill, with the fee broken out on a separate line.

Fees from stormwater utilities cannot be expected to pay for 100% of the costs of operation and maintenance costs and capital costs of the utility. However, the fees can be used as leverage for borrowing money, seeking new federal grants, and for qualifying for a low-interest state revolving loan fund.

Case history experiences and information on a few established stormwater utilities is summarized below.

- Auburn, Washington.

The City of Auburn has a population of over 46,000, and includes a Stormwater Division that maintains over 135 miles of pipe, 4,362 catch basins, 75 collection facilities and 4 miles of ditch. Recurring local flooding, development, growth and new water quality obligations under federal law led to Auburn forming a Storm Drainage Utility to provide ongoing management, maintenance and repair of the storm drainage system. A portion of each resident’s utility bill (\$9.90 per month) is dedicated to funding the Utility.

- Bellevue, Washington

The City of Bellevue has a population of over 120,000, covering over 30 square miles. Rapid development since the mid-1960s created a host of stormwater runoff problems for local salmon streams and lakes. The Bellevue Storm & Surface Water Utility – an independent government entity – was created in 1974 to design, construct, maintain, and operate a drainage system to control storm and surface water runoff and urban flooding. It also manages surface water quality and nonpoint source pollution to nearby streams and lakes. The Utility was created in response to “grassroots” citizen concerns over property and road flooding and the increased loss of streams and wetlands due to rapid growth. A 1976 advisory vote by citizens recommended that a service charge be placed on all properties to fund stormwater management activities.

The process of creating the Utility took seven years of planning. It maintains a staff of thirty-five, with an annual budget of around \$4 million in 1985. Acreage fees are paid by landowners to finance the Utility and helped to issue \$10 million in revenue bonds to build its original stormwater control facilities. The Utility does not compete for funds with other traditional government services such as education or police protection. As an independent entity, it is accountable to the Bellevue City Council and Rates Commission.



The Stormwater Utility sets fees based on the type and intensity of development for each parcel. Impervious surfaces include roofs, decks, patios, driveways, roads, highways and parking lots. Parameters estimate the disturbance to the natural percolation of rainwater and increase in stormwater runoff. Runoff coefficients are developed for each of the following five classes:

- Undeveloped
- Light Development (less than 35 percent coverage by impervious surfaces)
- Moderate Development (35-50% impervious surface, impacts on hydrology noted)
- Heavy Development (50-70 % impervious surface coverage, intensive development)
- Very Heavy Development (greater the 70% impervious surface coverage, including roads and highways)

Aerial photos and property line maps were used to determine runoff coefficients and parcel sizes. For example, owners of undeveloped property less than 2,000 square feet pay \$0.80 per month; moderate development of one acre of land (40,000 sq ft) would pay \$3.28. The average household bill in 1987 was \$6.00 per month. The average fee in 2004 rose to \$13.34, with 65% of that going for maintenance and operations, 29 % to construction, and 6% to taxes. Developers providing runoff control systems qualify for a reduced classification and reduced fees. These user fees were initially set up to pay for only stormwater operation and administrative costs.

Bellevue has 11 major stormwater detention site, some of the wetlands, which connect with streams and hold water before release. Over 250 neighborhood grassy detention sites exist and filter out pollutants. Bellevue Utilities oversees a Stream Team program for citizen volunteers to work on stream projects.

The Utility reports that storm and surface water runoff have been greatly reduced, with declining flood damages, as well as improvements in surface water quality. Fish kills have been reduced. Inspectors routinely inspect over 5,000 privately-owned drainage structures and provides inspection reports. Private parties are required to pay for needed maintenance/clean outs on their systems. This service also helps lower the cost of flood insurance for homeowners.

The two most serious issues that Bellevue cites in beginning the Utility operation were garnering community support and working out the details of how much the state should pay for highway development.

Unlike the City of Bellevue, King County in Washington State and some cities, such as Seattle and Kirkland, WA do not bill monthly for stormwater charges, but include a charge on the annual property tax bill. Monthly residential bills for 2003 (for comparison with Bellevue) are \$8.50 (King County), \$8.75 (Seattle), and \$7.42 (Kirkland).

## *2. Stormwater Operating Permits*

Several Alaskan municipalities require filing for a stormwater operating permit prior to operating an on-site stormwater system. Language detailing the permit system is usually outlined in the local code. Landowners pay a fee and are obligated to operate and maintain the stormwater system consistent with local requirements.

## *3. Performance Bonds*

Local governments can require developers to submit a performance bond to ensure that proper operation and maintenance is performed on a constructed stormwater system.

## *4. Stormwater and Septic System Maintenance Agreements*

A stormwater maintenance agreement is a formal contract between the municipality and a property owner, including a Homeowner's Association, designed to ensure that specific maintenance activities are performed. An example is mowing/trimming grasses in neighborhood drainage ditches. Local governments can save considerable money with such agreements. Responsibilities for routine maintenance, annual inspections, and inspection requirements are laid out in the agreement.

The City and Borough of Juneau has proposed two new ordinances addressing citizen responsibility for maintaining and operating on-site wastewater treatment. Pre-occupancy inspections, fees and fines are outlined. A customer service contract with CBS would call for annual inspections by the city. The property owner would make any repairs or corrections within 30 days of receiving the inspection report. Monthly fees for septic-system inspection and maintenance will be assessed.

## *Issues in developing and implementing a comprehensive stormwater ordinance and funding mechanism*

A primary issue for communities that consider developing a comprehensive stormwater management plan, ordinance or stormwater utility is a demonstration of need. Often, this comes through a citizen initiative (such as Bellevue, Washington's case) based on community concern with wetland losses, water pollution and flooding. Selling the creation of a stormwater utility requires clearly defining the specific services provided and convincing the public that they should pay for them. The process of determining a reasonable rate is a second step, and often requires a separate ordinance.

Experience has shown that the costs of stormwater programs are not met exclusively through plan and permit review fees and inspection fees. Other funds typically must be provided to supplement fee-based revenues. The exceptions are communities that have formed utilities with a large dedicated fund for stormwater operation and maintenance collected through monthly utility fees.

Convincing citizens, the local Assembly and Planning Commission of the need and acceptability of establishing a new stormwater fee similar to monthly water and sewer



fees has been most successful when that fee is earmarked specifically for known stormwater services or construction projects.

The benefit of having a stand alone title in municipal code devoted to stormwater management or water pollution control, as Anchorage does, is packaging all requirements in one location so that developers clearly understand the local rules.

### **Recommendations for Consideration by the City and Borough of Sitka**

Based on the review of the City and Borough of Sitka's stormwater management needs and local authorities, the following recommendations are provided for CBS consideration. They address various approaches for improving stormwater management, with or without adoption of a comprehensive stormwater ordinance.

*Recommendation ①: Prepare and adopt a Stormwater Control Strategy for the municipality's entire road system.*

In 2002, the CBS completed and adopted the *Stormwater Control Strategy and Action Plan for the Swan Lake Watershed*, which analyzed each of EPA's six minimum program elements against Sitka's stormwater management activities. This watershed-specific Strategy, while not required by the federal government given Sitka's population, has helped focus attention on a number of improvements that have been addressed through federal Clean Water Act funding. Expanding this approach from the Swan Lake watershed to the entire road system could provide a formal framework for seeking funding for both operation and new construction. Items that would immediately help the CBS include completing stormwater drainage maps for all street systems, entering drainage maps into a GIS system along with other land uses, and completing an engineering analysis of drainage problems and needed upgrades to the stormwater system. Standard operating procedures (SOPs) for stormwater maintenance and inspection tasks could be included in the Strategy as a training tool for CBS Public Works staff.

The Swan Lake Stormwater Strategy has been very successful in guiding improvements in the watershed and helping secure federal funds for specific stormwater improvements over the last two years. Adopting a broader municipal Strategy would provide many of the same pollution control benefits that the community has gained from the Swan Lake stormwater control strategy. Such as "blueprint" would measurably leverage and support applying for federal and state grants to supplement local revenues.

*Recommendation ②: Complete a stormwater needs assessment for ongoing management activities and capital improvements. Itemize CBS costs.*

This task would identify the range of stormwater operation and maintenance tasks, needed upgrades to facilities, and future construction projects. O&M costs and upgrades, construction costs and administrative costs would be itemized. Itemizing services and



future construction needs are central to seeking new revenues. This task commonly precedes any effort to consider, or create, a stormwater utility.

*Recommendation ②: Review available revenues against the costs itemized in the stormwater needs assessment to determine funding gaps and whether new fees/taxes are justified.*

Comparing available funding for stormwater system O & M, and replacement and construction of new facilities, against the true needs for the program helps to formally identify deficits and can assist in justifying the need for new funding or forming a stormwater utility.

*Recommendation ③: Complete a review of the CBS municipal code to identify areas where “housekeeping amendments” would help simplify and clarify stormwater requirements in one place.*

Short of inserting a comprehensive new stormwater section in municipal code, the alternative of organizing existing stormwater-related sections into a single cohesive section might make sense.

*Recommendation ④: Sponsor a community survey on municipal programs and services, including whether the public would consider paying a small monthly fee for defined stormwater management activities. Alternately, sponsor a public forum on this issue.*

Surveys are a good tool for asking residents about their preferences and concerns with government programs and priorities. Public meetings or forums can also be used in conjunction with the survey to get oral feedback. The results of the needs assessment and cost/revenue stream in Recommendations ② and ③ above would need to be provided with the survey so that citizens could make an informed opinion on any new fees. Several approaches to developing a stormwater fee formula based on runoff, % of impervious surface, and lot size are provided above in this report.

*Recommendation ⑤: Encourage residents to maintain vegetation in drainage ditches and keep basic stormwater conveyances clean. Secondly, consider entering into maintenance agreements with businesses and/or neighborhoods to maintain a number of basic stormwater facilities in priority areas.*

The CBS’ Ditch Maintenance Plan for the Swan Lake watershed emphasizes the value of retaining vegetated drainage ditches to provide effective biofiltration of sediments, oils and other pollutants. Getting homeowners to routinely mow or trim grasses in drainage ditches fronting or adjacent to their homes is a challenge. Encouraging resident participation is a CBS priority and the focus of this recommendation. Also, adopting formal maintenance agreements with neighborhood groups or businesses is a proven tool in many communities. Such agreements could save the CBS money while enlisting the public’s help in reducing stormwater pollution

*Recommendation ②: Consider adopting a new section into the municipal Subdivision Code (Title 21.32 or 21.40) that requires an Erosion and Sedimentation Control Plan to be submitted by subdivision developers to the CBS for review and approval prior to land clearing.*

Stormwater controls in newly developed subdivisions are addressed sporadically. The CBS currently reviews preliminary and final plats and engineering plans for new subdivisions, including curb and gutter and easement issues. A Drainage Plan is required under Title 21.40.130, but there is no requirement for submitting an erosion and sedimentation control plan for approval. Such a holistic plan could comprehensively address needed stormwater controls. Grading permits address standards geared towards structural stability and safety, and do not emphasize water quality protection.

Additionally, for land disturbance greater than one-acre, the CBS should routinely require the developer to provide the CBS a copy of its Stormwater Pollution Prevention Plan (SWPPP) required by the Environmental Protection Agency and Alaska Dept. of Environmental Conservation.

The Erosion and Sedimentation Control Plan concept has a precedent in Sitka, as it was included as an element in the comprehensive Subdivision Agreement brought before the Assembly in 2003. While the entire Agreement was not adopted into an updated ordinance, the need for an erosion control plan still is valid and should be considered as a possible amendment to the code. A national model approach for local erosion and sedimentation control is included in the Appendix.

Other municipalities in Alaska include a similar requirement in local code. Examples of model language are found in the codes of the following communities.

The Municipality of Anchorage has added an Erosion and Sedimentation Control section to their code (21.85.180) and a Storm Drainage section requiring a site drainage plan prior to issuing a building permit. Anchorage also has a Stormwater Runoff Restrictions and System Plan Review section that adopts a Storm Water Treatment Plan Review Guidance Manual for reviewing and approving all stormwater runoff plans. A fee is charged for each plan review.

The City of Palmer has an erosion and sedimentation plan requirement (Title 12.12.070), requiring developers to submit such plans for approval prior to recontouring or denuding land. The City of Homer code includes a Drainage and Erosion Control (11.04.080) section that sets standards for road drainage and erosion control in accordance with its Design Criteria Manual.



*Recommendation ③: Pending the outcome of Recommendation ② above, consider assessing fees for reviewing erosion and sedimentation control plans and/or site drainage plans.*

Adding a new review and approval responsibility to CBS staff should ideally be matched with revenue to avoid creating an unfunded mandate. Charging a small fee for review of site erosion and sedimentation plans and drainage plans would help offset the cost of this new task.

*Recommendation ④: Require the filing and local approval of a Stormwater Pollution Prevention Plan (SWPPP) for planned subdivisions and major commercial land clearing activities.*

For construction activities disturbing more than one (1) acre, developers currently are required under federal regulations to complete and file a SWPPP with ADEC and notify EPA of their intent to be covered under the federal stormwater NPDES permit. No similar requirement for filing the SWPPP with CBS and getting *local* approval exists. Under this recommendation, developers would be required to submit their federally-required SWPPPs to CBS for approval before work begins. Ideally, CBS would provide the initial review and provide conditions to developers prior to their submitting the SWPPP to ADEC.

This is the process currently used for industrial operations in the Granite Creek watershed. The CBS – as a lease condition - requires developers to submit the federally required SWPPP to the municipality for review and approval prior to beginning lease operations. Conditions are placed on approvals to ensure water quality is protected and stormwater runoff is collected and treated.

Adopting a local SWPPP approval requirement would provide an additional control to reduce the effects of stormwater pollutant runoff from construction sites. For example, the local approval of the SWPPP could provide a vehicle for listing specific requirements for installing appropriate stormwater facilities in new subdivisions and large commercial developments. This would help to avoid poorly executed subdivisions that provide substandard stormwater disposal. CBS would need to determine whether minor subdivisions should be subject to the requirement.

If the requirement for an Erosion and Sedimentation Control Plan discussed in Recommendation ② were adopted, the local CBS approval of the SWPPP would be merged with that Plan review process. Erosion and sedimentation control is one of several elements of an overall stormwater pollution prevention plan.

Small residential land clearing would be exempt from the requirement to file a SWPPP and receive CBS approval under this recommendation. Presently, insufficient staff is available to review, monitor and enforce SWPPP conditions on small residential lots. Large developments offer an “economy of size” and are also currently subject to conditions of municipal code.

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## **APPENDICES**





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# Local Ordinances Governing Nonpoint Source Pollution in Alaska

State of Alaska > Commerce > Community Advocacy > Nonpoint Main Page > Model Ordinances for Nonpoint Source Pollution



## Model Ordinances for Nonpoint Source Pollution

Model Ordinances for Urban Nonpoint Source Pollution, Louisiana Department of Natural Resources.

Model Ordinances to Protect Local Resources, U.S. Environmental Protection Agency. Links to EPA model ordinances by type, below (bulleted list).

- [Aquatic Buffers](#)
- [Erosion & Sediment Control](#)
- [Open Space Development](#)
- [Stormwater Control Operation & Maintenance](#)
- [Illicit Discharges](#)
- [Post Construction Controls](#)
- [Source Water Protection](#)
- [Miscellaneous Ordinances](#)

Model Ordinances for Source Water Protection - USEPA Region 10

Stormwater Pollution Control Manual (King County, Washington)

Example Ordinance for Creating a Wellhead Protection Area District (Oregon)

Model Ordinances (Massachusetts)

Local Zoning and Health Ordinances (New Hampshire)

Land Use and Development Regulations (Skaquit County, Washington)

Groundwater Protection and Siting Ordinance (Hernando County, Florida)

Model Aquifer/Wellhead Protection Ordinance (Tallahassee, Florida)

Interim strategy to reduce nonpoint source pollution: model ordinance; Proposed Comprehensive Plan Amendment (The Metropolitan Council of Minneapolis/St. Paul, Minnesota)

Model Stormwater Management Ordinances (Atlanta, Georgia)

The Rhode Island Coastal Zone Buffer Program

For more information, contact [Sally Cox](#), Planner, Department of Community and Economic Development, at 907-269-4614.

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## Nonpoint Source Pollution Management Measures:

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## Of Interest...

- [Alaska Community Database](#)
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## City and Borough of Juneau Code of Ordinances

### **49.35.510 Drainage plan.**

(a) The developer shall provide a total surface drainage plan for approval by the director of engineering. The plan shall be prepared by a civil engineer licensed to practice in Alaska, shall show all drainage facilities, and shall include the calculated increase in stormwater runoff resulting from the proposed development as well as the runoff from the included drainage area runoff calculations shall be based on a fully developed subdivision and a 25-year storm event. The plan shall include an evaluation of existing drainage ways and structures located between the subdivision and the approved waterway and shall verify that the existing drainage ways can accommodate the increased runoff. Any improvements required due to increased flows shall be included as part of the subdivision improvements. The plan shall show all public and any required private drainage facilities in the subdivision. Changes in the locations of drainage outfalls from the subdivision will not be permitted unless approved by the director of engineering.

(b) All major developments shall be provided with private drainage easements and drainage facilities adequate to prevent increased surface or subsurface runoff to abutting properties. Any drainage improvements required by this section shall be constructed and approved prior to or contemporaneous with the final approval of any required streets.

(Serial No. 87-49, § 2, 1987; Serial No. 95-27, § 9, 1995; Serial No. 2002-20, § 6, 8-5-2002)

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**ANCHORAGE MUNICIPAL CODE  
TITLE 21 LAND USE PLANNING  
Chapter 21.67 Water Pollution Control**

**21.67.050 Storm water runoff restrictions and system plan review.**

- A. The director shall develop, implement, and maintain the Storm Water Treatment Plan Review Guidance Manual, incorporated herein by reference, which shall be used to develop, review, and approve storm water runoff system plans for projects which discharge storm water into or onto land, surface water, or groundwater within the municipality.
- B. Any person who constructs, alters, installs, modifies, or operates a storm water treatment or disposal system shall comply with the Storm Water Treatment Plan Review Guidance Manual established by the director regarding storm water runoff system plan requirements and plan reviews, and if necessary, gather data to confirm storm water conditions.
- C. If construction, alteration, installation, modification or operation has not begun within one year after issuance of plan approval, the approval is void, and plans shall be resubmitted to the department for review and approval.
- D. The director may, in his discretion, issue a project-wide approval to a person who plans to conduct an operation with the same runoff characteristics at various discharge locations. The director may, in his discretion, require the submission of site-specific plans, including a schedule and description of all planned discharge activities, for approval. The director may, in his discretion, restrict that approval to certain proposed discharge activities. The applicant shall pay to the department the fee required under Section 21.67.060 for each site-specific plan review. The applicant shall pay the fee prior to permit issuance.
- E. Any person who performs mechanized land clearing (chainsaws excluded) on undeveloped lots of two acres or more, with no building permit must have a land clearing permit issued by the director and shall comply with the Storm Water Treatment Plan Review Guidance Manual regarding storm water runoff requirements and plan reviews. A temporary native vegetation buffer shall be retained on the perimeter of any undeveloped lot of two acres or more during land clearing equal to or greater than the specified minimum yard setback for that site's zoning district. This buffer shall be at least 15 feet wide on the perimeter of lots in commercial and industrial zoning districts, except where these are adjacent to PLI and/or residential zoning districts, where the temporary buffer shall be a minimum of 30 feet wide. Those buffers of temporary native vegetation in



commercial and industrial zoning districts not essential to the parcel's development shall be retained and protected from disturbance.

This provision shall be reviewed one year from the date of passage.

**(AO No. 2002-117, § 9, 1-28-03)**

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## **ANCHORAGE MUNICIPAL CODE**

### **Title 21. Land Use Planning**

#### **21.85.180. Erosion and sedimentation control.**

All grading, excavating and removal or destruction of natural topsoil, trees or other natural vegetation shall conform to an erosion and sedimentation control plan prepared by the subdivider and approved by the department of public works before the work may commence. The plan shall conform to the guidelines and policies in the report, Soil Erosion and Sediment Control (Municipality of Anchorage, 1978), or any other guidelines and policies on this subject approved by the department of public works, and to the following:

- A. The smallest practical area of land should be exposed at any one time during development.
- B. When land is exposed during development, the exposure should be kept to the shortest practical period of time.
- C. Sediment and other pollutants, including but not limited to oil, grease, nutrients, bacteria and heavy metals generated by development activity, should be removed from runoff waters from land undergoing development by means of appropriate water quality control measures before the runoff waters are permitted to be discharged into natural streams or lakes. Examples of water quality control measures which may be appropriate are debris basins, desilting basins or silt traps, oil/water separators, retention/detention basins and infiltration devices. This applies to groundwater where applicable.
- D. Provisions should be made to effectively accommodate the increased runoff and pollutant loads caused by changed soil and surface conditions during and after development. Such provisions should include both stormwater and water quality control measures.
- E. Ground cover should be replaced as soon as practical in the development.
- F. The development plan should be fitted to the topography and soil conditions so as to create the least erosion potential.
- G. Wherever feasible, natural vegetation should be retained and protected.
- H. All slopes resulting from cut and fill operations shall not exceed a maximum slope of 50 percent. A lesser slope may be deemed necessary by the municipal engineer due to soil conditions. If slopes of greater than 50 percent are desired, such slopes will be supported by a retaining structure approved by the public works department.

I. The proposed construction should not adversely affect spawning of anadromous fish, or significantly reduce upstream fish passage through the creation of excessive in-stream velocities.

(GAAB 21.10.050.C; AMC 21.85.085; AO No. 83-142)

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## Chapter 12.12 STREET IMPROVEMENTS

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### **Section 12.12.070 Erosion and sedimentation plan.**

In the event that any developer shall intend to denude or recontour any land proposed to be subdivided, by means of grading, excavation or the removal of or destruction of the natural topsoil, trees, or other vegetative covering thereof, a plan for erosion and sedimentation control shall be submitted to the city manager for approval prior to any recontouring or denudation being done unless there has been prior determination by the platting authority that such a plan is not necessary. Such plans shall contain adequate measures for control of erosion and siltation, where necessary, using the guidelines and policies contained herein. These plans shall be reviewed by the city manager and, if approved, shall be followed as the plans indicate. If the measures required to control erosion and siltation construction are necessary, such construction shall be a part of the street improvement agreement. The following control measures should be used for an effective erosion and sediment control plan:

- A. The smallest practical area of land should be exposed at any one time during development.
- B. When land is exposed during development, the exposure should be kept to the shortest practical period of time.
- C. Sediment basins (debris basins, desilting basins or silt traps) should be installed and maintained to remove sediment from runoff waters from land undergoing development.
- D. Provisions should be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development.
- E. Groundcover should be replaced as soon as practical in the development.
- F. The development plan should be fitted to the topography and soil conditions so as to create the least erosion potential.
- G. Wherever feasible, natural vegetation should be retained and protected.
- H. All slopes within a subdivision resulting from cut and fill operations shall not exceed a maximum slope of fifty percent unless a lesser slope is deemed necessary by the city manager due to soil conditions. If slopes of greater than fifty percent are desired, such slopes will be supported by a retaining structure approved by the city. (Ord. 255 § 3 (part), 1982)

## Chapter 12.12 STREET IMPROVEMENTS

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### **Section 12.12.050 Drainage.**

An adequate drainage system, which may include necessary storm drainage facilities, drain inlets, manholes, culverts, bridges, and other appurtenances, shall be required in all subdivisions. This system shall take into consideration the preservation of designated high quality wetlands critical to the water table levels and wildlife habitat. (Ord. 255 § 3 (part), 1982)





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## Filling the Gaps: Environmental Protection Options for Local Governments (c) 2003

Written by Katherine Ardizzone, NOAA Coastal Management Fellow for DEQ (2001-2003), and Mark Wyckoff, FAICP and President of Planning & Zoning Center, Inc.



**H**ow we use our land is the foundation of environmental quality. Statewide there are more than 1800 units of local government that have the authority to make land use decisions. *FILLING THE GAPS* was created to equip local officials with important information to consider when making local land use plans, adopting new environmentally focused regulations, or reviewing proposed development. For more information contact the Michigan Coastal Management Program at DEQ: 517-335-3168.

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## APPENDICES

Below are 23 appendices referenced throughout the guidebook which contain sample ordinance language, natural features inventory information, DEQ permit coordination checklist, and other reference materials.

<a href="#">Appendix A</a>	Natural features inventory information (93 KB)
<a href="#">Appendix B</a>	Michigan Environmental Protection Act (100 KB)
<a href="#">Appendix C</a>	"What are Wetlands" and "Wetlands & People" (104 KB)
<a href="#">Appendix D</a>	NREPA, PA 451 of 1994, as amended: §324.30307 (4) (80 KB)
<a href="#">Appendix E</a>	Sample DEQ wetland ordinance (117 KB)
<a href="#">Appendix F</a>	Sample Planning & Zoning Enabling Acts wetland ordinance (129 KB)
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<a href="#">Appendix V</a>	Permit coordination checklist (69 KB)
<a href="#">Appendix W</a>	Additional reference information: including Michigan Regional Planning contacts, and the 2002 MI Land Trust Directory (421 KB)

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## **Stormwater Management Regulations**

### **Definitions**

**DETENTION BASIN** .A structure or facility, natural or artificial, which stores stormwater on a temporary basis and releases it at a predetermined rate. A detention basin may drain completely after a storm event, or it may be a pond with a fixed minimum water elevation between runoff events.

**DISTURBED AREA** .An area of land subject to the removal of vegetative cover and/or earthmoving activities.

**DRAINAGE SYSTEM** .All facilities, areas, and structures which serve to convey, store, or receive stormwater, either on a temporary or permanent basis.

**DRAINAGE WAY** .A natural or artificial facility, area, or structure which conveys or transports stormwater runoff from one location to a different location.

**EROSION** .The removal of soil particles from the land by the action of water, wind, ice, or other geological agents.

**PRIMARY DRAINAGE SYSTEM** .Facilities, structures, and areas which convey, store, or receive runoff from storms up to a 10-year frequency.

**RECEIVING BODY OF WATER** .Any watercourse or wetland into which surface waters are directed, either naturally or artificially.

**RETENTION BASIN** .A holding area for stormwater, either natural or constructed, which does not have a positive outlet. Water is removed from retention basins through infiltration and/or evaporation processes, and may or may not have a permanent pool of water.

**RUNOFF** .The water that flows across the land without seeping into the ground following a rain, snowmelt or irrigation.

**SECONDARY DRAINAGE SYSTEM** .Facilities, structures, and areas which convey, store or receive runoff from storms up to a 100-year frequency without causing serious damage to adjacent properties.

**SEDIMENT** .Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by water.

**STORM WATER MANAGEMENT PLAN** .Maps and written information which describe the way in which stormwater will be controlled, both during and after construction.

**WATERCOURSE** .Any waterway or other body of water having reasonably well defined banks, including rivers, streams, creeks and brooks, whether continually or intermittently flowing; and lakes and ponds, as shown on the official maps of \_\_\_\_ (insert name of jurisdiction).

### **Ordinance Language**

The following language is adapted from a draft Orion Charter Township (Oakland County) Stormwater Management

Ordinance. The draft was substantially expanded to include soil erosion and sedimentation control before it was adopted.

Grand Traverse County has adopted comprehensive stormwater management regulations being administered by the County

Drain Commissioner.

### **Section \_\_\_\_ Performance Standards**

1. Stormwater management areas and facilities, whether on-site or off-site, shall be designed, constructed, and maintained to prevent flooding and protect water quality. The design of any stormwater management system shall be based upon a 25-year frequency 24-hour duration storm event. In order to be approved, all stormwater management plans must meet the following performance standards:
  - a. Runoff leaving the site shall be controlled to a non-erosive velocity, both during and after construction.
  - b. After development, runoff from the site shall approximate the rate of flow, volume, and timing of runoff that would have occurred following the same rainfall under predevelopment conditions. Stormwater management conveyance and storage facilities shall be designed to reduce flood hazards and water pollution related to runoff from the proposed development project.



2. Stormwater storage facilities which protect water quality and prevent adverse flooding on-site and off-site shall be required for all sites of one acre or more. In order to improve the quality of stormwater runoff and reduce the discharge of sediment into \_\_\_ (*insert reference to jurisdiction*) wetlands and watercourses, the following techniques (a-f) and standards (g-i) shall be used:
  - a. Infiltration of runoff, provided that soils and groundwater conditions are suitable.
  - b. Retention basins with a fixed minimum water elevation between runoff events (e.g., wet ponds).
  - c. Detention basins which drain completely after a storm event (e.g., dry basins) but which discharge stormwater to wetlands or constructed basins which trap sediment carried by stormwater runoff
  - d. Detention basins which hold stormwater for more than 24 hours before completely draining to become a dry basin  
(Extended detention basins).
  - e. Detention basins with a positive outlet shall be designed to hold runoff from a 100-year storm event, as a minimum. Retention basins without a positive outlet shall be designed to hold runoff from a 100-year storm event.
  - f. The banks of detention basins shall not exceed a 1:6 slope unless a fence is constructed.
  - g. Natural watercourses shall not be dredged, cleared of vegetation, deepened, widened, straightened, stabilized or otherwise altered without approval from the Michigan Department of Natural Resources and (*insert name of jurisdiction*).
  - h. Discharge of runoff from commercial and industrial sites which may contain oil, grease, toxic chemicals, or other polluting materials shall be prohibited unless approval has been obtained from the Michigan Department of Natural Resources and \_\_\_ (*insert name of jurisdiction*).
  - i. The use of stormwater management areas and vegetated buffer areas as open space, recreation, and conservation areas shall be encouraged.
3. Pipes, conduits, ditches, drains, or other conveyance facilities shall not discharge directly to:
  - a. Any natural watercourses, including lakes, ponds, rivers and streams.
  - b. Wetlands with unique or natural wildlife or habitat characteristics as defined by a professional wetlands delineation specialist, biologist or ecologist.
  - c. Wetlands which are within a 500 foot distance of any natural lake or pond.
  - d. Wetlands which are within a 100 foot distance of any river or stream.
  - e. Discharges from stormwater conveyance facilities shall be routed through swales, vegetated buffer strips, stormwater basins, hydrologically isolated wetlands, and other facilities designed to decrease runoff velocity and volume, allow for natural infiltration, allow suspended solids to settle, and remove pollutants.
  - f. If wetlands are proposed for stormwater detention, runoff must be diffused to non-erosive velocities before it reaches the wetlands.
  - g. Vegetated buffer strips shall be created, or retained in their natural state along the edges of all watercourses and wetlands. The width of the buffer shall be sufficient to prevent erosion, trap the sediment from overland runoff, and buffer structures from periodic flooding.
4. No stormwater management plan shall be approved if the \_\_\_ (*insert title of reviewing body*) finds that the action will or is likely to pollute, impair or destroy air, water or other natural resources or the public trust therein, provided that there is a feasible and prudent alternative consistent with the reasonable requirements of the public health, safety and welfare.



**STORMWATER AND SEDIMENT AND EROSION CONTROL  
ORDINANCE:  
OPERATION AND MAINTENANCE**

**Grand Traverse County, MI**

**Department of Public Works**

**(231) 922 - 4726**

**IX Maintenance**

- A. All soil erosion and stormwater runoff control facilities and measures shall be maintained in accordance with permit conditions.
- B. The person(s) or organization(s) responsible for maintenance shall be designated in the Soil Erosion and Stormwater Runoff Control Plan or the permit application submitted to the Drain Commissioner. Options include:
  - 1. The owner of the property.
  - 2. Property owners association or other nonprofit organization, provided that provisions for financing necessary maintenance are included in deed restrictions or other contractual agreements.
  - 3. Drain Commissioner, in accordance with provisions of the Michigan Drain Code (Public Act 40 of 1956, as amended).
- C. Maintenance agreements shall specify responsibilities for financing maintenance and emergency repairs, including but not limited to the procedures specified in Section XIII and XIV of this ordinance.
- D. The Drain Commissioner will make the final decision of what maintenance option is appropriate in a given situation. Natural features, proximity of site to lakes, streams and protected wetlands, extent of impervious surfaces, size of the site and potential need for ongoing maintenance activities will be considered when making this decision.

**X. Stormwater Management Easements**

- A. Stormwater management easements shall be provided by the property owner if necessary for: (1) access for facility inspections and maintenance, or (2) preservation of stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for the 100-year storm event. The purpose of the easement shall be specified in the maintenance agreement signed by the property owner.

- B. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Drain Commissioner.
- C. Easements shall be recorded with the Grand Traverse County Register of Deeds prior to issuance

- A. Authorized representatives of the Drain Commissioner may enter at reasonable times upon any property to conduct on-site inspections. Such inspections may take place before, during and after any earth change activity for which a permit has been issued.
- B. If upon inspection, existing site conditions are found not to be as stated in the permit or approved Soil Erosion and Stormwater Runoff Control Plan, the permit will be invalid. No earth disrupting work shall be undertaken, or continued, until revised plans have been submitted and a valid permit issued.
- C. Requests for revisions must be submitted to and approved by the Drain Commissioner in writing before being effective unless approved by the field inspector on the site. If approved, a revised site plan shall be submitted for review and approval.

**XIII. Stop-Work Orders and Emergency Actions**

- A. If necessary to assure compliance with the permit requirements, standards, and other provisions of this Ordinance, or to protect public health safety and welfare, the Drain Commissioner may issue a stop-work order for the purpose of preventing or minimizing accelerated soil erosion, stormwater runoff, or other conditions posing imminent and substantial danger to public health, safety, welfare, or natural resources.
- B. If necessary to protect public safety or water resources, including lakes, streams, protected wetlands, and other receiving bodies of water, the Drain Commissioner may initiate emergency action to abate imminent and substantial danger and risk, subject to Section XIV B of this ordinance.
- C. Except as otherwise provided through maintenance agreements, the property owner may be held responsible for reimbursing Grand Traverse County for all costs incurred as a result of emergency action, including administrative costs, provided that a finding is made that the property owner violated provisions of this Ordinance, a permit, or an approved maintenance agreement, subject to Section XIV B of this Ordinance.
- D. The stop-work order, when issued, shall require all specified earth change activities to be stopped. A copy of the stop-work order shall immediately be submitted to other state and local agencies with regulatory jurisdiction.



of a permit by the Drain Commissioner.

## **XI. Compliance Assurances**

### **A. Performance Guarantees**

1. Applicants proposing subdivision plats, road construction projects, or other developments identified by the Drain Commissioner with a high potential for soil erosion shall be required to post a cash escrow, letter of credit, or other acceptable form of performance security in an amount determined by the Drain Commissioner.
2. Letters of credit, if used as a performance guarantee, shall extend for a minimum of one year with the option of renewal. Letters of credit will be returned to the applicant when the site is certified by the licensed professional who designed the site plan and the site is completely stabilized to meet requirements set forth by the Drain Commissioner.

### **B. Construction Certification by Registered Professional**

For any sites that required a professional site plan, a certification letter shall be submitted after soil erosion and stormwater runoff control facilities have been installed to affirm that construction has been completed in accordance with the approved soil erosion and stormwater runoff control plan. This certification letter can be prepared by one of the following registered professionals: civil engineer, land surveyor, architect, and/or landscape architect unless it was specified by the Drain Commissioner that a civil engineer prepare a plan, it would need to be a civil engineer that approves the plan.

If there are changes during the course of construction, the Drain Commissioner may require final "as built" drawings for final approval of the site work.

### **C. Certificate of Compliance**

Upon receipt and approval of the certification letter, the Drain Commissioner shall issue a certificate of compliance to the property owner.

## **XII. Inspections**

- E. If the Drain Commissioner determines that soil erosion and sedimentation of the waters of this state has or will reasonably occur from a parcel of land in violation of this Ordinance, it may seek to enforce the ordinance by notifying the person who owns the land, by mail, with return receipt requested, of its determination. The notice shall contain a description of specific soil and sedimentation control measures which, if implemented by the property owner, would bring the owner into compliance.
- F. A person who owns land subject to this ordinance shall implement and maintain soil erosion and stormwater runoff control measures in conformance with this ordinance within ten (10) days after the notice of violation has been given as specified in Section E above.

#### **XIV. Enforcement Action**

##### **A. General Provisions**

1. All earth changes in Grand Traverse County, including earth changes exempt from permit requirements, are subject to the enforcement provisions and penalties of this ordinance.
2. A person who owns land on which an earth change has been made that may result in or contribute to soil erosion or sedimentation of the waters of the state shall implement and maintain soil erosion and sedimentation control measures that will effectively reduce soil erosion or sedimentation from the land on which the earth change has been made.
3. The Drain Commissioner shall notify the Michigan Department of Natural Resources of all violations of the Michigan Soil Erosion and Sedimentation Control Act (Act 347 of 1972, as amended), or rules, as well as violations of this ordinance, including violations attributable to an earth change created by an authorized public agency.
4. Each act of violation, and every day upon which any violation shall occur or continues to occur, shall constitute a separate offense.
5. A person who has not complied with this ordinance and who, after notice, refuses to implement and maintain soil erosion control and stormwater runoff control measures and facilities in conformance with these regulations shall be subject to a fine of not more than \$500.00 or ninety (90) days in jail, or both, plus the cost of prosecution.







U.S. Environmental Protection Agency


## Model Ordinances to Protect Local Resources

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## Erosion & Sediment Control

By most accounts, the most environmentally dangerous period of development is the initial construction phase when land is cleared of vegetation and graded to create a proper surface for construction. The removal of natural vegetation and topsoil makes the exposed area particularly susceptible to erosion, causing transformation of existing drainage areas and disturbance of sensitive areas.

The model ordinance in this section borrows language from the erosion and sediment control ordinance for Westchester County, New York, and also incorporates some additional features that might help prevent erosion and sedimentation and protect natural resources more fully. The model ordinance will need to be adapted to be broadly applied for several reasons. For example, some of the requirements might not be politically feasible or technically appropriate in all communities. In addition, the ordinance does not strongly correlate with the process by which building permits are granted because the process may vary between communities.

*When you see this symbol, get more information to custom tailor the ordinance to local conditions and authorities.* 

[Model  
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Supporting  
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In addition to the model ordinance, this section includes several other materials that might be useful in drafting an ordinance or as support material:

- **Erosion and Sediment Control Ordinance from Minneapolis, MN**  
Provides a few technical guidelines and references an existing technical document. An example of a very strict ordinance in terms of the sites that are required to submit sediment and erosion control plans.

[WordPerfect Format](#) (95KB, 16pages)

[PDF Format](#) (40KB, 16pages).

- **Clearing and Grading Ordinance from Olympia, WA**  
An example of regulating clearing and grading separately from erosion and sediment control.

[WordPerfect Format](#) (66KB, 11pages)

[PDF Format](#) (28KB, 12pages).

- **Erosion and Sediment Control Inspection Checklist from the Lower Platte South Natural Resources District, NE**  
A good example of a tool that can help contractors or government inspectors effectively maintain erosion and sediment control measures.

[WordPerfect Format](#) (65KB, 3pages)

[PDF Format](#) (9KB, 3pages).

- **Small site design guideline from the Indiana Department of Natural Resources**

An example of a small site guideline. For sites that are not regulated by the ordinance, guidance material like this might help to reduce erosion and sedimentation.

[WordPerfect Format \(42KB, 8pages\)](#)

[PDF Format \(656KB, 7pages\).](#)

- **Pre-Construction Meeting Notice from Montgomery County, MD**

An example notice for a public meeting. Materials like this notice help support the ordinance language and ensure that erosion and sediment control measures are properly installed.

[WordPerfect Format \(13KB, 2pages\)](#)

[PDF Format \(13KB, 3pages\).](#)

Erosion and sediment control is widely accepted as a necessary practice, but there are certain ways to make even the most well-crafted ordinance more effective. First, communities need to have the staff and resources to enforce erosion and sediment control regulations; otherwise, the authority to inspect sites becomes useless. In addition, the technical manual referred to in the ordinance needs to provide useful guidance on selecting erosion and sediment control measures; in particular, it should not include measures that are ineffective. Third, education of contractors, engineers, and designers regarding the importance and effective use of erosion and sediment controls is essential to implementing effective erosion and sediment controls.

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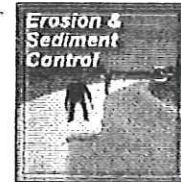
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## Model Ordinances Language

This document is downloadable in WordPerfect format.

<a href="#">Section 1: Introduction/Purpose</a>	<a href="#">Section 6: Design Requirements</a>
<a href="#">Section 2: Definitions</a>	<a href="#">Section 7: Inspection</a>
<a href="#">Section 3: Permits</a>	<a href="#">Section 8: Enforcement</a>
<a href="#">Section 4: Review &amp; Approval</a>	<a href="#">Section 9: Separability</a>
<a href="#">Section 5: Erosion &amp; Sediment Control Plan</a>	<a href="#">References</a>

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### Section I. Introduction/ Purpose

During the construction process, soil is highly vulnerable to erosion by wind and water. Eroded soil endangers water resources by reducing water quality and causing the siltation of aquatic habitat for fish and other desirable species. Eroded soil also necessitates repair of sewers and ditches and the dredging of lakes. In addition, clearing and grading during construction cause the loss of native vegetation necessary for terrestrial and aquatic habitat.

As a result, the purpose of this local regulation is to safeguard persons, protect property, and prevent damage to the environment in \_\_\_\_\_ (municipality). This ordinance will also promote the public welfare by guiding, regulating, and controlling the design, construction, use, and maintenance of any development or other activity that disturbs or breaks the topsoil or results in the movement of earth on land in \_\_\_\_\_ (municipality).

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### Section II. Definitions

#### Certified Contractor

A person who has received training and is licensed by \_\_\_\_\_ (state or local environmental agency) to inspect and maintain erosion and sediment control practices.

#### Clearing

Any activity that removes the vegetative surface cover.

#### Drainage Way

Any channel that conveys surface runoff throughout the site.

#### Erosion Control

A measure that prevents erosion.



**Erosion and Sediment**

A set of plans prepared by or under the direction of a licensed professional engineer

**Control Plan**

indicating the specific measures and sequencing to be used to control sediment and erosion on a development site during and after construction.

**Grading**

Excavation or fill of material, including the resulting conditions thereof.

**Perimeter Control**

A barrier that prevents sediment from leaving a site by filtering sediment-laden runoff or diverting it to a sediment trap or basin.

**Phasing**

Clearing a parcel of land in distinct phases, with the stabilization of each phase completed before the clearing of the next.

**Sediment Control**

Measures that prevent eroded sediment from leaving the site.

**Site**

A parcel of land or a contiguous combination thereof, where grading work is performed as a single unified operation.

**Site Development**

A permit issued by the municipality for the construction or alteration of ground

**Permit**

improvements and structures for the control of erosion, runoff, and grading.

**Stabilization**

The use of practices that prevent exposed soil from eroding.

**Start of Construction**

The first land-disturbing activity associated with a development, including land preparation such as clearing, grading, and filling; installation of streets and walkways; excavation for basements, footings, piers, or foundations; erection of temporary forms; and installation of accessory buildings such as garages.

**Watercourse** Any body of water, including, but not limited to lakes, ponds, rivers, streams, and bodies of water delineated by \_\_\_\_\_ (municipality).

**Waterway**

A channel that directs surface runoff to a watercourse or to the public storm drain.


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## Section III. Permits

- A. No person shall be granted a site development permit for land-disturbing activity that would require the uncovering of *10,000 or more square feet* without the approval of an Erosion and Sediment Control Plan by \_\_\_\_\_ (*erosion and sediment control*)


agency).

 The size of the site regulated under the erosion and sediment control ordinance varies widely. The proposed Phase II of USEPA's National Pollutant Discharge Elimination System (NPDES) rules regulates disturbances greater than 1 acre, but communities may regulate sites as small as 2,000 square feet.

- B. No site development permit is required for the following activities:
1. Any emergency activity that is immediately necessary for the protection of life, property, or natural resources.
  2. Existing nursery and agricultural operations conducted as a permitted main or accessory use.

 Communities may choose to exempt other activities, such as mining, from an erosion and sediment control permit, or in some cases include the exempted uses cited above.

- C. Each application shall bear the name(s) and address(es) of the owner or developer of the site, and of any consulting firm retained by the applicant together with the name of the applicant's principal contact at such firm and shall be accompanied by a filing fee.
- D. Each application shall include a statement that any land clearing, construction, or development involving the movement of earth shall be in accordance with the Erosion and Sediment Control Plan and that a certified contractor shall be on site on all days when construction or grading activity takes place.

 Some states have "Certified Contractor" programs, in which contractors successfully complete a training course in basic erosion and sediment control. This person would be responsible for ensuring the regular maintenance and proper installation of erosion and sediment control measures.

- E. The applicant will be required to file with \_\_\_\_\_ (municipality) a faithful performance bond, letter of credit, or other improvement security in an amount deemed sufficient by \_\_\_\_\_ (erosion and sediment control agency) to cover all costs of improvements, landscaping, maintenance of improvements for such period as specified by \_\_\_\_\_ (municipality), and engineering and inspection costs to cover the cost of failure or repair of improvements installed on the site.

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## Section IV. Review and approval

1. \_\_\_\_\_ (erosion and sediment control agency) will review each application for a site development permit to determine its conformance with the provisions of this regulation. Within 30 days after receiving an application, \_\_\_\_\_ (erosion and sediment control agency) shall, in writing:
  1. Approve the permit application;
  2. Approve the permit application subject to such reasonable conditions as may be necessary to secure substantially the objectives of this regulation, and issue the permit subject to

- these conditions; or
3. Disapprove the permit application, indicating the reason(s) and procedure for submitting a revised application and/or submission.
  2. Failure of the \_\_\_\_\_ (erosion and sediment control agency) to act on an original or revised application within 30 days of receipt shall authorize the applicant to proceed in accordance with the plans as filed unless such time is extended by agreement between the applicant and \_\_\_\_\_ (erosion and sediment control agency). Pending preparation and approval of a revised plan, development activities shall be allowed to proceed in accordance with conditions established by \_\_\_\_\_ (erosion and sediment control agency).


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## Section V. Erosion and Sediment Control Plan

### A. The Erosion and Sediment Control Plan shall include the following:

1. A natural resources map identifying soils, forest cover, and resources protected under other chapters of this code.

 *This map should be at a scale no smaller than 1"=100'. For a more detailed discussion, see the buffer ordinance.*

2. A sequence of construction of the development site, including stripping and clearing; rough grading; construction of utilities, infrastructure, and buildings; and final grading and landscaping. Sequencing shall identify the expected date on which clearing will begin, the estimated duration of exposure of cleared areas, areas of clearing, installation of temporary erosion and sediment control measures, and establishment of permanent vegetation.
  3. All erosion and sediment control measures necessary to meet the objectives of this local regulation throughout all phases of construction and after completion of development of the site. Depending upon the complexity of the project, the drafting of intermediate plans may be required at the close of each season.
  4. Seeding mixtures and rates, types of sod, method of seedbed preparation, expected seeding dates, type and rate of lime and fertilizer application, and kind and quantity of mulching for both temporary and permanent vegetative control measures.
  5. Provisions for maintenance of control facilities, including easements and estimates of the cost of maintenance.
- B. Modifications to the plan shall be processed and approved or disapproved in the same manner as Section IV of this regulation, may be authorized by \_\_\_\_\_ (erosion and sediment control agency) by written authorization to the permittee, and shall include
1. Major amendments of the erosion and sediment control plan submitted to \_\_\_\_\_ (erosion and sediment control agency)
  2. Field modifications of a minor nature


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## Section VI. Design Requirements




1. Grading, erosion control practices, sediment control practices, and waterway crossings shall meet the design criteria set forth in the most recent version of \_\_\_\_\_ (*erosion and sediment control manual*), and shall be adequate to prevent transportation of sediment from the site to the satisfaction of (*erosion and sediment control agency*). Cut and fill slopes shall be *no greater than 2:1*, except as approved by \_\_\_\_\_ (*erosion and sediment control agency*) to meet other community or environmental objectives.
2. Clearing and grading of natural resources, such as forests and wetlands, shall not be permitted, except when in compliance with all other chapters of this Code. Clearing techniques that retain natural vegetation and drainage patterns, as described in \_\_\_\_\_ (*erosion and sediment control manual*), shall be used to the satisfaction of \_\_\_\_\_ (*erosion and sediment control agency*).
3. Clearing, except that necessary to establish sediment control devices, shall not begin until all sediment control devices have been installed and have been stabilized.

 For example, the stream buffer codes as well as the forest conservation code in the "*Miscellaneous Ordinances*" section would also restrict clearing.

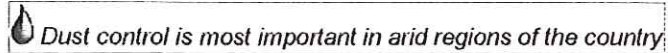
4. Phasing shall be required on all sites disturbing greater than 30 acres, with the size of each phase to be established at plan review and as approved by (*erosion and sediment control agency*).

 Although many communities encourage phasing, few actually require it. Phasing construction can reduce erosion significantly when well designed. (See Claytor, 1997.)

5. Erosion control requirements shall include the following:
  1. Soil stabilization shall be completed within *five days* of clearing or inactivity in construction.
  2. If seeding or another vegetative erosion control method is used, it shall become established within *two weeks* or \_\_\_\_\_ (*erosion and sediment control agency*) may require the site to be reseeded or a nonvegetative option employed.

 Numerical standards regarding the time to stabilization will vary. In particular, the time to establish seeding will depend on the climate.

3. Special techniques that meet the design criteria outlined in (*erosion and sediment control manual*) on steep slopes or in drainage ways shall be used to ensure stabilization.
4. Soil stockpiles must be stabilized or covered at the end of each workday.
5. The entire site must be stabilized, using a heavy mulch layer or another method that does not require germination to control erosion, at the close of the construction season.
6. Techniques shall be employed to prevent the blowing of dust or sediment from the site.



7. Techniques that divert upland runoff past disturbed slopes shall be employed.
6. Sediment controls requirements shall include
  1. Settling basins, sediment traps, or tanks and perimeter controls.
  2. Settling basins that are designed in a manner that allows adaptation to provide long term stormwater management, if required by \_\_\_\_\_ (*erosion and sediment control agency*)
  3. Protection for adjacent properties by the use of a vegetated buffer strip in combination with perimeter controls
7. Waterway and watercourse protection requirements shall include
  1. A temporary stream crossing installed and approved by \_\_\_\_\_ (*approving agency, e.g., Waterways Division, ESC agency*) if a wet watercourse will be crossed regularly during construction
  2. Stabilization of the watercourse channel before, during, and after any in-channel work
  3. All on-site stormwater conveyance channels designed according to the criteria outlined in \_\_\_\_\_ (*erosion and sediment control manual*)
  4. Stabilization adequate to prevent erosion located at the outlets of all pipes and paved channels
8. Construction site access requirements shall include
  1. a temporary access road provided at all sites
  2. other measures required by \_\_\_\_\_ (*erosion and sediment control agency*) in order to ensure that sediment is not tracked onto public streets by construction vehicles or washed into storm drains


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## Section VII. Inspection

1. \_\_\_\_\_ (*erosion and sediment control agency*) or designated agent shall make inspections as hereinafter required and either shall approve that portion of the work completed or shall notify the permittee wherein the work fails to comply with the Erosion and Sediment Control Plan as approved. Plans for grading, stripping, excavating, and filling work bearing the stamp of approval of the \_\_\_\_\_ (*erosion and sediment control agency*) shall be maintained at the site during the progress of the work. To obtain inspections, the permittee shall notify \_\_\_\_\_ (*erosion and sediment control agency*) at least two working days before the following:
  1. Start of construction
  2. Installation of sediment and erosion measures
  3. Completion of site clearing
  4. Completion of rough grading
  5. Completion of final grading

6. Close of the construction season
7. Completion of final landscaping

 *The "Certified Inspector Program" in Delaware allows developers to hire an inspector who has passed a state licensing program. This person would inspect the site at regular intervals and file reports to the erosion and sediment control agency. The agency would then be responsible for spot checks on these reports.*


2. The permittee or his/her agent shall make regular inspections of all control measures in accordance with the inspection schedule outlined on the approved Erosion and Sediment Control Plan(s). The purpose of such inspections will be to determine the overall effectiveness of the control plan and the need for additional control measures. All inspections shall be documented in written form and submitted to \_\_\_\_\_ (erosion and sediment control agency) at the time interval specified in the approved permit.
3. \_\_\_\_\_ (erosion and sediment control agency) or its designated agent shall enter the property of the applicant as deemed necessary to make regular inspections to ensure the validity of the reports filed under Section B.

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## Section VIII. Enforcement

1. Stop-Work Order; Revocation of Permit  
In the event that any person holding a site development permit pursuant to this ordinance violates the terms of the permit or implements site development in such a manner as to materially adversely affect the health, welfare, or safety of persons residing or working in the neighborhood or development site so as to be materially detrimental to the public welfare or injurious to property or improvements in the neighborhood, \_\_\_\_\_ (erosion and sediment control agency) may suspend or revoke the site development permit.
2. Violation and Penalties  
No person shall construct, enlarge, alter, repair, or maintain any grading, excavation, or fill, or cause the same to be done, contrary to or in violation of any terms of this ordinance. Any person violating any of the provisions of this ordinance shall be deemed guilty of a misdemeanor and each day during which any violation of any of the provisions of this ordinance is committed, continued, or permitted, shall constitute a separate offense. Upon conviction of any such violation, such person, partnership, or corporation shall be punished by a fine of not more than \$ \_\_\_\_\_ for each offense. In addition to any other penalty authorized by this section, any person, partnership, or corporation convicted of violating any of the provisions of this ordinance shall be required to bear the expense of such restoration.

 *Specific penalties will vary between communities and should reflect enforceable penalties given the political realities of a jurisdiction.*



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## Section IX. Separability

The provisions and sections of this ordinance shall be deemed to be separable, and the invalidity of any portion of this ordinance shall not affect the validity of the remainder.

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## References

Claytor, R. 1997. Practical Tips for Construction Site Phasing. *Watershed Protection Techniques* 2(3): 413-417.

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## Model Ordinances to Protect Local Resources

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## Stormwater Control Operation & Maintenance

The expense of maintaining most stormwater best management practices (BMPs) is relatively small compared to the original construction cost. Too frequently, however, BMP maintenance is not completed, particularly when the BMP is privately owned. Improper maintenance decreases the efficiency of BMPs and can also detract from the aesthetic qualities of the practice. The operation and maintenance language within a stormwater ordinance can ensure that designs facilitate easy maintenance and that regular maintenance activities are completed.

This section includes [model ordinance language](#), which focuses primarily on the maintenance of stormwater BMPs, and includes the elements of design, routine maintenance, and inspections. Stormwater ordinance language regarding the maintenance of erosion control measures would differ slightly from a sediment and erosion control ordinance due to the short-term nature of these measures. In addition, it is important to note that elements such as the process of applying for a permit would be included in more comprehensive sediment and erosion control or stormwater ordinances. Areas where additional information might be useful are indicated with the following symbol:

 When you see this symbol, it is time to make a decision or get more information.

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This section includes additional materials from localities around the country:

### 1. Ordinance Language from Grand Traverse County, MI

This ordinance language provides an example of operation and maintenance for both stormwater and erosion and sediment control.

[WordPerfect Format](#) (23KB, 6pages)

[PDF Format](#) (13KB, 6pages).

### 2. Example maintenance agreement from Albemarle County, VA

This document provides an example of an agreement that places the responsibility of maintenance on the property owner.

[WordPerfect Format](#) (22KB, 5pages)

[PDF Format](#) (11KB, 6pages).

### 3. Easement and ROW agreement from Montgomery County, MD

This document ensures that ample space is provided near a BMP for inspection and maintenance.

[WordPerfect Format](#) (10KB, 4pages)

[PDF Format](#) (6KB, 4pages).

### 4. Anne Arundel County, MD Inspection Checklist

This pond inspection list is an example of a useful field tool to ensure

maintenance of BMPs.

[WordPerfect Format](#) (18KB, 2pages)

[PDF Format](#) (10KB, 3pages).

#### 5. Performance Bond from Colorado

Performance bonds can be used to provide an incentive for both proper construction and long-term maintenance of BMPs.

[WordPerfect Format](#) (57KB, 18pages)

[PDF Format](#) (59KB, 19pages).

Some important elements of effective stormwater operation and maintenance ordinance language are the specification of a specific entity responsible for long-term maintenance and reference to regular inspection visits. The ordinance should also address design guidelines that can help ease the maintenance burden, such as the inclusion of maintenance easements.

Although language that legally requires operation and maintenance of stormwater BMPs is important, there might be a disjoint between the ordinance language and what happens "on the ground." In this section, the information provided in support of the ordinance, such as maintenance agreements and inspection checklists, is as important as the ordinance to ensuring that stormwater BMPs perform efficiently over time.

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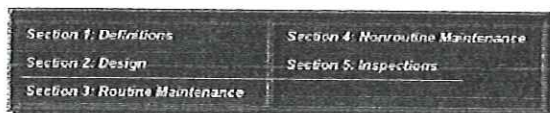
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## Model Ordinances Language

This document is downloadable in WordPerfect format.


[Model Ordinances Language](#)
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 *"Operation Maintenance and Management of Stormwater Management Systems" by the Watershed Management Institute.*

 *Unlike other model ordinances, the operation and maintenance ordinance language is not "stand-alone". Operation and maintenance language would be a part of a broader stormwater ordinance.*



### Section I. Definitions

#### Best Management Practice (BMP)

Structural device, measure, facility or activity that helps to achieve stormwater management control objectives at a designated site.


#### Plan


A document approved at the site design phase that outlines the measures and practices used to control stormwater runoff at a site.

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### Section II. Design


- A. All stormwater BMPs shall be designed in a manner to minimize the need for maintenance and reduce the chances of failure. Design guidelines are outlined in the most recent version of \_\_\_\_\_ (local or state stormwater manual).

 *Rather than incorporate specific stormwater design or maintenance standards into the ordinance itself, it is best to reference "the most recent version" of a stormwater manual. This way, technical information can remain up-to-date without making legal changes to the ordinance.*

 *The Maryland Stormwater Design Manual is one example of an*

*up-to-date stormwater design manual that explicitly defines design and regular maintenance measures. For more information, go to [www.mde.state.md.us](http://www.mde.state.md.us). Under topics, choose "Stormwater Design Manual."*

- B. Stormwater easements and covenants shall be provided by the property owner for access for facility inspections and maintenance. Easements and covenants shall be recorded with \_\_\_\_\_ (stormwater agency) prior to the issuance of a permit.
- C. Final design shall be approved by \_\_\_\_\_ (stormwater agency)


 An example stormwater easement from Montgomery County, Maryland is included in this section.

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### Section III. Routine Maintenance

- A. All stormwater BMPs shall be maintained according to the measures outlined in the most recent version of \_\_\_\_\_ (local or state stormwater manual), and as approved in the permit.
- B. The person(s) or organization(s) responsible for maintenance shall be designated in the plan. Options include
1. Property owner
  2. Homeowner's association, provided that provisions for financing necessary maintenance are included in deed restrictions or other contractual agreements
  3. \_\_\_\_\_ (stormwater management agency)
- C. Maintenance agreements shall specify responsibilities for financing maintenance.

 For an example of a maintenance agreement, see the maintenance agreement from Albemarle County, Virginia.

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### Section IV. Non-Routine Maintenance

Non-routine maintenance includes maintenance activities that are expensive but infrequent, such as pond dredging or major repairs to stormwater structures.

- A. Nonroutine maintenance shall be performed on an as-needed basis based on information gathered during regular inspections.
- B. If nonroutine maintenance activities are not completed in a timely manner or as specified in the approved plan, \_\_\_\_\_ (stormwater agency) may complete the necessary maintenance at the owner's/operator's expense.

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## V. Inspections

- A. The person(s) or organization(s) responsible for maintenance shall inspect stormwater BMPs on a regular basis, as outlined in the Plan.
- B. Authorized representatives of \_\_\_\_\_ (stormwater agency) may enter at reasonable times to conduct on-site inspections or routine maintenance.
- C. For BMPs maintained by the property owner or homeowner's association, inspection and maintenance reports shall be filed with \_\_\_\_\_ (stormwater agency), as provided for in the plan.
- D. Authorized representatives of \_\_\_\_\_ (stormwater agency) may conduct inspections to confirm the information in the reports filed under Section C.

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## Illicit Discharges

An illicit discharge is defined as any discharge to the municipal separate storm sewer system that is not composed entirely of storm water, except for discharges allowed under a NPDES permit or waters used for firefighting operations. These non-stormwater discharges occur due to illegal connections to the storm drain system from business or commercial establishments. As a result of these illicit connections, contaminated wastewater enter into storm drains or directly into local waters before receiving treatment from a wastewater treatment plant. Illicit connections may be intentional or may be unknown to the business owner and often are due to the connection of floor drains to the storm sewer system. Additional sources of illicit discharges can be failing septic systems, illegal dumping practices, and the improper disposal of sewage from recreational practices such as boating or camping.

Illicit discharge detection and elimination programs are designed to prevent contamination of ground and surface water supplies by monitoring, inspection and removal of these illegal non-stormwater discharges. An essential element of these programs is an ordinance granting the authority to inspect properties suspected of releasing contaminated discharges into storm drain systems. Another important factor is the establishment of enforcement actions for those properties found to be in noncompliance or that refuse to allow access to their facilities. The [model ordinance](#) in this section includes language to address illicit discharges in general, as well as illicit connections from industrial sites. The language is borrowed from a number of ordinances and communities will need to assess what enforcement methods are appropriate for their area.

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### 1. Fort Worth, Texas Environmental Code-Stormwater Protection

Fort Worth's ordinance has been used as a model by many other communities around the country and their illicit connection detection program has been recognized nationally.

[WordPerfect Format](#) (68KB, 22pages)[PDF Format](#) (64KB, 21pages).

### 2. Washtenaw County, Michigan Regulation for Inspection of Residential Onsite Disposal Systems at Property Transfer

Failing septic systems are recognized as a source of pollutants, especially nitrogen and bacteria. This ordinance seeks to identify those systems that may be contributing excessive pollutant loadings by requiring that inspections be done a time of sale or title transfer.

[WordPerfect Format](#) (67KB, 12pages)[PDF Format](#) (38KB, 12pages).

### 3. Metropolitan St. Louis Sewer District Sewer Use

Ordinance Sewer use ordinances are designed to control pollutant discharges to the sanitary sewer system. Since cross connections often occur between sanitary and storm sewer systems, the regulation

of discharges can help reduce contamination of stormwater runoff.

[WordPerfect Format](#) (128KB, 30pages)

[PDF Format](#) (125KB, 29pages).

#### 4. City of Monterey, California Stormwater Ordinance

The City of Monterey was part of a Model Urban Runoff Program designed to be used by small municipalities under 100,000 in population. The Model Program includes a "Stormwater Discharge Management Ordinance" which provides the legal authority required to regulate illicit discharges.

[WordPerfect Format](#) (77KB, 10pages)

[PDF Format](#) (27KB, 10pages).

#### 5. Montgomery County, Maryland Illicit Discharge Ordinance

This ordinance includes illegal discharge restrictions for agriculture and includes language that provides the Director of Environmental Protection with significant latitude for illicit discharge control.

[WordPerfect Format](#) (36KB, 8pages)

[PDF Format](#) (20KB, 8pages).

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## Model Stormwater Management Ordinances

### Deliverables

#### **Purpose of Project:**

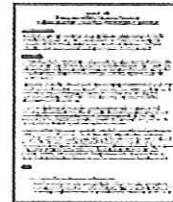
To prepare one or more model ordinances for local governments designed to provide for effective stormwater management. Such model ordinances shall also include minimum design and development standards for local development as it may affect stormwater run-off quality and stormwater conveyance and infrastructure standards applicable to local governments.

#### **Background:**

Local ordinances are the implementation vehicle for many stormwater and nonpoint source control program objectives. They can include provisions for stormwater management requirements (both water quantity and quality) for development activities, erosion and sediment control, the prohibition of non-stormwater discharges to municipal storm sewers, and other nonpoint source pollution prevention measures.

Though many communities in the District area have implemented stormwater ordinances and other nonpoint source control statutes, many have not. Further, many of the existing ordinances need to be updated to reflect new regulatory programs, including TMDLs and NPDES MS4 Phase I and Phase II requirements, and the recommendations from the Georgia Stormwater Management Design Manual. The project proposes to develop a set of updated model stormwater and development ordinances to assist District communities to effectively address stormwater management needs and requirements.

#### **Scope of Work**




#### **Fact Sheet**



District communities are facing new requirements in the area of stormwater management and the control of nonpoint source pollution. The majority of stream miles in the District, on the State 303(d)/305(b) list for not fully supporting designated uses, are listed due to urban runoff or nonpoint source pollution and have or will have requirements to meet TMDLs. In addition, many communities will have a need to incorporate the results of Watershed Assessments and the results of the Georgia Stormwater Management Design Manual recommendations into their local programs. Therefore, new model stormwater ordinances need to be developed to include and address additional stormwater management issues and needs of the local stormwater programs.

### **Deliverables**

Most of the documents on this page are Adobe PDF files. You will need the Adobe Acrobat Reader to view them 

#### **Final Model Stormwater Management Ordinances - (September 25, 2003)**

- [Table of Contents](#)
- [Introduction, Background, and Summary of Model Stormwater Management Ordinances](#)
- [Model Ordinance for Post-Development Stormwater Management for New Development and Redevelopment](#)
  - [Word Version](#)
- [Model Floodplain Management/Flood Damage Prevention Ordinances](#)
  - [Word Version](#)
- [Model Conservation Subdivision/Open Space Development Ordinance](#)
  - [Word Version](#)
- [Model Illicit Discharge and Illegal Connection Ordinance](#)
  - [Word Version](#)
- [Model Litter Control Ordinance](#)
  - [Word Version](#)

- [Model Stream Buffer Protection Ordinance \(New\)](#)
    - [Word Version](#)
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#### **Final Model Stormwater Management Ordinances - (Adopted October 3, 2002)**

- Task 10 Deliverable
    - [Table of Contents](#)
    - [Introduction, Background, and Summary of Model Stormwater Management Ordinances](#)
    - [Model Ordinance for Post-Development Stormwater Management for New Development and Redevelopment](#)
    - [Model Floodplain Management/Flood Damage Prevention Ordinances](#)
    - [Model Conservation Subdivision/Open Space Development Ordinance](#)
    - [Model Illicit Discharge and Illegal Connection Ordinance](#)
    - [Model Litter Control Ordinance](#)
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#### **Final Draft Model Stormwater Management Ordinances - (Posted August 22, 2002)**

- Task 9 Deliverable
  - [Cover Memorandum](#)
  - [Table of Contents](#)
  - [Background and Summary of Final Draft Model Ordinances](#)
  - [Final Draft Model Ordinance for Post-Development Stormwater Management for New Development and Redevelopment](#)
  - [Final Draft Model Floodplain Management/Flood Damage Prevention Ordinance](#)
  - [Final Draft Model Conservation Subdivision/Open Space Development Ordinance](#)
  - [Final Draft Model Illicit Discharge and Illegal Connection Ordinance](#)
  - [Final Draft Model Litter Control Ordinance](#)
  - [Final Draft Model Stream Buffer Protection Ordinance](#)

#### **Public Review Process, Comments & Responses for the Draft Model Stormwater Management Ordinances - (Posted August 26, 2002)**

- Task 9 Deliverable
  - [Part 1 \(1.81 MB\)](#)
  - [Part 2 \(2.87 MB\)](#)

#### **Red-lined Draft Model Stormwater Management Ordinances - (Posted August 22, 2002)**

- Task 9 Deliverable
    - [Red-lined "Draft Model Ordinance for Post-Development Stormwater Management for New Development and Redevelopment"](#)
    - [Red-lined "Draft Model Stream Buffer Protection Ordinance"](#)
    - [Red-lined "Draft Model Floodplain Management/Flood Damage Prevention Ordinance"](#)
    - [Red-lined "Draft Model Conservation Subdivision/Open Space Development Ordinance"](#)
    - [Red-lined "Draft Model Illicit Discharge and Illegal Connection Ordinance"](#)
    - [Red-lined "Draft Model Litter Control Ordinance"](#)
- 

- [Task 8 Deliverable - Draft Model Stormwater Management Ordinances](#) (Posted for Public Review May 6, 2002)
-





## **Background and Summary of Draft Model Stormwater Management Ordinances**

With a finite water resource and a growing population, the need to carefully and cooperatively manage and protect metropolitan Atlanta's rivers and streams has become a priority. The Metropolitan North Georgia Water Planning District (S.B. 130) was established May 1, 2001 to develop regional and watershed specific plans for stormwater management, wastewater management and water supply and conservation in a 16-county area which includes Bartow, Cherokee, Clayton, Cobb, Coweta, DeKalb, Douglas, Fayette, Fulton, Forsyth, Gwinnett, Hall, Henry, Paulding, Rockdale and Walton counties.

Effective stormwater management and watershed protection is a critical to the District area to protect water resources, environmental health and the quality of life in the greater metropolitan area.

Local ordinances are an important implementation vehicle for many stormwater and nonpoint source pollution control program objectives. They can include provisions for stormwater management requirements (both water quantity and quality) for development activities, the prohibition of non-stormwater discharges to municipal/county storm sewers, and other nonpoint source pollution prevention measures.

As such, the enabling legislation for the District (Official Code of Georgia Annotated § 12-5-582(a)) provides that:

*"Within one year after the effective date of this article, unless such time period is extended by majority vote of the board, the district shall prepare for public comment one or more model ordinances for local governments designed to provide for effective storm-water management. Such model ordinances shall also include minimum design and development standards for local development as it may affect storm-water run-off quality and storm-water conveyance and infrastructure standards applicable to local governments. Upon receipt of public comment, the district shall finalize the model ordinances and publish the same."*

The District Planning Staff assembled and prepared this group of draft model ordinances for this purpose. These draft model ordinances were prepared over the course of the past six months in conjunction with the Water District Stormwater Technical Subcommittee, as well as the six (6) Water District Basin Advisory Councils (BACs).

At the outset, the Staff worked with the Technical Committee and BACs to identify the stormwater management needs that should be addressed through one or more model ordinances. Based upon feedback received, it was clear that several model



**Background and Summary: Draft Model Ordinances**  
**Page 2 (May 6, 2002)**

ordinances would need to be prepared in order to address the many different aspects of the stormwater management problem. After a needs summary was developed, the District Staff thoroughly reviewed existing ordinances from District communities and other parts of the country, as well as existing model ordinances. Though many communities in the District have implemented some level of stormwater-related regulations, many have not addressed the issue comprehensively. Therefore, a suite of stormwater management model ordinances was proposed in order to provide a package of tools to the District localities to effectively address stormwater management issues as well as to provide for consistent regulations across the 16-county District area.

A summary of this review was provided to the Technical Committee and BACs. Based upon the needs summary and ordinance review, District Staff prepared an outline of potential ordinances for comment. This outline was used to prepare a set of preliminary draft ordinances. Feedback on the preliminary draft ordinances (with the exception of the Floodplain ordinance which was not available) was used to prepare this set of Draft Model Stormwater Management Ordinances for public review.

During the process of developing these draft ordinances a number of other topics and measures were also discussed. Staff developed a list of these topics that are recommended for further consideration as part of the District's long-term plans. Moreover, the District's legislation provides for making further modifications to the ordinances based on recommendations from the District-wide Watershed Management Plan and specifically identifies that stormwater retrofits should be addressed at that time.

O.C.G.A. § 12-5-582(b)(7) provides that the District-wide Watershed Management Plan shall include:

*The model ordinances established under subsection (a) of this Code section and any recommended additions or modifications to such model ordinances, if appropriate, to provide additional measures to improve storm-water run-off quality, including without limitation requirements to retrofit or modify existing developments in order to improve storm-water run-off quality.*

The following is a list of the Draft Model Stormwater Management Ordinances that were developed with a brief description of each ordinance and a list of the additional measures that were considered but are being recommended for further study as part of the District's Long-term plans.

**I. Draft Model Ordinance for Post-Development Stormwater Management For New Development and Redevelopment**

**Description:** This model ordinance addresses post development stormwater management requirements for new development and redevelopment in a community. The ordinance will

**Background and Summary: Draft Model Ordinances**  
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define requirements for a stormwater management plan required before a project begins. This plan must contain details of how the development will address post-development stormwater runoff quality and quantity impacts from the development. The ordinance also outlines the technical performance criteria for managing runoff quality and quantity and specifies local requirements for the use of structural stormwater controls and nonstructural practices (such as greenspace preservation). Ongoing inspection and maintenance provisions are provided. The majority of technical criteria and standards are adopted by reference through the use of a local stormwater management design manual.

**II. Existing State Model Soil Erosion and Sedimentation Control Ordinance**

**Description:** There is an existing state model ordinance to address erosion control during construction. In order to not duplicate efforts it is recommended that local governments follow the current state model from the Manual for Erosion and Sedimentation Control in Georgia (green book). The Georgia Department of Natural Resources website [www.dnr.state.ga.us/dnr/envIRON](http://www.dnr.state.ga.us/dnr/envIRON) contains this manual. We are not including a copy for review.

There are ongoing efforts at the state level to consolidate the federal construction and state permits, as the state approach and/or manual is amended/updated, local governments will need to amend/update their programs as well.

**III. Draft Model Stream Buffer Protection Ordinance**

**Description:** The stream buffer protection ordinance outlines minimum buffer requirements for rivers and streams. In this draft the minimum widths for the vegetative buffer and impervious surface setbacks are left blank in order to take into account the recommendations of the District-wide Watershed Plan which should be available at the end of this year. However, this ordinance is being put forth to solicit public comment on the buffer width and other aspects of the ordinance. The model also recommends approval and enforcement procedures. Language is included that addresses existing regulations and that allows for the adoption of buffers stricter than the minimums.

**IV. Draft Model Floodplain Management / Flood Damage Prevention Ordinance**

**Description:** Floodplain management regulations aim to protect public safety, minimize both public and private losses due to potential flooding from stormwater runoff and protect the floodplain functions that manage water quantity and quality. This model ordinance will aim to help communities integrate floodplain management with stormwater management.



**V. Draft Model Conservation Subdivision/Open Space Development Ordinance**

**Description:** This section contains a model ordinance prepared by Seth Wenger and Laurie Fowler of the UGA Institute of Ecology Office of Public Service and Outreach. The model ordinance provides for conservation subdivisions in residential zones.

**VI. Draft Model Illicit Discharge and Illegal Connection Ordinance**

**Description:** An illicit discharge is defined as any discharge to a storm drainage system or surface water that is not composed entirely of stormwater runoff (except for discharges allowed under an NPDES permit or waters used for firefighting operations). These model ordinances provide communities with the authority to deal with illicit discharges and establishes enforcement actions for those properties found to be in noncompliance or that refuse to allow access to their facilities.

**VII. Draft Model Litter Control Ordinance**

**Description:** Often the final destination of litter is streams, rivers and lakes. Litter control ordinances provide a prohibition against littering and provide an enforcement mechanism with penalties for dealing with those found littering. This ordinance is modeled on the "Georgia Litter Control Law" (O.C.G.A. §16-7-40 et. Seq.) and adoption of this ordinance is authorized by O.C.G.A §16-7-48.

**VIII. Other model ordinance/stormwater topics that will be considered during the development of the long-term plans**

The measures listed below are topics that were reviewed and discussed with both the Technical Subcommittee and the Basin Advisory Councils. We are not recommending that these measures be included in the Model Ordinance(s) at this time. However, these measures will be studied as part of the District's Long-term plans and may be considered for inclusion in the Model Ordinances at some future time.

- Inspection of Septic Tanks
- Retrofit of Existing Areas
- Impervious Surface Limitations
- Maximum Roadway Widths
- Maximum Parking Ratios
- Building and Impervious Surface Setbacks
- Clearing and/or Grading Limitations
- Source Water / Watershed Protection Districts
- Fertilizer Application
- Grease Control
- Pollution Prevention/Good Housekeeping
- Tree Protection



**Background and Summary: Draft Model Ordinances**  
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The enclosed Draft Model Stormwater Ordinances were presented to the District Board at their May 2, 2002 meeting and released for a formal public comment period. This public comment period will end on June 19, 2002. Following the public comment period, the staff will then work with the District Stormwater Technical Subcommittee to incorporate comments. It is anticipated that the Board will consider a finalized set of Model Ordinances for adoption on August 1, 2002.

Following adoption by the District Board, local governments in the District will be expected to adopt these models or something as least as effective. This requirement can be found in O.C.G.A. § 12-5-582(e)(1) - (4).