

1. Introduction

In Oregon it is no longer possible to ignore the connection between urban development and degraded water quality. Extensive findings demonstrate that our urban streams do not meet state water quality standards, and do not adequately support native salmon populations (See Chapter 2). The best way to reverse these trends is to think differently about land use planning at the local level. Local governments are already rethinking the connection between land use and transportation as it relates to air quality. The new challenge is to amend local plans and codes to protect water quality. But don't panic! Many of the strategies designed to reduce the impact of urbanization on air quality also support efforts to reduce impacts on water quality and aquatic habitat.

The Water Quality Model Code and Guidebook is a companion to the *Model Development Code and User's Guide for Small Cities*. Developed by the Department of Land Conservation and Development and the Department of Transportation under the Transportation and Growth Management Program (TGM). This guidebook integrates many of the "smart development" inspired code recommendations of the TGM project with recommended code language to achieve water quality objectives. Where the two objectives do not overlap, we have tried to assure that there would be no conflicts.

So dig in, and spend some time figuring out what will work for your city or county. How will you and your community reach a level of confidence that new development and re-development in your jurisdiction will not further degrade water quality and aquatic habitat? This task is not an easy one, but the model codes and guidance contained in this document will make it doable.

Urban Impacts on Water Quality

This guidebook is targeted at the cumulative impact of development activities that result in degradation of streams, lakes and groundwater. Water pollution in urban areas can result from land uses and development that:

- Discharge pollution (such as suspended solids, sediments and nutrients) into surface water and groundwater from stormwater;
- Affect water quality by increasing temperature, changing pH, or reducing dissolved oxygen; or
- Diminish the resilience of natural systems by removing vegetation, channelizing streams or increasing impervious areas in a watershed.

The impacts of urban development result from the accumulation of many small actions. Each action may have a small individual impact, but the combined cumulative effects are large. The cumulative impacts of urbanization and other human activities are often called "nonpoint source pollution". The term is in contrast to "point source" pollution, which refers to discharges from sewage treatment plants and factories.

1.1 Local Government's Role in Protecting Water Quality

The values and benefits of protecting water quality are many. Healthy water bodies provide valuable fish and wildlife habitat, aesthetic resources, recreational opportunities, and safe drinking water supplies. Water quality is an integral part of our individual and community well-being. To best protect water quality and aquatic habitat, sensitive environmental

resources such as riparian areas, wetlands, steep slopes, flood plains, etc. need to be identified, mapped and protected before other land use actions are considered. Developments need to occur that limit impervious and its effects on the natural hydrology of a watershed.

Much information is available to local communities and decision makers on the water quality impacts of urban development. Knowledge of these impacts and the rationale for selecting a particular management solution is an important step in initiating amendments to comprehensive plans and development codes. (See Chapter 5 for a list of web sites and handbooks designed for local government officials, concerned citizens and planners).

Water quality is regulated and protected through numerous federal laws and regulations, including the Clean Water Act and the Safe Drinking Water Act. The Oregon Department of Environmental Quality (DEQ) implements and enforces provisions of these federal acts and state water quality standards. The National Marine Fisheries Service (NMFS), U.S. Fish and Wildlife Service (USFWS) and the Oregon Department of Fish and Wildlife (ODF&W) also play a role in regulating Oregon water quality and aquatic habitat, through their listing of indigenous fish species as threatened or endangered. Many of these regulations have components that place requirements on local governments, or impose a liability on a local government whose actions result in degradation of water quality and salmon habitat.

Local governments have an interest and a responsibility to participate in water quality and aquatic habitat restoration efforts.

1.2 The Goal of this Guidebook

The goal of this guidebook is to provide local communities, both small cities and counties, with a practical guide to protecting and enhancing water quality through improved land use regulations. The guidebook includes both model zoning code ordinances and comprehensive plan policies that are ready for implementation. It also provides references to other publications and resources which provide background information on the link between development activity and water quality.

Protecting Water Quality Means Protecting Beneficial Uses, Including Aquatic Life

The Department of Environmental Quality (DEQ) is mandated by the federal Clean Water Act to protect water quality by establishing standards to protect beneficial uses. Beneficial uses are defined by law, and include such things as recreation, aquatic life, fisheries, irrigation, and drinking water. While there may be competing beneficial uses in a river or a stream, federal law requires the DEQ to protect the most sensitive of these beneficial uses. For most surface waters in Oregon the most sensitive beneficial use is salmonid habitat, and the standards are set to protect salmon.

The DEQ's standards include parameters such as bacteria, pH, turbidity, dissolved oxygen, temperature, total dissolved gas, certain toxic and carcinogenic compounds, habitat and flow modification, and aquatic weeds or algae that affect aquatic life. Chapter 4 contains comparison between these parameters and the best management practices found in this guidebook.

As with any change in local land use regulations, Oregon law requires public involvement. A community discussion about changes to the zoning code and comprehensive plan is a critical step towards protecting and enhancing water quality through the local comprehensive plan and implementing ordinances.

This guidebook includes an evaluation of the Statewide Planning Goals as they apply to water quality and aquatic habitat protection. Many of the model ordinances found in this guidebook can probably be implemented without alteration to existing comprehensive plans. Comprehensive plan amendments are recommended for those communities that have not adequately acknowledged the full range of impacts development activities can have on water quality and aquatic habitat. Model comprehensive plan language is included in Chapter 3 of this guidebook.

This guidebook provides many of the tools needed to comply with state and federal regulations. Staff members from the Department of Land Conservation and Development, Department of Environmental Quality and National Marine Fisheries Service have participated in drafting the guidebook. Each unique jurisdiction is responsible for determining how to best comply with state and federal regulations.

1.3 What's in this Guidebook

This guidebook provides all the information needed for a community to adapt their development codes and comprehensive plan to reduce impacts on water quality and aquatic habitat. It is organized in five chapters plus an appendix.

Chapter 1 Introduction

Chapter 2
Chapter 2 describes the regulatory context for addressing water quality through local land use regulations. The chapter describes all of the federal and state water quality laws and how those laws apply to local jurisdictions.

Chapter 3
Chapter 3 provides model comprehensive plan language, organized by the applicable Statewide Planning Goals. The language recognizes the current understanding of urban impacts on water quality, and highlights sources of information, specific to local jurisdictions, on which policies and implementing ordinances can be based.

Chapter 4
Chapter 4 includes the model zoning ordinance language. The chapter begins with a matrix describing each of the strategies the model ordinance language is meant to implement, from streamside buffers to impervious cover reductions. The matrix shows the effect of each strategy on various types of pollution, based on extensive literature research. The matrix will help explain the relevance of each model ordinance to the enhancement and protection of water quality and aquatic habitat.

Chapter 5

Chapter 5 provides a list of resources and educational materials that local communities can use when updating zoning codes and comprehensive plans to protect and enhance water quality.

Appendix

The appendix contains resources to help a community implement the model ordinances found in Chapter 4, including various manuals and sources of technical information. The appendix includes an ordinance encouraging zero effective impervious surfaces for new development, and an updated flood hazard ordinance.

1.4 Using the Model Code

There are two types of model ordinances found within Chapter 4 of this guidebook. The first type provides alterations to the *Model Development Code & User's Guide for Small Cities* published by the Department of Land Conservation and Development. The changes recommended to the *Model Development Code* are described, and the actual recommended code language is shown within a textbox. The *Model Development Code* numbering is referenced to make cross referencing easy.

The other type of model ordinance is a complete ordinance ready for adoption. These types of ordinances include overlay districts, erosion prevention and sediment control and tree preservation. These ordinances are meant either to replace the current corresponding ordinance in total, or to add a new section to the development code to help protect and enhance water quality.

All model code language is found in text boxes (see example above). Within each text box the material to be customized by the local jurisdiction is included in [brackets]. In the above example the range of suggested maximum lot coverage is included in a bracket for each building type. Brackets also show where a decision needs to be made about what zoning districts should be applied by this provision. When the word [jurisdiction] is in brackets the name of the city or county or the word "city" or "county" should be inserted.

Lot Coverage - Sample Code Provisions: (excerpted from Section 2.1.160 of the Model Development Code and User's Guide for Small Cities)

1. Maximum Lot Coverage. As applicable, the following standards shall apply in the [R-1 and R-2 zones / list appropriate zones]:
 - a. Single Family Detached Housing – [30 - 50] percent
 - b. Duplex and Triplex Buildings - [40 - 60] percent
 - c. Single Family Attached Townhomes - [60 - 70] percent
 - d. Multiple Family Housing Developments - [40 - 60] percent
 - e. Neighborhood Commercial and Mixed Use Buildings - [70 - 90] percent