Stormwater Management

FOR EASTERN WASHINGTON

Model Municipal Stormwater Program for Eastern Washington

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

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Washington State Department of Ecology
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Table of Contents

Chapter 1 – Introduction
- 1.1 Overview
- 1.2 Background
- 1.3 Organization of this Model Program
- 1.4 How to Use this Model Program
- 1.5 Getting Ready for Phase II: What should an Eastern Washington Community Do To Prepare?
- 1.6 Funding Options
- 1.7 Acknowledgements

Chapter 2 – Stormwater Public Education Program
- 2.1 Requirements
- 2.2 Benefits/Why This Program is Important
- 2.3 Model Program for Stormwater Public Education
- 2.4 Resources

Chapter 3 – Stormwater Public Involvement/Participation Program
- 3.1 Requirements
- 3.2 Benefits/Why This Program is Important
- 3.3 Model Program for Stormwater Public Involvement/Participation
- 3.4 Resources

Chapter 4 – Illicit Discharge Detection and Elimination Program
- 4.1 Requirements
- 4.2 Benefits/Why This Program is Important
- 4.3 Model Program for Illicit Discharge Detection and Elimination
- 4.4 Resources

Chapter 5 – Construction Site Stormwater Runoff Control Program
- 5.1 Requirements
- 5.2 Benefits/Why This Program is Important
- 5.3 Model Program for Construction Site Stormwater Runoff Control
- 5.4 Resources

Chapter 6 – Post-Construction Stormwater Management Program
- 6.1 Requirements
- 6.2 Benefits/Why This Program is Important
- 6.3 Model Program for Post-Construction Stormwater Management
- 6.4 Resources

DRAFT

Chapter 7 – Pollution Prevention/Good Housekeeping Program
7.1 Requirements
7.2 Benefits/Why This Program is Important
7.3 Model Program for Pollution Prevention/Good Housekeeping
7.4 Resources

Chapter 8 – Evaluation and Assessment, Record Keeping and Reporting
8.1 Evaluation and Assessment
8.2 Record Keeping
8.3 Annual Reporting

Chapter 9 – Cost Estimates
9.1 Cost Assumptions
9.2 How to use the costing spreadsheets
9.3 NPDES Program Development Costs
9.4 Public Education Costs
9.5 Public Involvement Costs
9.6 Illicit Discharge Costs
9.7 Construction Program Costs
9.8 Post-Construction Program Costs
9.9 Good Housekeeping Program Costs
9.10 Annual Report Costs

DRAFT

Table of Contents

Chapter 1 - Introduction 1-1
1.1 Overview 1-1
1.1.1 Objective 1-1
1.1.2 Intent 1-1
1.1.3 Benefits of Implementing a Stormwater Management Program 1-2
1.2 Background 1-3
1.2.1 Background 1-3
1.2.2 Phase I - NPDES and State Waste Discharge Stormwater Permits for Municipalities 1-4
1.2.3 Phase II - NPDES and State Waste Discharge Stormwater Permits for Municipalities 1-5
1.2.4 Municipalities Not Subject to NPDES Stormwater Municipal Permits 1-5
1.2.5 Industrial Stormwater Permit (i.e. NPDES and State Waste Discharge Baseline General Permit for Stormwater Discharges Associated With Industrial Activities) 1-6
1.2.6 Construction Stormwater Permit (i.e. NPDES and State Waste Discharge General Permit for Stormwater Discharges Associated With Construction Activity) 1-7
1.2.7 Underground Injection Control (UIC) Program 1-8
1.3 Organization of this Model Program 1-8
1.4 How to Use this Model Program 1-9
1.4.1 Common terms 1-9
1.4.2 Urbanized Areas and the Phase II Permit 1-9
1.4.3 Who Is Covered by the Stormwater Phase II Regulation? 1-12
1.4.4 What does Phase II Require? 1-13
1.5 Getting Ready for Phase II: What Should an Eastern Washington Community Do To Prepare? 1-14
1.5.1 The Self-Analysis 1-14
1.5.2 The Action Plan 1-16
1.6 Funding Options 1-18
1.6.1 What Programs Does Ecology have to Help Fund Water Quality Projects? 1-18
1.6.2 Stormwater Utilities 1-19
1.7 Acknowledgements 1-19
1.7.1 Steering Committee 1-19
1.7.2 NPDES Model Program Subcommittee 1-20
Appendices 1-20
Appendix 1A – Stormwater Utility Code from Richland, WA 1-21

DRAFT

Chapter 1 - Introduction

1.1 Overview

1.1.1 Objective

The primary object of this model program is to help local governments achieve compliance with the National Pollutant Discharge Elimination System (NPDES) Phase II Municipal Stormwater Permit requirements and protect water quality, both ground water and surface water.

A steering committee comprised of eastern Washington cities and counties at a chartering meeting further elaborated on the objective of model NPDES Phase II Program:

> "…to describe a regionally and environmentally appropriate Phase II stormwater program that satisfies federal and state regulatory requirements, and that can be implemented by local government. The Model Program will be constructed to assure that local governments can address unique or specific issues within the context of the Model Program." (from Chartering Meeting held June 2001)

It is envisioned that the Model Program described herein can assist eastern Washington communities (elected officials, staff, and citizens) that must plan and implement programs to comply with a Phase II NPDES Permit. It is also envisioned that the Model Program will describe how the State and Federal requirements can be implemented in a way that is the most economical, as well as meaningful to the citizens and environment of eastern Washington.

1.1.2 Intent

It is the intent of this document to provide a model that can help communities more easily understand and implement the requirements of a combined State and Federal NPDES Permit. The elements of this Model Program will form the basis of the primary requirements and conditions that will be set forth in Ecology's eastern Washington "NPDES Phase II Municipal Stormwater Permit." The sections of this Model Program will:

1. Provide guidance to communities concerning what is required under the Phase II municipal stormwater permit, the potential consequences of not having a permit or not complying with permit conditions, and the basic record keeping and reporting requirements.
2. Provide guidance and examples on what can be done to comply with each permit requirement. Examples may include: educational programs, plan review processes, construction site inspection and enforcement activities, examples of required local ordinances,

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annual inspection and maintenance activities, a program for detecting and eliminating "illicit discharges," etc.

3. Provide examples of activities that are already occurring in communities that can count toward permit compliance and reduce the overall cost of the program.
4. Explain to communities the benefit of implementing a stormwater program.
5. Identify the organizational structures and costs related to meeting each permit requirement (staffing, equipment, planning, etc.).
6. Estimate the costs associated with each permit requirement for two hypothetical Phase II communities (larger and smaller).
7. Provide examples of possible funding sources and mechanisms.

1.1.3 Benefits of Implementing a Stormwater Management Program

Developing and implementing a comprehensive stormwater management program, as described in this Phase II Model Program, can result in a wide array of benefits for cities, counties, and the environment. Successful implementation of a stormwater program that addresses the six minimum control measures has the potential to generate benefits related to water quality, municipal operations, and other benefits that will positively impact quality of life (e.g., recreational and public health and safety). Ultimately, these types of benefits can translate into economic benefits for cities and counties as a result of factors such as more efficient and cost-effective operating practices, increased property values through preservation of green space, and increased revenues from recreation and tourism. Provided below is a description of the various benefits that cities and counties in eastern Washington may generate through implementation of the Phase II Model Program.

Poorly managed stormwater can contribute high levels of pollutants such as excess sediment, nutrients, bacteria, and heavy metals as runoff travels over land and discharges into receiving rivers, lakes, and streams. Stormwater management programs recognize the potential impacts of unchecked stormwater runoff – accelerated stream flows, destruction of aquatic habitat, modified natural hydrologic patterns, and elevated pollutant concentrations. A stormwater management program that promotes or requires smarter land use practices can minimize negative chemical, physical and biological impacts and produce water quality improvements over time. Achieving water quality improvements is a primary benefit of stormwater management that can generate a host of related benefits for cities and counties. A successful stormwater management program that improves water quality can help to ensure that rivers, lakes and streams meet water quality standards – the measuring stick that drives the need for additional pollution controls such as Total

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Maximum Daily Loads (TMDLs). Avoiding the need for such additional pollution controls can translate into cost-savings for cities and counties. Sound stormwater management programs can also play an important role in reducing the number of impaired water bodies due to bacteria levels and reducing the need for additional expensive treatment technologies for drinking water supplies.

In addition to water quality benefits, stormwater management programs can provide cities and counties with a framework and measures to conduct operational activities in a more efficient and cost-effective manner. Management practices that seek to prevent pollutants from entering the storm sewer system (e.g., construction best management practices, illicit discharge detection and elimination practices) will reduce the need for costly system maintenance and repair activities. Through the various reporting mechanisms required in stormwater management programs, cities and counties will establish the ability to track activities and expenditures related to stormwater management activities, thereby improving communication and coordination among responsible departments.

As mentioned earlier, stormwater management programs can produce a ripple effect in terms of benefits. Other benefits to consider include enhanced fishing and opportunities for recreation. Stormwater management helps to reduce pollutants that can harm important fish habitat and minimize the contaminants that make fish unsafe to eat – often the same pollutants that make swimming and boating unsafe. Stormwater quantity is often addressed through stormwater management techniques intended to improve water quality. Effective management techniques help to limit increases in impervious surface, thereby decreasing the quantity and velocity of stormwater runoff and minimizing flooding events. Stormwater management programs help promote maintaining green spaces in the community, improve visual appearance of waterways, and promote cleaner sites on land (e.g., better maintained parking lots, industrial sites, municipal facilities, etc.).

1.2 Background

1.2.1 Background

The Federal Clean Water Act is the primary federal law protecting water quality and includes the National Pollutant Discharge Elimination System (NPDES) permit program. Point source discharges to waters of the U.S. (including stormwater and wastewater discharges) are regulated through NPDES permits issued by EPA or delegated states. In Washington, NPDES permits are issued and implemented by the State Department of Ecology (Ecology). The Water Pollution Control Act, chapter 90.48 RCW, is the primary state law protecting water quality. Ecology combines the Federal NPDES regulations with pertinent state regulations and issues a combined permit that regulates discharges to waters of the

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U.S. and waters of the State (oceans, lakes, rivers, creeks, wetlands, ground water). These permits are designed to satisfy NPDES permit requirements under the federal Clean Water Act and state law under the Water Pollution Control Act.

"Waters of the state" means all lakes, rivers, ponds, streams, inland waters, ground waters, salt waters, and all other waters and water courses within the jurisdiction of the state of Washington. [from WAC Chapter 173-216-030(20)]

The stormwater portion of the Federal NPDES regulations has been imposed in two phases. Phase I addressed stormwater discharges by large and medium municipal separate storm sewer systems (MS4s) and certain industrial activities, including construction sites disturbing more than five (5) acres. The term "separate" means that wastewater such as sewage is not combined with stormwater runoff. The Phase I stormwater regulations were published in 1990.

1.2.2 Phase I - NPDES and State Waste Discharge Stormwater Permits for Municipalities

Certain municipalities and other entities are subject to permitting under the U.S. Environmental Protection Agency (EPA) Phase I Stormwater Regulations (40 CFR Part 122). In Western Washington, Ecology has issued combined NPDES and State Waste Discharge permits to regulate the discharges of stormwater from the municipal separate storm sewer systems operated by the following cities and counties:

- Clark County
- King County
- Pierce County
- Snohomish County
- Seattle
- Tacoma

The Washington Department of Transportation is also a Phase I municipal stormwater permittee for its stormwater discharges within the jurisdictions of the above cities and counties. There are no cities or counties permitted under Phase I in eastern Washington.

As a condition (Special Condition S7.b.8.a.) of the permits issued in July 1995, these entities are required to implement stormwater programs that must include:

> "… ordinances (except WSDOT's program), minimum requirements and best management practices (BMPs) equivalent to those found in Volumes I-IV of Ecology's Stormwater Management Manual for the Puget Sound Basin (1992 edition, and as amended by its replacement)…."

DRAFT

These entities had until the end of the permit terms, July 2000, to comply with this requirement.

Ecology has administratively extended these municipal permits until it can reissue updated permits. In the reissued permits, Ecology intends to include a special condition similar to the above with a reference to the new Western Washington Stormwater Manual. Ecology will also add a deadline or deadlines within the term of the permit for compliance with the condition.

1.2.3 Phase II - NPDES and State Waste Discharge Stormwater Permits for Municipalities

The EPA adopted Phase II stormwater regulations in December 1999. Those rules identify additional municipalities as subject to NPDES municipal stormwater permitting requirements. An initial estimate is that 78 municipalities will be subject to the requirements, and 13 additional municipalities may be subject to the requirements, depending upon an analysis that Ecology must perform. Those communities that are designated as Phase II communities must submit an application for coverage under the permit by March 10, 2003. Ecology will develop an application form for communities to use; that application form will likely require information on current and proposed stormwater programs.

The federal regulations specify minimum measures for the stormwater programs developed to comply with the Phase II permits. A more detailed description of these minimum measures is found in section 1.4.4 and in the individual chapters of this model program.

To at least partially fulfill these requirements, Ecology intends to require the Phase II municipalities in eastern Washington to adopt ordinances, minimum requirements, and BMPs equivalent to those in the model Phase II program and the Eastern Washington Stormwater Manual.

1.2.4 Municipalities Not Subject to NPDES Stormwater Municipal Permits

Municipalities not subject to NPDES stormwater municipal permits are encouraged to adopt stormwater programs at least equivalent to the model Phase II program. Those municipalities adopting the model program would benefit by helping to protect local ground and surface water sources from stormwater pollution, by reducing potential flooding concerns and by ensuring that their storm drain system is properly maintained. This program would include adoption of ordinances, minimum measures, and Best Management Practices (BMPs). For municipalities not subject to NPDES stormwater municipal permits, the adoption of this model program is voluntary.

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1.2.5 Industrial Stormwater Permit (i.e. NPDES and State Waste Discharge Baseline General Permit for Stormwater Discharges Associated With Industrial Activities)

Businesses subject to the Baseline General Permit for Stormwater Discharges Associated with Industrial Activities have to prepare and implement a Stormwater Pollution Prevention Plan in accordance with the terms of that permit. The permit issued in November 2000 requires a description and implementation of generic "operational BMPs", and "source control BMPs" (or "structural source control BMPs") from Volume IV of Ecology's Stormwater Management Manual for Western Washington (SWMMWW). Additionally, application of erosion and sediment control BMPs, flow control BMPs and treatment BMPs from the SWMMWW and other published guidance is required if necessary to address an erosion, flow, or pollution problem.

The permit requires selection of BMPs from: "the most recent published edition of the SWMMWW, or other equivalent manuals, available at least 120 days before the selection of the BMPs is necessary." This language will likely be included in all future revisions of this permit so that new facilities and facilities implementing new BMPs are always using the most current guidance for managing stormwater.

Although this permit does not expire until November 2005, Ecology has begun an examination of the industrial stormwater general permit and expects to issue a revised permit by March 2003. That revised permit will incorporate identified changes and implement applicable EPA Phase II regulations. Ecology anticipates that the permit will continue to focus on developing and implementing stormwater pollution prevention plans, with BMPs adequate to protect beneficial uses of the waters of the state.

Municipalities with a population of less than 100,000 served by separate storm sewers were provided a temporary exclusion from permitting requirements for all categories of industrial activities regulated under Phase I (except for airports, power plants, and uncontrolled sanitary landfills). Under the new Phase II rule, municipalities under 100,000 will be required to seek permit coverage for these previously excluded industrial activities.

Under the new Phase II rule, municipalities may be subject to all three components of the NPDES Storm Water Program, thus requiring compliance with up to three different permits:

- The Industrial General Permit as an operator of regulated industrial activity (10 categories)
- The Construction General Permit as an operator of regulated construction activity (1+ acres)
- Municipal General Permit as a regulated MS4 operator

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Each of the three components of the NPDES Storm Water Program has its own separate requirements and permits. It is possible, however, that Ecology could issue one individual permit to the municipality that covers all of its industrial, construction, and MS4 activities. All the requirements of each component of the program will be in the permit (no advantage there), but only one permit would need to be applied for (the advantage).

1.2.6 Construction Stormwater Permit (i.e. NPDES and State Waste Discharge General Permit for Stormwater Discharges Associated With Construction Activity)

Construction sites that will disturb five acres or more and will have a discharge of stormwater from the project site to surface water must apply for Ecology's construction stormwater permit. The permit requires application of stabilization and structural practices to reduce the potential for erosion and the discharge of sediments from the construction sites. The stabilization and structural practices cited in the permit are similar to the minimum requirements for sedimentation and erosion control in Volume I of the SWMMWW. The permit also requires construction sites within the Puget Sound basin to "select from BMPs described in Volume II of the most recent edition of Ecology's Stormwater Management Manual (SWMMWW) that has been available at least 120 days prior to the BMP selection." Sites outside the basin are required to select BMPs from the manual, from the Erosion and Sediment Control Handbook by Goldman et al, or to select other appropriate BMPs. The permit also states that where Ecology has determined that the local government requirements for construction sites are at least as stringent as Ecology's, Ecology will accept compliance with the local requirements.

The existing construction stormwater general permit expires in November 2005. However, Ecology has begun a thorough examination of the construction stormwater general permit and expects to issue a revised permit by March 2003. This revised permit will incorporate identified changes and implement applicable EPA Phase II regulations. Ecology anticipates that this permit will require western Washington sites to apply the appropriate BMPs listed in the current version of the western Washington stormwater management manual. A separate manual is being developed for eastern Washington and eastern Washington sites will be expected to implement BMPs identified in that manual, or an equivalent manual.

The EPA Phase II stormwater regulations require construction sites of one acre and larger that discharge stormwater to surface waters to apply for an NPDES permit effective March 2003. There is greater flexibility regarding options for implementing coverage for sites under five acres. Ecology has not determined how it will implement coverage for these small construction sites, but any strategy must require implementation of those BMPs necessary to protect the beneficial uses of surface water.

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1.2.7 Underground Injection Control (UIC) Program

One of the provisions of the Safe Drinking Water Act is to protect Underground Sources of Drinking Water (USDW). The Underground Injection Control (UIC) Program was established to protect USDW by regulating the discharges of fluids into the subsurface by underground injection wells. In 1984 Ecology adopted Chapter 173-218 WAC to implement the program.

Subsurface infiltration systems, such as drywells, are classified as Class V injection wells in the EPA's federal UIC program. The two requirements of the UIC program are:

- A non-endangerment performance standard must be met, prohibiting discharges that allow movement of fluids containing contaminants into underground sources of drinking water.
- All well owners must provide inventory information by registering the wells.

Under the federal UIC regulations, the definition of an underground injection well is a bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or a dug hole whose depth is greater than the largest surface dimension; or an improved sinkhole; or a subsurface fluid distribution system which includes an assemblage of perforated pipes, drain tiles, or other similar mechanisms intended to distribute fluids below the surface of the ground. Examples of a UIC well or a subsurface infiltration system are drywells, drain fields, catch basins, pipe or french drains and other similar devices that discharge to ground.

Information for Reviewers: *Ecology is proposing to revise the existing UIC rule. The proposed changes to the rule will include rule authorization for properly managed stormwater discharges from defined sources to subsurface infiltration systems. Proper management would be based on following applicable best management practices as described in Ecology's current regional stormwater manuals or an approved equivalent manual. This Manual will be the applicable manual for eastern Washington. For more information about the rule revision contact Mary Shaleen-Hansen at maha461@ecy.wa.gov or (360) 407-6143.*

1.3 Organization of this Model Program

To accomplish the objectives described in Section 1.1, this model program includes BMPs, measurable goals, and guidance on the following:

- Chapter 2 – Stormwater Public Education Program
- Chapter 3 – Stormwater Public Involvement/Participation Program
- Chapter 4 – Illicit Discharge Detection and Elimination Program
- Chapter 5 – Construction Site Stormwater Runoff Control Program

DRAFT

- Chapter 6 – Post-Construction Stormwater Management Program
- Chapter 7 – Pollution Prevention/Good Housekeeping Program
- Chapter 8 – Reporting and Assessment
- Chapter 9 – Cost Estimates

1.4 How to Use this Model Program

1.4.1 Common Terms

The stormwater Phase II regulation applies to certain governmental entities that own or operate a municipal separate storm sewer system (MS4). Typically, this is either the city or county Public Works Department (or equivalent).

A **Municipal Separate Storm Sewer System (MS4)**, when combined with State Law, means a conveyance or system of conveyances, including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drain pipes, subsurface infiltration systems (drywells and infiltration trenches), detention systems, and stormwater quality facilities.

An **operator** of an MS4 can be a town, city, county, DOT, tribe or special district (drainage improvement district, Flood Control District, etc.) and may include state owned facilities (universities, prisons, hospitals, etc).

An MS4, which carries only stormwater, is separate and distinct from a combined sewer, which carries both stormwater and wastewater.

A **combined sewer** is a sewer system designed to convey commingled wastewater and stormwater runoff to a wastewater treatment plant. Where treatment plant or pipe capacity is inadequate during wet weather, the excess combined sewage discharges from the system at designated outfalls (termed combined sewer overflows).

Only a certain subset of small MS4s need to apply for a Phase II permit. These are termed 'regulated small MS4s.'

Regulated small MS4s are defined as all small MS4s located in "urbanized areas" (UAs) as defined by the Bureau of the Census, and those small MS4s located outside of a UA that are designated by NPDES permitting authorities.

1.4.2 Urbanized Areas and the Phase II Permit

In eastern Washington, there are five urbanized areas:

- Kennewick – Richland, WA
- Lewiston, ID-WA (includes Washington cities of Clarkston and Asotin)

DRAFT

- Spokane, WA-ID
- Wenatchee, WA
- Yakima, WA

Western Washington has the following urbanized areas:

- Bellingham, WA
- Longview, WA-OR
- Marysville, WA
- Mount Vernon, WA
- Olympia-Lacey, WA
- Portland, OR-WA (includes Washington city of Vancouver and associated urban area)
- Seattle, WA

An **Urbanized Area** is a land area composed of one or more central places and the adjacent surrounding area (urban fringe) that together have a residential population of at least 50,000 and a density of at least 1000 people per square mile. Other MS4s may be designated as needing a permit based on application of criteria to be developed by the permitting authority (Ecology). The criteria must evaluate whether stormwater discharges result in or have the potential to result in exceedances of water quality standards, including impairment of designated uses, or other significant water quality impacts, including adverse habitat and biological impacts.

Federal regulations require that MS4s in urbanized areas develop a Phase II program and apply for an NPDES permit except in the following situations:

- The MS4 is already permitted under the stormwater Phase I MS4 program
- The MS4 does not discharge to waters of the U.S.
- The MS4 is waived by the Department of Ecology

The urbanized areas developed by the Census Bureau do not necessarily follow city and county boundaries. Therefore, the Phase II permit boundary for individual cities and counties in eastern Washington may only include part of their jurisdiction. The Phase II permit issued by Ecology may specify a different Phase II boundary.

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1-1 Feedback Requested:

For most cities, the entire city will fall under the Phase II program. For counties, however, only the urbanized portion of the county is required under federal regulations to develop a Phase II program. The NPDES Subcommittee requests public comment on the appropriate boundary to use for the stormwater Phase II program.

Ecology, in coordination with local governments, must consider the following when identifying the coverage area for the Phase II program:

- Where the urbanized area does not follow city/county boundaries. The Census defined urbanized area does not follow city and county boundaries. Therefore, for cities where only a small portion of the jurisdiction is outside of the urbanized area, it may be easier to apply the Phase II program to all areas.
- Where the urbanized area includes a combined sewer area. Some areas of eastern Washington contain combined sewer systems. Areas drained by combined sewers are not addressed in the Phase II program, but are instead addressed by the Combined Sewer Overflow Reduction Program. Cities and Counties served by combined sewers should coordinate the development and implementation of these programs and practices jurisdiction-wide.
- Where parts of the urbanized area discharge to ground through subsurface infiltration systems, or do not drain to waters of the U.S. or State. NPDES Stormwater permits are not required in areas that do not drain to waters of the U.S. or State. For cities or counties with numerous drywells and outfalls to surface waters, this could result in a patchwork program where Phase II applies in some areas, but not others. The Phase II city/county may want to consider applying the Phase II program across all areas, whether they drain to surface waters or not. The State's UIC regulations will require cities and counties to address stormwater discharge to injection wells. Stormwater management programs developed in compliance with the Phase II Municipal Permit and with this Model Program may assist in complying with those UIC regulations.
- For Counties, the urbanized area may represent only a small portion of the county. Urbanized areas rarely encompass an entire county. While many cities may choose to apply the Phase II program jurisdiction-wide, counties may choose to apply the program, or some portions of the program, in only the urban portion of the county. In addition, county Phase II programs will need to address unincorporated "islands" within incorporated cities that fall within the urbanized area.
- Link the Phase II boundary to the Urban Growth Area Boundary. Ecology is considering whether coverage under the Phase II permit

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should be based on the Urban Growth Boundaries, established by cities and counties under the State Growth Management Act. A coincident boundary may ease program implementation in the long run.

- Unincorporated islands within a city. The stormwater Phase II regulation applies to all storm drain systems within urbanized areas. Where a city has an unincorporated island within the city boundary, this unincorporated island is still subject to Phase II, but responsibility for compliance would fall to the county. These unincorporated islands, however, present an excellent opportunity for the city and county agencies to cooperate on developing a joint stormwater program, at least with respect to the issues that affect these unincorporated areas.

1.4.3 Who Is Covered by the Stormwater Phase II Regulation?

The following cities and counties in eastern Washington are covered by the stormwater Phase II regulation. Cities and counties in the **Mandatory Coverage** column must develop a Phase II program, while cities and counties in the **Potential Designation** column may need to develop a Phase II program, if designated for permit coverage by Ecology.

Mandatory Coverage:	**Potential Designation:**
(Census Urban Areas) The Phase II regulations require coverage for the following communities in Urbanized Areas, as defined in the 2000 Census: • Asotin • Clarkston • East Wenatchee • Liberty Lake • Kennewick • Millwood • Moxee • Pasco • Richland • Rock Island • Selah • Spokane • Spokane Valley (new city) • Union Gap • Wenatchee • West Richland • Yakima	(Communities with greater than 10,000 population must be evaluated for coverage). In addition to those communities that require mandatory coverage, Ecology must evaluate communities with more than 10,000 in population and a density of 1,000 persons per square mile or greater. <u>Note – Some of these communities could be designated as Urban Areas in the 2000 Census:</u> • Ellensburg • Moses Lake • Pullman • Sunnyside • Walla Walla

DRAFT

Mandatory Coverage:	Potential Designation:
The Census Defined Urbanized Area of the following counties: • Asotin County • Benton County • Chelan County • Douglas County • Franklin County • Spokane County • Walla Walla County • Yakima County	

This list is based on preliminary review of the new U.S. Census 2000 data. As Ecology continues to review this data and work with affected communities, the list may be revised.

1.4.4 What does Phase II Require?

Stormwater Phase II requires that an operator of an MS4 implement a program of activities and record keeping to meet a series of requirements. The program must at least address the minimum requirements shown in Table 1-1 (which will be elaborated on in the body of this document).

As will be described further in sections of this Model Program, implementing a program to address the minimum requirements of a combined NPDES and State Waste Discharge Permit will require that most operators of small MS4s, typically counties and cities, do the following things:

- Integrate a stormwater management program into their organizational structure.
- Hire additional staff to carry out the work (public involvement/education, plan review, inspection and enforcement, maintenance, planning, complaint response, management, etc.).
- Find additional office space for staff
- Obtain additional office, field, and maintenance equipment
- Develop and adopt ongoing funding method(s)
- Develop and adopt various legal ordinances
- Conduct ongoing stormwater and surface water planning efforts

Development of a Phase II stormwater management program may require additional staff, additional office space, additional equipment, and an additional funding mechanism. Some cities and counties, however, are already implementing parts of these requirements and may not need to add significant staff resources to meet this model program.

DRAFT

Chapter 9 provides cost estimates for implementing the Model Program and spreadsheets that communities can use as a planning tool.

Table 1.1 **Summary of the Minimum Stormwater and Surface Water Management Program Requirements**
1. Public education and outreach – Develop and distribute educational materials and conduct public outreach aimed at informing citizens about the impacts of polluted stormwater as well as ways to minimize their contribution to pollution.
2. Public involvement and participation – Involve the public in stormwater management program development and implementation.
3. Illicit discharge detection and elimination – Develop and implement a program of detecting and eliminating illicit discharges to the storm drain system. This includes storm system mapping, dry weather sampling, and citizen information activities.
4. Construction site stormwater runoff control – Develop, implement, and enforce a program and standards to control/prevent construction site erosion and sediment discharges from construction sites which disturb one or more acres of land. This includes preparation of a construction site stormwater pollution prevention plan (SP3).
5. Post-construction stormwater management – Develop, implement, and enforce a program and standards to control/prevent the discharge of polluted runoff from new development and redeveloped sites. This can include structural treatment and detention systems as well as resource protection measures (wetland protection, habitat protection, etc.) and pollution prevention planning.
6. Pollution prevention, or "good housekeeping," for municipal operations – Develop, implement, and enforce a program to control/prevent the discharge of polluted runoff from municipal operations (road maintenance, vegetation management, storm drain maintenance, etc.).

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1.5 Getting Ready for Phase II: What Should an Eastern Washington Community Do To Prepare?

In order to prepare for the development of a stormwater Phase II program, a community should conduct a self-analysis to assess their current programs and policies, and develop an action plan to help identify what needs to get done. This model program serves as a tool to developing a Phase II program unique to a jurisdiction's local program and needs. The information in this section is adapted from an American Public Works Association (APWA) presentation on the stormwater Phase II program taught during a series of workshops in 2001-02.

1.5.1 The Self-Analysis

Begin by doing a self-analysis and asking the following questions:

- **Do I understand the regulations?**

  Each chapter of this Model Program describes the Phase II requirements for that program element. For additional information on the Phase II requirements, EPA has published a series of fact sheets on the Phase II rules on its web site. In terms of deadlines, EPA requires permit coverage by March 10, 2003; however, Ecology will probably issue the Phase II general permit after this deadline.

  Another basic question to ask is "Am I covered?" Section 1.4.3 of this Chapter describes who is covered by the Phase II regulation. Additional cities may be designated by Ecology based on water quality issues, and some cities could be waived from coverage.

- **Why worry about stormwater?**

  The stormwater regulations exist to address and prevent water quality problems caused by stormwater runoff. Stormwater, as it runs off city streets, parking lots, construction sites, and other areas, picks up pollutants such as oil, grease, nutrients and sediment and deposits them into our waterways. Certain cities and counties are required to develop stormwater programs to prevent and control these pollutants in stormwater runoff before they reach receiving waters.

  Also, federal law requires compliance with the Phase II regulations. Failure to comply with the regulations, or submit an NPDES permit application to Ecology, can result in fines from both Ecology and EPA. In addition, citizens can file suit against the municipality for failure to comply with the Clean Water Act. Finally, negative publicity can result if a municipality fails to "do its part" to protect the environment.

- **What do you know about your stormwater system?**

  This is an excellent time to inventory your stormwater system and find out exactly what you have. For example, do you have a map of the pipes, ditches, outfalls, drywells, and other structural stormwater facilities in your jurisdiction? Do you know who discharges stormwater to your storm drain system? Is there another city or county that discharges to your system, or are there certain industries that may contribute significant pollutants to your system? What types of flood control or water quality practices are already in place?

- **Do you discharge to surface waters, and what is their condition?**

  The NPDES stormwater regulations only apply where there is a discharge to surface waters. Identify the places you discharge to surface waters, and find out the character and quality of those waters. What are the designated uses for these waters, and are there pollutants currently impacting these waters? Are any of these waters listed as impaired on Ecology's 303(d) list? Who is currently using these

DRAFT

receiving waters? What is the impact of your stormwater discharges on these receiving waters?

- **Inventory your current practices and programs**

  After reviewing this model program, develop an inventory of your current practices and programs that can be used to implement a stormwater program. Do you currently have a public education program, or a program to address spills to your storm drain system? The Eastern Washington NPDES Subcommittee conducted a survey of current stormwater programs and practices used by about 20 cities and counties. The results of this survey are available from Ecology.

- **Identify who can help**

  Identify groups who can help in either the development or implementation of your Phase II program. This could include local stakeholders, neighboring Phase II communities, and Ecology. For example, local stakeholders, including citizens, interest groups, businesses, and construction operators are impacted by the Phase II program and will also have some role in ultimately paying for the program. Neighboring Phase II communities may be willing to share information or partner in a strategic relationship to share resources. Also, Ecology has various programs that can provide assistance to local government on water quality issues.

- **What benefits do you want your stormwater program to achieve?**

  Finally, identify the overall goals for your stormwater program. Is the goal of your program to achieve regulatory compliance with Phase II, improve water quality in the local streams, improve the operating effectiveness of the storm drain system and reduce flooding, improve citizen awareness and support for stormwater issues, and/or increase the financial resources devoted to stormwater? A clear set of goals will help direct development of a Phase II program.

1.5.2 The Action Plan

After conducting a self-analysis, the next step for a Phase II community is to develop an action plan that describes how that community will meet the Phase II requirements. This could be a simple document that addresses the following topics:

- **Create a Planning Process**

  The first step in creating a planning process is to identify and assemble the primary stormwater players within the local government. These are city/county departments with a potential role in stormwater management (Public Works, Planning, Parks and Recreation, Legal Counsel, etc). Each department should have a designated stormwater contact and understand which requirements apply to that department.

DRAFT

- **Develop a Time Schedule**

  Develop a schedule working backwards from the deadline when your permit application will be due. Budget time for coordination with local departments, development of your Phase II plan, identification of funding, public review, and council approval.

- **Develop a Plan Approval Process**

  Identify who **should** approve your Phase II plan, primarily the major stakeholders in your area. Also identify who **must** approve your Phase II plan. This will consist initially of your city/county council, but can also include Ecology.

- **Determine Your Phase II Strategy**

  Using the goals identified in the last step of your self-analysis, determine what you would like your Phase II program to look like. Are you trying to develop a program that meets the minimum legal requirements, a program that addresses specific water quality problems, a program that is the "best we can afford", or a program that is the "best the city council will approve"?

  Consider your tolerance for risk. A program that does not address specific local water quality concerns could be challenged down the road. Also, consider what is realistically achievable. Are there financial limitations or pollutant sources impacting water bodies that are outside the control of the jurisdiction?

- **Create and Use a Technical Support Network**

  From your self-analysis, identify other Phase II communities and investigate forming partnerships to coordinate planning efforts or share resources. Also get to know the Ecology stormwater staff, educate them on your local issues, and participate in policy and permit development. Consider forming a technical advisory panel on stormwater. Also, include local businesses and industry representatives, along with local citizen groups, on an advisory panel.

- **Determine the BMPs and Measurable Goals of Your Program**

  Using this model program as a guide, determine the BMPs and measurable goals you will use for each of the six minimum measures. Set timeframes for when certain activities will be completed.

- **Establish an Implementation Plan for Your Phase II Program**

  Estimate the type and amount of staffing required to implement your Phase II program. Chapter 9 includes additional information on how you can estimate the cost of a Phase II program. Include in your cost estimate both start-up costs and on-going program costs. Also, establish institutional frameworks, such as memoranda of understanding, necessary to implement the program. Determine your

DRAFT

compliance/enforcement procedures, assign responsibilities to the appropriate staff/department, and determine how you will evaluate and report on the program.

1.6 Funding Options

Although Federal and State governments do not provide a dedicated source of funding specifically for the Phase II program, cities and counties in eastern Washington implementing a Phase II program have a number of different options on how to fund this program. In addition to grants, loans, stormwater utilities and special districts, cities and counties can use plan review fees, permit fees, system connection charges, or general funds for the Phase II program.

The Washington Stormwater Management Study (2001) recommended development of a business plan for the fiscal aspects of stormwater management. This business plan, which should be developed before the Phase II permit goes into effect, would provide a broad overview of statewide costs, priorities, and recommended levels of state and federal funding that will be useful for all stormwater stakeholders in Washington.

Additional information on financing can be found on "An Internet Guide to Financing Stormwater Management" available on the web at: http://stormwaterfinance.urbancenter.iupui.edu

1.6.1 What Programs Does Ecology have to Help Fund Water Quality Projects?

The Department of Ecology's Water Quality Program administers three major funding programs that provide low-interest loans and grants for projects that protect and improve water quality in Washington State (several other programs address related issues; contact Ecology for more information). Ecology acts in partnership with state agencies, local governments, and Native American tribes by providing financial and administrative support for their water quality efforts. As much as possible, Ecology manages the three programs as one; there is one funding cycle, application form, and offer list.

The three programs sharing guidelines, application, and funding cycle are:

- The Centennial Clean Water Fund (Centennial), which provides low-interest loans and grants for wastewater treatment facilities and fund-related activities to reduce nonpoint sources of water pollution.
- The State Revolving Loan Fund (SRF), which provides low-interest loans for wastewater treatment facilities and related activities, or to reduce nonpoint sources of water pollution.
- The Section 319 Nonpoint Source Grants Program, which provides grants to reduce nonpoint sources of water pollution.

DRAFT

For more information on Ecology's Grant & Loan programs, please see Ecology's web site at http://www.ecy.wa.gov/programs/wq/funding.

1.6.2 Stormwater Utilities

A stormwater utility is essentially a special assessment district set up to generate funding specifically for stormwater management. Users within the district pay a stormwater fee, generally based on the amount of impervious surface, with the revenue generated going directly to fund the stormwater program. Unlike a stormwater program that draws on the general tax fund or uses property taxes for revenue, the people who benefit are the only ones who pay. Several eastern Washington cities and counties have developed stormwater utilities, including Douglas County, the City of Walla Walla, the City of Richland, the City of Spokane, the City of Wenatchee, and Spokane County.

A copy of the stormwater utility code from the City of Richland is included in Appendix 1A.

1.7 Acknowledgements

1.7.1 Steering Committee

In order to develop the Phase II Model Program and the Manual, Ecology formed a Steering Committee of eastern Washington representatives. Ecology would like to thank the following members of the Eastern Washington Stormwater Management Steering Committee for their valuable commitment of time and leadership in leading the process to develop the NPDES Phase II Model Program and the Stormwater Technical Manual for Eastern Washington.

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Brewer, Lloyd *NPDES II Subcommittee Vice-Chair*	City of Spokane – Environmental Programs
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DRAFT

1.7.2 NPDES Model Program Subcommittee

Ecology would also like to thank the following members of the Eastern Washington NPDES Model Program Subcommittee for their valuable commitment of time and energy in helping develop, review and shape the contents of this document.

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Appendices

Appendix 1A - Stormwater Utility Code from Richland, WA

Appendix 1A – Stormwater Utility Code from Richland, WA

Sections:

16.04.010 Definitions.

16.04.020 Creation of Storm Water-Utility-Authority.

16.04.030 Governing Body and Management of Storm Water Utility.

16.04.040 Ownership of Storm Water Facilities.

16.04.050 Severability.

16.04.010 Definitions.

For the purposes of this chapter of the Richland Municipal Code (RMC), the following definitions apply:

(a) "City" shall mean the City of Richland, Washington, a municipal corporation.

(b) "Utility" shall mean the storm water utility, a utility authorized to own, maintain, operate and preserve all the storm drainage system and related facilities.

(c) "Residential property" or "residential properties" shall mean any parcel of land upon which is constructed a structure designed to provide a housing unit to one or more persons or families, including duplexes, triplexes, four-plexes, and manufactured homes.

(d) "Housing unit" shall mean a building or portion thereof designed as a residence or the living quarters of one or more persons living together, or of one family.

(e) "Vacant land" shall mean property with no buildings thereon, including agricultural land.

(f) "Commercial property" shall mean all properties other than single family residences, duplexes, triplexes, four-plexes or manufactured homes. Commercial property shall include apartment buildings, condominiums and townhouses.

(g) "Qualification as low income senior citizen or low income disabled citizen" refers to person who shows satisfactory proof to the finance manager, or his designee, that he or she:

(1) Is sixty-two (62) years of age or over; or

(2) Is a citizen qualifying for special parking privileges under RCW 46.16.381(1)(a) through (f) or a blind citizen as defined in RCW 74.18.020(4), or developmentally disabled as defined in RCW

DRAFT

71A.10.020(2) or a mentally ill person as defined in RCW 71.05.020(1); and

(3) Has a maximum annual income of not more than one hundred twenty-five percent (125%) of the poverty level established by the federal office of management and budget; and

(4) Is the sole occupant or the head of a household.

(h) "Flood Plain" shall mean a parcel of land lying within an area determined as flood plain-100 year flood event.

All information presented in support of such application shall be verified by the applicant who shall provide such other data as deemed appropriate upon forms and in a manner determined by the finance manager or his designee. (Ord. 5-98: Ord. 31-99: Ord. 12-00).

16.04.020 Creation of Storm Water-Utility-Authority.

There is hereby created and established a storm water utility, a separate enterprise and facility. The utility is authorized to own, construct, maintain, operate and preserve all storm water infrastructure as now exist and as may be added to in the future by the addition of other existing or construction of storm drainage systems. In addition to its authority over storm water facilities, the utility is authorized to maintain, operate and preserve the street sweeping function of the City's street maintenance program. (Ord. 5-98).

16.04.030 Governing Body and Management of Storm Water Utility.

The city council shall be the governing body of the storm water utility. Management of the utility shall be provided by the city manager or his or her designee. (Ord. 5-98).

16.04.040 Ownership of Storm Water Facilities.

Title and all other incidents of ownership of the following assets are hereby vested in the utility: All properties, interest and physical and intangible rights of every nature, owned or held by the city, however acquired, insofar as they relate to:

(1) Drainage facilities.

(2) Street sweeping equipment. (Ord. 5-98).

16.04.050 Severability.

If any portion of this chapter as now or hereafter amended, or its application to any person or circumstances, is held invalid or unconstitutional, such adjudication shall not affect the validity of the chapter as a whole, or any section, provision or part thereof not adjudged to be invalid or unconstitutional and its application to other persons or circumstances shall not be affected. (Ord. 5-98).

DRAFT

Charges and Uses of Funds - Chapter 16.08

16.08.010 System of Charges.

16.08.030 Billing and Collection.

16.08.040 Use of Storm Water Funds.

16.08.050 Use of Other Proceeds by Storm Water Utility.

16.08.010 System of Charges.

There is hereby imposed a system of monthly charges on residential properties located within the boundaries of the city. A system of monthly or annual storm water utility charges for vacant land and commercial properties shall be imposed as follows:

(a) For any commercial property or vacant land with charges less than ninety-seven dollars ($97.00) per year, owners shall be billed once a year.

(b) All commercial property or vacant land owners shall be billed a minimum of two dollars ($2.00) per billing cycle.

The charges are necessary to assist in the funding of the construction, maintenance, operation and preservation of facilities under the jurisdiction of the storm water utility.

(a) Residential properties. There shall be a monthly charge of one dollar and eighty-five cents ($1.85) per month per residential property imposed upon each owner or occupant of residential property, unless such property is exempt under Section 16.08.010(l) of this chapter.

(b) Vacant land. There shall be a monthly charge of one dollar and thirty-five cents ($1.35) per acre for vacant land of 3.7 acres or less. There shall be a monthly charge of five dollars ($5.00) for vacant land over 3.7 acres.

(c) Very light. There shall be a monthly charge of two dollars ($2.00) per acre on land that has zero to ten percent (0-10%) of impervious surface.

(d) Moderate light. There shall be a monthly charge of six dollars and ninety-nine cents ($6.99) per acre on land that has greater than ten through twenty-five percent (10-25%) of impervious surface.

(e) Light. There shall be a monthly charge of twelve dollars and ninety-nine cents ($12.99) per acre on land that has greater than twenty-five through forty percent (25-40%) of impervious surface.

(f) Moderate. There shall be a monthly charge of eighteen dollars and ninety-eight cents ($18.98) per acre on land that has greater than forty through fifty-five percent (40-55%) of impervious surface.

DRAFT

(g) Moderately heavy. There shall be a monthly charge of twenty-four dollars and ninety-eight cents ($24.98) per acre on land that has greater than fifty-five through seventy percent (55-70%) of impervious surface.

(h) Heavy. There shall be a monthly charge of thirty dollars and ninety-seven cents ($30.97) per acre on land that has greater than seventy through eight-five percent (70-85%) of impervious surface.

(i) Very heavy. There shall be a monthly charge of thirty-six dollars and ninety-six cents ($36.96) per acre on land that has greater than eighty-five through one hundred percent (85-100%) of impervious surface.

(j) State highway. There shall be a monthly charge of nine dollars and twenty-nine cents ($9.29) per acre on land that has greater than seventy through eighty-five percent (70-85%) impervious surface.

(k) City streets. There shall be a monthly charge of nine dollars and twenty-nine cents ($9.29) per acre on land that has greater than seventy through eighty-five percent (70-85%) impervious surface.

(l) Exempt properties. The owners of the following properties are exempt from the charges imposed by this section:

(1) Residential properties to the extent of their occupancy by low-income senior citizens or low income disabled citizens.

(2) All non-commercial lands managed by the U. S. Army Corps of Engineers for the federal government which lie in the flood plain as defined herein.

(3) All vacant property lying within a flood plain as defined herein and any island entirely surrounded by either the Yakima River or the Columbia River. This exemption shall be retroactive back to August, 1999.

(Ord. 5-98: Ord. 31-99: Ord. 12-00).

16.08.030 Billing and Collection.

Storm water utility charges, as imposed by Section 16.08.010 of this chapter, shall be computed on a monthly or annual basis. The amount billed shall be included as a separate charge listed on the city utility bill. The finance manager, or his or her designee, is hereby authorized to administer the billing and collection of storm water utility fees. In the event a property does not have utility service but is subject to charges imposed by this chapter, a new account shall be established and that property shall be billed separately for the storm water utility charges. The finance manager is directed to compile a list of all residential property owners or occupiers, commercial property owners and vacant land owners, as is necessary for determining utility charge liability under this chapter. The finance manager is further directed to develop any rules and regulations which are consistent with this chapter and which are necessary

DRAFT

for its administration. Collection and enforcement shall be as provided in the statutes of the state of Washington, RCW 35.67 et seq. as they currently exist or may hereafter be modified and construed. (Ord. 5-98: Ord. 31-99: Ord. 12-00).

16.08.040 Use of Storm Water Utility Funds.

The proceeds from the charges imposed by Section 16.08.010 of this chapter shall be used for storm water and street sweeping purposes only including but not limited to: operation and maintenance of storm drainage facilities, street sweeping and other improvements; new construction, reconstruction, and expansion of city storm drainage systems. (Ord. 5-98).

16.08.050 Use of Other Proceeds by Storm Water Utility.

The storm water utility may finance the construction, operation, maintenance, and preservation of storm water infrastructure and related facilities through local improvement districts and utility local improvement district, or with the proceeds of revenue bonds, or any combination thereof. In addition, the utility, through appropriation by the city council, may use funds from general taxation, money received from the federal, state, or other local governments and other funds made available to it. (Ord. 5-98).

DRAFT

Table of Contents

Chapter 2 - Stormwater Public Education Program 2-1
2.1 Requirements 2-1
2.2 Benefits/Why This Program is Important 2-2
2.3 Model Program for Stormwater Public Education 2-3
2.3.1 Develop a Stormwater Education and Outreach Strategy 2-4
2.3.2 Stormwater Brochure for the General Public 2-8
2.3.3 Targeted Stormwater Brochures 2-9
2.3.4 Storm Drain Stenciling 2-10
2.3.5 Promote Water Quality Education with School Districts 2-11
2.3.6 Work with Volunteer Groups on Stormwater Education Projects 2-12
2.3.7 Develop a Stormwater Speakers Bureau 2-13
2.3.8 Create Stormwater Public Service Announcements 2-13
2.3.9 Design a Stormwater Display 2-14
2.3.10 Create a Stormwater Web Site 2-15
2.4 Resources 2-15
Appendices 2-16
Appendix 2A – Example Stormwater Outreach Brochure 2-17
Appendix 2B – Education and Outreach Strategy Development Template 2-19
Appendix 2C – Questions to Help Identify Target Audiences 2-21
Appendix 2D – Example Targeted Stormwater Brochure 2-24

DRAFT

Chapter 2 - Stormwater Public Education Program

2.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following information as the regulatory requirements for public education. This model program is intended to meet these EPA requirements and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties. The following guidance section from the Phase II Rule provides additional details on the preceding regulations.

Regulations	**40 CFR 122.34(b)(1) Public education and outreach on stormwater impacts** (i) You must implement a public education program to distribute educational materials to the community or conduct equivalent outreach activities about the impacts of stormwater discharges on water bodies and the steps that the public can take to reduce pollutants in stormwater runoff.

Guidance	**40 CFR 122.34(b)(1) Public education and outreach on stormwater impacts** You may use stormwater educational materials provided by your State, Tribe, EPA, environmental, public interest or trade organizations, or other MS4s. The public education program should inform individuals and households about the steps they can take to reduce stormwater pollution, such as ensuring proper septic system maintenance, ensuring the proper use and disposal of landscape and garden chemicals including fertilizers and pesticides, protecting and restoring riparian vegetation, and properly disposing of used motor oil or household hazardous wastes. EPA recommends that the program inform individuals and groups how to become involved in local stream and beach restoration activities as well as activities that are coordinated by youth service and conservation corps or other citizen groups. EPA recommends that the public education program be tailored, using a mix of locally appropriate strategies, to target specific audiences and communities. Examples of strategies include distributing brochures or fact sheets, sponsoring speaking engagements before community groups, providing public service announcements, implementing educational programs targeted at school age children, and conducting community-based projects such as storm drain stenciling, and watershed and beach cleanups.

DRAFT

Guidance	**40 CFR 122.34(b)(1) Public education and outreach on stormwater impacts** In addition, EPA recommends that some of the materials or outreach programs be directed toward targeted groups of commercial, industrial, and institutional entities likely to have significant stormwater impacts. For example, providing information to restaurants on the impact of grease clogging storm drains and to garages on the impact of oil discharges. You are encouraged to tailor your outreach program to address the viewpoints and concerns of all communities, particularly minority and disadvantaged communities, as well as any special concerns relating to children.

2.2 Benefits/Why This Program is Important

Successful implementation of the overall stormwater management program depends on more than just the actions of the municipality's staff – it depends on the everyday actions of the people who live and work within the municipality. Each community is comprised of different target audiences. Audiences important to the success of a stormwater public education program include: 1) the residential community; 2) commercial/ business community; 3) industrial sector; and 4) the development community. Unfortunately, not everyone in these audiences knows and understands the impact of their actions on the quality and quantity of stormwater runoff. Each audience has varying attitudes, perceptions, and levels of awareness that influence their behaviors.

An effective way to influence attitudes, change perceptions, provide accurate information, and modify behavior is through a public education and outreach program. Through education and outreach, target audiences gain a greater understanding of water quality impacts from stormwater discharges and the steps necessary to reduce stormwater pollution. As a result, members of these target audiences may help with the implementation of a stormwater management program by providing valuable resources and support (e.g., financial support; volunteer time; equipment; etc.). Benefits from an effective public education and outreach program can include:

- Reductions in the discharge of stormwater pollutants to water bodies and improved overall water quality.
- Increased compliance with the program, minimizing costs incurred for implementation of other minimum measures (e.g., less frequent stormwater system maintenance; fewer illicit discharges and connections; etc.).
- An educated public passing this information on to others, reducing the burden associated with conducting all educational activities.
- Greater opportunities to leverage resources among community partners willing to participate in program implementation.

DRAFT

2.3 Model Program for Stormwater Public Education

The steps for developing an effective public education program include:

- Understanding each target audience
- Developing messages that will result in practices that do not pollute stormwater on part of target audience
- Distributing messages in an appropriate format using each target audience's existing communication channels

Addressing each of these steps is necessary when developing outreach and education materials and activities. The first action is to develop an education and outreach strategy that is specific to the issues in the local community. This stormwater education and outreach strategy is developed in order to select and prepare for implementation of additional education and outreach BMPs.

After developing the outreach strategy, the next step is to identify appropriate BMPs to implement the strategy. Note that depending on the community and outreach strategy developed, more than one BMP may be necessary in order to effectively implement the strategy. Consider one or more of the following BMPs to implement the outreach strategy:

- Develop and distribute a brochure or equivalent outreach materials to inform the general public about stormwater issues and of the hazards associated with illicit discharges and improper disposal of waste
- Develop and distribute a stormwater brochure
- Organize storm drain stenciling projects
- Promote water quality education with school districts
- Work with volunteer groups on stormwater education projects
- Create a stormwater speaker's bureau
- Develop stormwater public service announcements
- Create a stormwater display
- Create a stormwater web site

This model program includes the public education BMPs listed above as examples of common public education activities. It is also acceptable to select and implement a different, but equivalent, BMP from those identified above. This may be necessary when an alternative idea for an educational BMP is a better fit for a particular community. If an alternative BMP is selected, include in the stormwater management plan a brief discussion on why the chosen BMP is equivalent to the other BMPs listed above.

DRAFT

2.3.1 Develop a Stormwater Education and Outreach Strategy

The stormwater outreach strategy is the only required BMP. The outreach strategy will identify one or more additional BMPs to be implemented. These additional BMPs that could be implemented in the outreach strategy are described in BMP 2J.

Required BMP 2A: Develop and implement a stormwater education and outreach strategy that examines target audiences. Include in the strategy information on the hazards associated with illicit discharges and improper disposal of waste.

Measurable Goal: By the end of permit year 3, develop a stormwater education and outreach strategy for implementing additional education and outreach BMPs during the remainder of the permit term.

An effective education and outreach program begins with a comprehensive education and outreach strategy. The strategy focuses on identifying target audiences, including what they value and how they communicate. This information directly relates to determining the other education and outreach BMPs that are most appropriate for target audiences. Provided below is a description of how to develop an education and outreach strategy. It is a two-step approach that begins with characterizing target audiences and then crafting the strategy itself.

Step 1. Characterize Target Audiences

Specific groups within the community may have the potential to contribute pollutants to stormwater. If so, document characteristics about these groups for use in developing and distributing educational materials. For example, restaurants can generate significant quantities of grease which, if not properly disposed of, can pollute stormwater runoff. There may be other potential partners to help in implementing the education and outreach program. For example, a local restaurant association may be able to efficiently pass information to its members on proper stormwater practices. Information about each target audience plays an important role in tailoring educational materials. Some questions to consider when identifying target audiences are included in Appendix 2C.

In order to characterize the target audience, it is necessary to identify target audience categories, describe the major water quality concerns of the target audience, and identify potential partner organizations. The following bullets provide more information on these activities:

- Identify categories of target audiences that have the greatest potential to impact the storm drainage system.

Although some generalized educational materials are suitable for the general population, tailored educational materials for sub-groups of the

DRAFT

general population are also necessary to improve effectiveness. These sub-groups can share similar characteristics such as attitudes, perceptions, motivations, socio-economic standing, language, education, age, etc. Many stormwater educational programs focus on homeowners, developers, business owners, students, and government employees. It is also possible to further identify sub-groups to create even more specific target audiences. For example, the sub-group of homeowners breaks down further into auto repair do-it-yourselfers, gardeners, home repair do-it-yourselfers, homeowners on septic systems, and riparian landowners. These sub-groups are target audiences, and their characteristics drive the planning and implementation of the public education and outreach program.

- Identify target audience concerns using knowledge of the community and other sources of information.

Common methods of identifying target audience concerns include the use of focus groups, surveys and interviews. These can be time and resource intensive undertakings. A quick and cost-effective way to identify target audience concerns is to use existing knowledge of the community and common sources of local information (e.g., newspapers, newsletters, meetings, community events, trade associations, yellow pages, fraternal organizations, chamber of commerce, etc.). By answering the following questions for each target audience, a rough characterization can be produced for use in developing and distributing educational materials.

Example Questions for Describing Target Audience Concerns

- What is the name of the target audience?
- How large is the audience?
- How do they receive their information about community issues?
- How do they communicate with each other?
- What organizations focus on serving them/meeting their needs?
- What organizations do they belong to?
- What do they value as a group?
- What is their attitude toward stormwater and water quality issues?

In addition to this information, contact information for each target audience is also necessary. This information is important for distributing educational materials. Contact information for target audiences may include the organizations and associations that regularly distribute information to specific target groups (i.e., fishing clubs, homeowner associations, neighborhood councils, business associations, etc.). Typically, these groups are willing to assist in getting information out to their members or provide their mailing list for distribution of pre-approved information.

DRAFT

To reach a broader audience, consider using utility bill inserts, tax record databases, or postal carrier route distribution to specific postal codes. This type of database information is available from various municipal departments (e.g., property tax office, utilities, etc.) or from local organizations such as the chamber of commerce or other civic associations.

- Identify potential partner organizations.

In addition to target audiences who will receive educational materials, identify organizations that have the capacity to assist with education and outreach efforts. Consider organizations that currently have volunteerism or community service as part of their mission (e.g., Boy/Girl Scout troops and Rotary, Kiwanis, Lions clubs), that focus on environmental protection (e.g., school environmental clubs), or work to improve the community's quality of life (e.g., block clubs, church groups, etc.).

Many of these organizations, including individual businesses, conduct regular or annual community service projects. They are often looking for projects that members or employees would enjoy working on. Consider contacting these organizations to begin establishing partnerships and collaborative efforts. Suggest activities, such as storm drain stenciling and stream cleanups, which would be mutually beneficial to both the municipality and the partner organization.

Step 2. Develop Education and Outreach Strategy

Using information about the storm drainage system and target audiences, develop an education and outreach strategy to help implement the overall program. The strategy identifies a variety of information, including the driving force (i.e., key problems caused by stormwater associated with the target audience); the key message(s); the objective (e.g., raise awareness, educate, or motivate action); the format for delivering the message; the distribution method; and the responsible parties and/or partners. There are no requirements related to the format of the strategy; the strategy may consist of a comprehensive document or it may be a completed version of the table shell provided in Appendix 2B.

In order to develop the education and outreach strategy, it is necessary to identify, using the target audience characterization completed in step 1 above, key stormwater issues and educational materials and distribution methods. Additional information on these activities is found below:

- Identify key problems caused by stormwater and potential solutions.

The goal of this minimum measure is to inform target audiences about the impacts of stormwater on water quality and motivate them to implement solutions. To achieve this goal, education and outreach materials must contain information about stormwater problems affecting water quality in the community and potential solutions.

DRAFT

Without sampling and analysis, it is appropriate to make general assumptions about the pollutants impacting stormwater runoff based on the types of land uses found within the community. For example, areas experiencing new and re-development may contribute significant amounts of sediment to the storm drainage system. Elevated levels of nutrients from lawn care, pet wastes and improper connections with the sanitary system are often associated with residential areas.

For more specific information about water quality problems due to stormwater impacts, review monitoring data from the Washington State Department of Ecology (see http://www.ecy.wa.gov/programs/eap/wrias/index.html) collected to develop 305(b) water quality assessment reports and 303(d) impaired water body listings for the Total Maximum Daily Loads (TMDL) Program. Also, contact local conservation districts that conduct volunteer water quality monitoring to determine if their data characterizes stormwater pollutants.

Once a better understanding of the key problems associated with stormwater is developed, identify the solutions to be promoted in educational materials for various target audiences. Solutions must be technically, legally, economically, and socially feasible. Otherwise, implementation of these solutions by target audiences is unlikely. Remember, the messages used to "sell" each solution must focus on the benefits to the target audience – not necessarily the benefits to water quality – to be effective. Although there must be an emphasis on the connection between behavior and water quality, educational materials must promote factors such as cost-savings, good publicity, legal consequences, or friendly competition that serve as the target audience's primary motivation.

- Develop educational materials and plan distribution methods.

Organizations within Washington and around the country have developed a wide range of educational materials that address stormwater pollution. Their materials often focus on stormwater as a non-point source, but the problems, solutions, and messages still apply in the context of the NPDES program. To avoid duplication of efforts, identify existing educational resources that contain appropriate messages and use appropriate formats for the target audiences listed in the education and outreach strategy. Contact the organizations responsible for producing these materials to inquire about adopting and adapting these materials. Ask about licensing fees associated with using photographs or specific requirements for crediting funding agencies. The appendices to this chapter contain several examples of existing educational materials that can be used for stormwater educational purposes.

Using the target audience characterization, determine the best mechanisms for distributing educational materials to each target audience. Where

DRAFT

possible, take advantage of existing communication channels and "piggyback" the distribution of stormwater educational materials. The goal is to have target audiences hear the educational message and adopt practices that do not pollute stormwater; creative distribution is key to having a target audience "hear" and respond to a message.

2-1 Feedback Requested:

Chapter 2 describes a variety of public education practices that jurisdictions can implement to satisfy the Phase II program requirements.

Do you have other ideas for public education program elements and best management practices that you think should be considered or included? (Please indicate yes or no, and explain your ideas.)

Which of the optional best management practices in Section 2.3 do you think would work best in your community? (Please explain which ones and why.)

2.3.2 Stormwater Brochure for the General Public

Optional BMP 2B: Develop and distribute a brochure or equivalent program to inform the general public about stormwater issues and of the hazards associated with illicit discharges and improper disposal of waste.

Measurable Goal: Distribute the brochure to 90% of the residences and businesses served by the storm drain system by the end of permit year 5.

Develop and distribute a general brochure on stormwater. The purpose of this brochure is to address how stormwater can impact water quality and the steps that people can take to reduce stormwater pollution (e.g., do not dump to storm drains). This brochure does not need to be tailored to each specific community. In fact, there are many examples of stormwater outreach materials available from other cities and States for adaptation and/or adoption. One element of the illicit discharge detection and elimination minimum measure (Chapter 4) is to "inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste." This BMP fulfills this element.

An example of a public educational brochure on stormwater issues and hazards of illegal dumping is included in Appendix 2A. This brochure, from Las Vegas (http://www.lvstormwater.com/pdfs/swqmc_brochure.pdf), focuses on protecting Lake Mead, but the language could be easily adapted to address a local waterbody or groundwater. The first page describes some of the problems and solutions, or "things you can do," to help protect water quality.

Additional examples of public education brochures are available online at:

DRAFT

- *Do You Know Where the Water In Your Storm Drain Goes?* Orange County Urban Stormwater Pollution Prevention Program. http://www.sanjuancapistrano.org/media/PolPrev_StormWater.pdf
- *Think Blue. Easy Solutions for Keeping Our Creeks, Bays, and Ocean Clean.* City of San Diego. http://thinkbluesd.org/brochures/ThinkBlue_Brochure.pdf
- *Managing Stormwater: Changes and Challenges in Carrollton.* City of Carrollton. http://www.cityofcarrollton.com/images1/envquality/pdf/SWManage.PDF
- *Stormwater Pollution: Keeping Our Creeks Clean Starts With You.* City of Carrollton. http://www.cityofcarrollton.com/images1/envquality/pdf/SWPollution.PDF

Additional Distribution Methods:

There are many opportunities to "piggyback" the distribution of educational materials onto the distribution of others such as newspapers, newsletters, community events, etc. Take advantage of these existing communication channels for distributing materials and messages in an effective and cost-efficient manner. Consider distributing materials in the following ways:

- Make materials available at city offices and selected facilities (e.g., park offices, libraries, schools);
- Distribute information through various community, association and organization newsletters, as inserts in your local newspaper, through utility bills as inserts, or other methods developed under BMP 2B.
- Participate in and distribute stormwater material during appropriate public events (e.g., Earth Day events, county fairs, stream clean-ups, etc.).

Exposing target audiences to a message on a regular basis can raise awareness. A combination of formats and distribution channels to reach each target audience is beneficial. A feedback mechanism can be developed for evaluating the effectiveness of the materials and the changes in target audiences' level of awareness regarding stormwater.

2.3.3 Targeted Stormwater Brochures

Optional BMB 2C: Develop and distribute stormwater brochures that address a variety of different target audiences.

Measurable Goal: Distribute targeted brochures according to the education and outreach strategy for each target audience by the end of permit year 5.

DRAFT

Appendix 2D presents an example of a targeted stormwater outreach brochure for restaurants. Other brochures target the automobile repair shops, certain industries, and the construction industry (see http://www.ci.phoenix.az.us/STREETS/bmps.html for a list of all the brochures). Each brochure describes specific practices for protecting water quality, as well as practices to avoid.

Brochures targeted and written specifically for the audience are often more effective than general brochures. The stormwater education and outreach strategy (BMP 2A) will provide direction on target audiences and issues to consider when developing targeted brochures.

Target audiences include residents, businesses, industries, and developers. Consider addressing topics such as pet waste management; pollution prevention tips for landscaping; proper disposal of household hazardous waste; pesticide use; do-it-yourself auto maintenance; car washing; and/or pavement deicing.

2.3.4 Storm Drain Stenciling

Optional BMP 2D: Plan and conduct storm drain stenciling projects using "Do Not Dump – Drains to Stream" or an equivalent message on storm drain inlets draining to the system.

Measurable Goal: Beginning in Permit Year 3, Stencil 20% of all storm drain inlets within the storm drain system boundary during each permit year.

Stenciling storm drains with messages such as "Do Not Dump – Drains to Stream" or "Do Not Dump – Drains to Groundwater" have proven very effective in many jurisdictions. Some residents still do not know that material placed in storm drains is not treated at a wastewater treatment plan before reaching a river or infiltrating into groundwater. These permanent messages on storm drains serve as constant reminders and teaching tools for everyone who sees them.

There are several options to consider in terms of what type of stencils to use and how to get the job done. First is to consider enlisting the aid of volunteer organizations. Second is to decide on the method of applying the messages. To apply the "no dumping" messages, use either actual stencils that require paint or signs and emblems out of plastic and metal that permanently affix. Labor for stenciling can come from either municipal employees or volunteers. Set a goal to complete a certain amount of storm drain stenciling by the end of the first permit term. Using the storm sewer system map completed for the Illicit Discharge Detection and Elimination minimum measure (described in Chapter 4), prioritize storm drain inlets according to potential risk (e.g., inlets with a history of illegal dumping; inlets located near industries with outdoor, uncovered

DRAFT

operations; inlets located near areas with high rates of development; etc.) and begin stenciling projects in those areas.

Prior to initiating stenciling projects, conduct targeted education in the surrounding neighborhoods. Brochures explaining the storm drain stenciling project will notify households of the activity and its purpose. Distribute these brochures either via mail or find volunteers to deliver it door-to-door.

To order stencils from the Washington Department of Ecology, call 1-800-RECYCLE. Stencils and logistical information available from Earthwater Stencils, Ltd.'s website http://www.earthwater-stencils.com/index.htm.

2.3.5 Promote Water Quality Education with School Districts

Optional BMP 2E: Contact school districts to discuss opportunities to integrate water quality educational materials into the classroom and provide educational materials, where requested by schools.

Measurable Goal: Contact all school districts within the storm drain system boundary by the end of permit year 5 to discuss water quality educational opportunities in the classroom.

For this BMP, contact all schools districts within the storm drain system and offer to distribute appropriate water quality educational materials. If feasible, offer staff from a department involved in stormwater management to teach some of the material or organize alternative educational efforts such as tours of wastewater treatment plants or stream restoration visits.

The Washington Department of Ecology's Environmental Education program lists Classroom Curriculum Guides (K-12) that could be distributed to local schools. See the web site http://www.ecy.wa.gov/news/ee/curricul.html for more information. Ecology also holds workshops for teachers on Project WET, Water Education for Teachers. Additional information can be found on Ecology's Environmental Education web site.

Below are two examples of educational programs specifically developed for schools:

Boise's Environmental Presentations to Schools

The City of Boise, ID, Environmental Division staff teach environmental programs in Boise public schools, focusing on the elementary grades. Presenters provide visuals, hands-on activities, materials for students to keep and supplemental teaching materials, if requested. Each presentation is interactive and can accommodate a variety of grade levels. One hour presentations on ground water protection and stormwater protection, along with other topics, have been created. For more information, see

DRAFT

http://www.cityofboise.org/public_works/education/ or contact the Boise City Public Works Department.

EPA's Water Sourcebooks

EPA's Water Sourcebooks are also available as an educational program. The Water Sourcebooks contain 324 activities for grades K-12 divided into four sections: K-2, 3-5, 5-8, and 9-12. Each section is divided into five chapters: Introduction to Water, Drinking Water and Wastewater Treatment, Surface Water Resources, Ground Water Resources, and Wetlands and Coastal Waters. The program is available on the web for printing and use by educators.

http://www.epa.gov/ogwdw000/kids/wsb/index.html

2.3.6 Work with Volunteer Groups on Stormwater Education Projects

Optional BMP 2F: Contact volunteer organizations to discuss opportunities to integrate stormwater into existing education projects.

Measurable Goal: Contact at least 5 volunteer organizations by the end of permit year 5 to discuss and promote stormwater education.

Many volunteer organizations within the storm drainage system may already conduct water quality related educational programs. Where these organizations exist, they may be willing to incorporate stormwater issues into their programs and activities to help meet this minimum measure.

Begin by researching the various volunteer programs and organizations that focus on the boundaries of the storm drainage system and/or the watershed and identify ways to integrate stormwater issues into these existing volunteer opportunities.

Existing volunteer programs and organizations that may be willing to take on stormwater issues include school organizations, civic associations, and environmental organizations. After developing a comprehensive list of these volunteer programs and organizations, contact the volunteer coordinators and discuss how to incorporate stormwater related activities with ongoing activities and programs. Document these existing programs and organizations, along with information related to the potential for integrating stormwater issues. If volunteer programs and organizations agree to address stormwater issues, provide these groups with information regarding stormwater management and effective stormwater controls.

DRAFT

2.3.7 Develop a Stormwater Speakers Bureau

Optional BMP 2G: Develop and promote a stormwater speakers bureau that give presentations on stormwater issues throughout the community.

Measurable Goal: Develop a speakers bureau by the end of permit year 4 and promote the use of this speakers bureau by contacting at least three groups each year.

Recruiting a team of stormwater management advocates from target audiences is one way to educate stakeholders and to distribute stormwater educational messages at a low-cost. Speakers bureaus are an effective way to get out information on stormwater management and have the message come from a representative of each target audience. All that is needed to implement this BMP are presentation materials on stormwater management and a group of willing volunteers who like to speak in public.

In order to implement this BMP, develop presentation materials and actively recruit volunteers to join the speaker's bureau. Offer the services of the speaker's bureau to schools, civic organizations, and/or corporate events.

An example of a speakers bureau developed by a city in Colorado can be found online at http://www.greenwoodvillage.com/cityman/speakers.html.

2.3.8 Create Stormwater Public Service Announcements

Optional BMP 2H: Broadcast stormwater public service announcements (PSAs) through newspapers, television or radio and run the announcements at appropriate frequent intervals to ensure target audiences are exposed to the message.

Measurable Goal: Create a stormwater PSA by the end of permit year 5, and run this PSA so the population within the jurisdiction receives the information an average of 3 times over the course of a year.

Most people within communities receive their information from mass media sources such as newspapers, television, and radio. While these forms of outreach tend to be more expensive than printed materials, they can reach a wide audience and have a stronger, more lasting impact.

Design public service announcements (PSAs) for mass media sources such as newspaper, television, or radio. To have an impact, audiences need exposure to PSAs over a long-period of time and at regular intervals. Many communities have already designed and used PSAs related to stormwater and make these PSAs available to other communities to use either for free or at a minimal cost.

The frequency of PSA ads is up to each jurisdiction, however, in order to make sure that the PSA is received by an appropriate number of people,

DRAFT

use estimates of the audience reached by that media to calculate a total number of people reached by the PSAs. For example, radio stations have estimates for the number of listeners at various times of the day, and newspapers have the total numbers of subscribers. The PSAs should be run enough times so that each person within the jurisdiction will view the PSA an average of three times over the course of a year.

Washington State Department of Ecology Water Quality Consortium (http://www.ecy.wa.gov/programs/wq/posters/) has a series of newspaper and television advertisements available to local governments. The ads come on a CD ROM in a format that can be customized. See the web site listed above for more information on ordering the materials.

2.3.9 Design a Stormwater Display

Optional MBP 2I: Display a stormwater exhibit at various community locations and events (e.g., county Fairs, city Events, etc.).

Measurable Goal: Develop a stormwater display by the end of permit year 5, and use this display at various events an average of 4 times per year.

Buildings and events that have regular traffic and/or attract a large number of people provide an opportunity for stormwater education. Free-standing educational displays are intended to communicate information in an easy-to-understand format using photographs, maps, and hands-on activities. Educational displays convey information to a broad audience due to their mobile nature, and they are easily adapted for different audiences and/or venues. In some communities, educational displays in libraries or city hall become semi-permanent or permanent exhibits. Mobile displays also travel from event to event, such as festivals and fairs, or rotate from location to location, such as schools and nature centers.

In order to design and develop an educational display on stormwater issues, include messages for members of each target audience, provide information on stormwater problems and solutions, and use a combination of images and text to convey information. In addition to developing the display, use the information contained in the education and outreach strategy (BMP 2A) to identify the most effective places and/or events to set-up the display. Send the display to at least one location/event that focuses on each specific target audience during each permit year. Also, use the display as a mechanism for distributing the other stormwater information, such as brochures.

DRAFT

2.3.10 Create a Stormwater Web Site

Optional BMP 2J: Create a stormwater website that contains educational information for a variety of target audiences.
Measurable Goal: Complete a stormwater web site section on an existing web page, or independently, by the end of permit year 5. The site will be updated monthly during the rest of the permit term.

Many target audiences have access to the Internet through home, work and/or school. Websites serve as a powerful educational tool given the increased access to computers and the Internet. Electronic information also facilitates involvement in other BMPs and community service projects (e.g., reporting of illegal dumping, registering for storm drain stenciling activities). Websites function as a public notification tool, aiding implementation of the Public Involvement and Participation minimum measure described in Chapter 3. In addition, using a website as an educational resource reduces costs by decreasing funds needed to print and distribute educational materials.

Design and develop a stormwater website that contains educational information on stormwater and information on the jurisdiction's stormwater program. Include the website address on other forms of outreach, such as brochures and displays, to ensure that the community knows where to find additional information about stormwater.

Provided below are links to two stormwater websites for Las Vegas, Nevada, and Sacramento, California. These websites provide examples and different ways to format information.

Las Vegas Stormwater
http://www.lvstormwater.com/

Sacramento Stormwater Management Program
http://www.sacto.org/cleanwater/

2.4 Resources

Las Vegas Education examples
http://www.lvstormwater.com/education.html

Puget Sound Public Education Info
http://www.wa.gov/puget_sound/Programs/Education.htm

Wash Ecology NPS educational product showcase
http://www.ecy.wa.gov/forms/showcase/

City of Boise Public Works Education program
http://www.cityofboise.org/public_works/education

Water Education Foundation
http://www.water-ed.org/store/default.asp

DRAFT

The Terrene Institute
http://www.terrene.org/index.htm

Earthwater Stencils
http://www.earthwater-stencils.com/index.htm

Getting In Step: A Guide to Effective Outreach in Your Watershed
http://www.epa.gov/owow/watershed/outreach/documents/getnstep.pdf

EPA National Menu of BMPs
http://www.epa.gov/npdes/menuofbmps/pub_ed.htm

Appendices

Appendix 2A - Example Stormwater Brochure

Appendix 2B - Education and Outreach Strategy Development Template

Appendix 2C - Questions to Help Identify Target Audiences

Appendix 2D - Example Targeted Stormwater Brochure

DRAFT

Appendix 2A – Example Stormwater Outreach Brochure

The Stormwater Quality Management Committee is a multi-agency effort committed to the development and implementation of stormwater pollution monitoring, control and outreach efforts within the Las Vegas Valley.

The goal of this brochure is to alert residents that dumping litter or other common hazardous materials is harmful to our environment and our water quality.

Storm drains are located throughout Clark County. Storm drains remove excess water from streets during rainy weather, vehicle washing and from over irrigation of grassy areas. Water from the storm drains flows through our washes to Lake Mead and is not treated to remove pollutants during this trip.

Sign warning citizens not to dump pollutants into the storm drain.

THE PROBLEM

REFUSE OR TRASH-Trash dumped in streets and washes clogs flood channels and can increase the possibility of flooding, as well as pollute the water.

PET WASTE-Pet waste contains harmful levels of bacteria that pollutes stormwater. Pet waste that is not picked up in parks or yards breaks down with sprinkler water contact and then travels into storm drains. Dispose of pet waste in the trash.

FERTILIZERS-Over fertilizing your lawn will increase the growth of algae in stream channels and Lake Mead and reduce the amount of oxygen in the water, which is needed by aquatic life.

Dirty Storm Drain

PAINT, ANTIFREEZE, PESTICIDES-Although common, these items are often classified as hazardous wastes. These products are toxic to pets, wildlife and the environment when not disposed of properly.

AUTOMOTIVE FLUIDS-Used automotive fluids, such as motor oil, that are poured down storm drains or that drip onto the street, flow to Lake Mead untreated and harm or kill underwater vegetation and aquatic life. One quart of oil can pollute up to 250,000 gallons of water.

THE SOLUTION

THINGS YOU CAN DO

JOIN THE STORMWATER QUALITY MANAGEMENT EFFORT-Educate our community about storm drains and potential stormwater pollutants. Keep pollutants off streets, yards and parks.

AVOID WATER RUNOFF & SOIL EROSION-Water runoff is a main form of transport for many urban pollutants. Use a broom to sweep up debris, and fix faulty sprinkler systems. Decorative rocks & plants can help reduce soil erosion in landscaped areas.

CHECK YOUR CAR FOR LEAKS-Place a drip pan under leaking vehicles or have them repaired. Clean up spills with absorbent materials like kitty litter and dispose of in the trash.

TRASH & RECYCLING-Properly dispose of chemicals, oil, paint, antifreeze and other toxic materials. Reuse and recycle where possible.

OUTDOOR CLEANING-Wash outdoor items with biodegradable soap, or at a commercial car wash that filters and recycles wash and rinse water.

TAKING CARE OF BUSINESS- Businesses like carpet cleaners, pool services, mobile dog grooming and auto detail services can avoid harmful runoff of soapy or chlorinated water by using the sanitary sewer "clean-out" that is located in front (or in some cases in the garage) of most houses.

Sanitary Sewer "Clean Out"

FOR MORE INFORMATION ABOUT:

Proper Disposal of Hazardous Wastes:
See Waste Reduction & Disposal
in the yellow pages

Recycling Information: See Recycling
Services in the yellow pages:

Heavy Item Pick Up Services:
Republic Silver State Disposal
(702) 735-5151

To Report Illegal Dumping:
Clark County Health District (702) 383-1027

Stormwater Quality Management Committee:
Clark County Comprehensive Planning
(702) 455-4181 or www.lvstormwater.com

What Else Can You Do?

For more examples of best management practices, pollution prevention tips and techniques that can help save money and protect our water quality, check out:

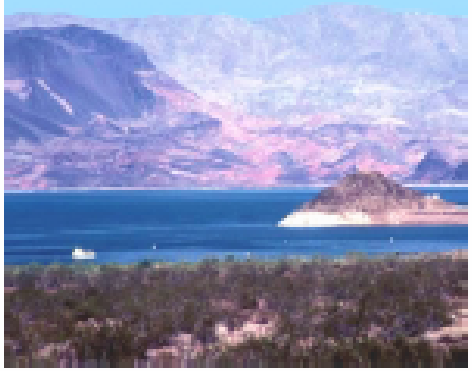
www.lvstormwater.com

Sponsored By
The Stormwater Quality
Management Committee's
Outreach Team

Clark County Regional Flood Control District
Stormwater Quality Management Committee
600 S. Grand Central Parkway 3rd Floor
Las Vegas, Nevada 89106

You May Be Polluting Lake Mead...

and not even know it!



www.lvstormwater.com

Appendix 2B – Education and Outreach Strategy Development Template

Driving force: (list stormwater problems to be addressed by educational material)

Target Audience: (list sub-group of the general population that has the potential to impact stormwater quality)

Messages: (list messages that contain "hooks" to get target audience to respond)

Objective	Format/Distribution	Schedule (quarters)				Responsible Party
List desired outcome of educational effort	▪ Describe type of educational material and how it will be distributed					List departments, organizations, etc. responsible for material development and distribution

***Example* of Education and Outreach Strategy**

Driving force: Nutrients, organic matter, and oil and grease

Target Audience: Homeowners

Messages:

- Protecting our watershed today will protect our quality of life tomorrow.
- Preventing pollution at the storm drain will save you money.
- Swimming with the "first flush" is hazardous to your health!

Objective	Format/Distribution	Schedule (quarters)				Responsible Party
Make audience aware that their day-to-day activities affect the resource	▪ Submit articles in local newspapers		x	x	x	Public Works Department
	▪ Submit articles in homeowner assn newsletters			x	x	Public Works Department
	▪ Develop and air PSAs featuring the 10 Did You Know? Questions about the watershed		x			Watershed Association
	▪ Mail brochure to all riparian residents with the 10 Did you know questions			x		Watershed Association

DRAFT

Objective	Format/Distribution	Schedule quarters				Responsible Party
Educate the audience on the causes of water quality impacts and what actions they can take to minimize the impacts.	Distribute Riffles and Runs Newsletter to residents	x				Watershed Association
	Make Presentations to homeowner assns and schools and distribute give-aways		x			Local Garden Club
	Distribute watershed placemat		x			Watershed Association
	Continue to print articles in local papers and related publications	x	x	x		Public Works Department
	Conduct Watershed fair					Watershed Association
	Distribute calendars to residents					Public Works Department
	Develop targeted brochure on land-use decision making and maintaining riparian buffers					Soil and Water Conservation District and Planning Department
	Sponsor the Bear Creek Players at community events					Community Foundation

Objective	Format/Distribution	Schedule quarters				Responsible Party
Promote involvement through participation of activities	Hold landscaping workshops					Soil and Water Conservation District
	Hold community meetings to promote participation in land-use decisions					Watershed Association and Planning Department
	Recruit homeowner assns to become stream stewards					Watershed Association

DRAFT

Appendix 2C – Questions to Help Identify Target Audiences

Who Are We Trying to Educate?	How Large is the Audience?	How Do They Receive Information?	What Organizations Focus on Them?	How Will Educational Materials be Distributed to this Audience?
Municipal Employees	How many departments/agencies address stormwater-related issues in their responsibilities? How many employees are there in these departments?	What publications do employees regularly receive (e.g., new employee orientation guide; employee newsletter; paycheck)? What is the community website? Where are central information sources located at each government facility? When do staff meetings take place?	What groups do local government employees belong to (e.g., unions; local watershed organizations; churches; special committees; nature centers; block clubs; etc.)?	

DRAFT

Who Are We Trying to Educate?	How Large is the Audience?	How Do They Receive Information?	What Organizations Focus on Them?	How Will Educational Materials be Distributed to this Audience?
Residents	What is the total population of your community? How many households are located within your community?	What is the most popular newspaper in your community? What newsletters do residents receive and how often? What libraries do people visit? What churches do people attend? Are there programs in place to reach new residents that move to your community?	What groups exist that target homeowners (e.g., homeowners associations; block clubs; neighborhood development associations; recreational groups; etc.)?	
Schools	How many schools are located in the community? How many are elementary schools? High schools? Colleges and/or universities? What is the approximate student population at each of these schools?	Which schools have newspapers and how often do they go out? How often does the student body gather for assemblies? When are guest speakers invited to visit the schools?	What groups might students belong to at all levels (e.g., boy/girl scouts; 4-H Club; Junior Achievement; student councils; school environmental clubs; local chapters of environmental organizations; nature centers, etc.)?	

DRAFT

Who Are We Trying to Educate?	How Large is the Audience?	How Do They Receive Information?	What Organizations Focus on Them?	How Will Educational Materials be Distributed to this Audience?
Businesses	How many businesses are located within your community?	What newspapers and other periodicals do business owners subscribe to? What local programs/organizations work to recruit and retain new businesses in your community?	What groups or associations might businesses belong to or communicate with businesses (e.g., chamber of commerce; trade associations; rotary club; community foundations; small business associations; etc.)?	
Developers	How many developers and contractors work within your community? How many developers have submitted building permit requests?	Where do developers go to get information on the community's development requirements? What newsletters specifically target developers in your area? What newspapers and other periodicals do developers subscribe to?	What groups or associations might developers belong to or communicate with developers (e.g., chamber of commerce; trade associations; rotary club; community foundations; small business associations; etc.)?	

DRAFT

Appendix 2D – Example Targeted Stormwater Brochure

Example of a targeted restaurant brochure from the City of Phoenix. Taken from http://www.ci.phoenix.az.us/STORM/restaur.html.

The City of Phoenix urges all valley residents to do their part in implementing Solutions To Pollution

Urban stormwater runoff pollution includes chemicals, cleaning solvents, mop water, oil, grease and food particles. This pollution damages the environment, killing plant and animal life. The valley cities are required by federal law to educate the public on stormwater concerns. Please join us in our effort to reduce urban stormwater runoff pollution. Follow these simple tips and be a solution to pollution.

Restaurant Industry Tips

DON'T
wash kitchen mats or rugs outside, in the alley, on the sidewalk or in the street.

DO
wash mats indoors, near the kitchen floor drain, in the mop sink or have them professionally laundered.

DON'T
use toxic chemicals like bleach and detergents to wash down your outdoor dining area or allow the area go unswept.

DO
sweep up food and trash before using a mop and bucket to wash the outside dining area, then dispose of the water in a mop sink or kitchen floor drain.

DON'T
use toxic chemicals like bleach and detergents to clean trash containers outside.

DO
sweep out debris from trash cans, scrub with a brush and soap, then rinse the cans into a mop sink or kitchen floor drain.

DON'T
pour oil or grease into a trash bin, storm drain, the street, sanitary sewer or on the ground.

DO
collect bulk oil and grease in a "tallow bin" container and contact a firm to haul it away regularly.

DON'T
allow employees to teach and monitor themselves about your operating procedures.

DO
train employees on the proper ways to clean and operate the facility and dispose of wastes.

Do Your Part

To report illegal dumping in storm drains or for more information call ###-###-####.

DRAFT

Table of Contents

Chapter 3 - Stormwater Public Involvement/Participation Program **3-1**
3.1 Requirements 3-1
3.2 Benefits/Why This Measure is Important 3-1
3.3 Model Program for Stormwater Public Involvement/Participation 3-2
3.3.1 Public Review/Public Meetings 3-3
Step 1. Determine the appropriate type of public meeting format. 3-3
Step 2. Announce the meetings 3-3
Step 3. Conduct meeting and solicit stakeholder input 3-4
Step 4. Perform meeting follow-up activities. 3-4
3.3.1 Optional BMP: Distribute News Releases 3-4
3.3.2 Optional BMP: Stakeholder Advisory Panel 3-5
3.4 Resources 3-5
Appendices 3-5
Appendix 3A – Public Meeting Planning Checklist 3-6

DRAFT

Chapter 3 - Stormwater Public Involvement/Participation Program

3.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following information as the regulatory requirements for public involvement/participation. This model program is intended to meet these EPA requirements and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties. The following guidance section from the Phase II Rule provides additional details on the preceding regulations.

Regulations	**40 CFR 122.34(b)(2) Public involvement/participation** (i) You must, at a minimum, comply with State, Tribal and local public notice requirements when implementing a public involvement/ participation program

Guidance	**40 CFR 122.34(b)(3) Public involvement/participation** EPA recommends that the public be included in developing, implementing, and reviewing your stormwater management program and that the public participation process should make efforts to reach out and engage all economic and ethnic groups. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on a local stormwater management panel, attending public hearings, working as citizen volunteers to educate other individuals about the program, assisting in program coordination with other pre-existing programs, or participating in volunteer monitoring efforts. (Citizens should obtain approval where necessary for lawful access to monitoring sites.)

DRAFT

3.2 Benefits/Why This Measure is Important

Public involvement/participation activities can gain much needed public support for stormwater management program implementation. As mentioned in the previous chapter, the success of the overall program relies on changes in the public's attitudes and behaviors. Early and frequent public involvement in stormwater management increases awareness and broadens public support. By providing interested members of the public (also referred to as stakeholders) with the opportunity to participate in the design of the stormwater program, the potential for legal challenges decreases and stakeholders' sense of program ownership increases.

In addition to changing stakeholders' attitudes, opportunities to participate also play an important role in education and behavior modification.

Volunteer programs that allow people to monitor water quality in streams, stencil storm drains, or clean trash from streambanks illustrate the connection between everyday actions and water quality while providing people with a sense of accomplishment. They see that they are truly a part of the solution. Stakeholders also help provide access to additional funding sources, expertise, and other important resources (e.g., equipment, facilities, media outlets, etc.). Public education programs are further described in Chapter 2.

3.3 Model Program for Stormwater Public Involvement/Participation

Involve the public in both the development and implementation of the stormwater program. Public notice requirements are the minimum element of this minimum measure, consisting of the following steps:

- Public Review/Public Meetings, including local newspaper advertisements
- News releases

A significant amount of public input and involvement has already been included in the development of this model Phase II NPDES program. A Steering Committee made up of state and local representatives oversaw the development of both this model program and the Eastern Washington Stormwater Manual. An NPDES Subcommittee consisting of State and local representatives was also formed to specifically oversee and comment on this model program.

In addition to the Committee and Subcommittee, the subcommittee requested public comments on the draft model program and held public meetings to discuss the model program

3-1 Feedback Requested:

Chapter 3 describes techniques to use and consider using to solicit public involvement in the stormwater program.

How would you like to be involved in your community's stormwater public involvement program? (Please explain how and why.)

How would you like to be informed about stormwater public involvement opportunities? (Please explain how and why.)

There is only one required BMP for public involvement; BMP 3A on public review/public meetings. BMP 3B and BMP 3C are optional BMPs at the discretion of each jurisdiction.

3.3.1 Public Review/Public Meetings

Required BMP 3A: Hold public meetings and solicit public review of stormwater management plan.

Measurable Goal: Hold at least two public meetings and publish at least two public notices during the first permit year.

Follow all local and state public notice requirements to ensure that the public has an opportunity to participate in the program. Local public notice requirements vary, but will probably consist of public meetings, including city/county Council meetings, and publishing notices in local newspapers.

Planning and conducting a public meeting will consist of the following main steps:

Step 1. Determine the appropriate type of public meeting format.

There are many things to consider when planning a public meeting, including format, time, location, agenda, and facilitator. Not all public meeting formats are alike, depending on the goal of the meeting and the items on the agenda. Since the goal of this meeting is to first inform and then to obtain stakeholder input, formats such as workshops and/or open houses are most appropriate. Give stakeholders attending the meeting an overview of the stormwater program and then transition into a format (e.g., workgroups) conducive to sharing ideas and information.

Be sensitive to the factors that can influence stakeholder participation, such as the day and time of the meeting, the actual meeting site, and advertising for the meeting. Appendix 3A contains a checklist to assist in planning a public meeting.

Also consider the factors that will affect participation during the meeting. Presentation materials should avoid excessive use of acronyms, technical terminology, and large amounts of text. Be sure that the agenda allots enough time for people to ask questions and provide feedback. Keep in mind that not all people feel comfortable speaking in public, so consider having a public comment form available for each participant and/or have staff available for one-on-one discussions.

Step 2. Announce the meetings

Ensure that announcements for the public meeting reach all stakeholders within the community, and that each category of stakeholder (i.e., similar to target audiences identified for public education and outreach) is represented during the public meeting.

Use the education and outreach strategy and the target audiences identified in Chapter 2 to ensure that announcements go out to all interested parties. Create and distribute the meeting announcement to local newpapers or through other appropriate mechanisms

DRAFT

Step 3. Conduct meeting and solicit stakeholder input

Be sure the agenda includes enough time for people to ask questions and provide feedback. Someone should have the responsibility for recording comments from the public and the responses that they receive. Not all people feel comfortable speaking in public, so include a public comment form for participants to fill out. If possible, have staff available for one-on-one discussions. In addition, ask for participants to fill out an evaluation form to determine if this was an effective mechanism to reach people.

Step 4. Perform meeting follow-up activities.

Follow-up activities are just as important as planning. Essential follow-up activities include preparing a summary of the questions and answers discussed at the meeting, generating a participants' contact list (for inclusion in a mailing list), and compiling public comment forms received via mail or fax. Review the information on the meeting evaluation forms for use in planning future public meetings. The types of information collected through the public meeting will help determine who was/wasn't represented during the meeting, what the perceptions and attitudes are of those who attended and commented, and how best to reach stakeholders in the future.

Use stakeholder input to develop and/or modify the stormwater program. Stakeholder input may influence the type of BMPs selected for each minimum measure and/or the measurable goals developed to track implementation progress. Make meeting follow-up information available to the public, either through newspapers, websites, or a mailing. This will demonstrate to stakeholders that their input is taken seriously and that it has influence. This may have a positive impact on whether they continue to participate.

3.3.2 Optional BMP: Distribute News Releases

Optional BMP 3B: Develop a news release for local newspapers in order to solicit interest to cover the new stormwater program as a feature story.

Measurable Goal: At least one news release story on the jurisdictions stormwater program will be distributed to local papers per year starting in permit year 2.

To help encourage additional local coverage on the development of the stormwater program, create and distribute a new release for use by local papers. Include in the news release an overview of the new stormwater program, activities that will be conducted, and how the public can obtain more information.

3.3.3 Optional BMP: Stakeholder Advisory Panel

Optional BMP 3C: Hold and solicit input from a stakeholder advisory panel.

Measurable Goal: Organize and convene a stakeholder advisory panel by the end of permit year 1. Hold meetings with the panel at least quarterly thereafter.

This is an optional BMP, but one which can help build support for a local stormwater management program and provide valuable expertise in designing and implementing the program.

Convene a stormwater advisory panel to solicit input on the development and implementation of the stormwater program. Include on the panel representatives of businesses, industries, conservation groups, residential and civic associations, and other interested stakeholders. If this optional BMP is chosen, work with this panel to discuss program development and program implementation. Although the stormwater panel is advisory only, working with such a panel helps develop significant support for a local stormwater program.

3.4 Resources

Adopt-A-Stream
http://www.streamkeeper.org/

Earthwater Stencils
http://www.earthwater-stencils.com/index.htm

EPA National Menu of BMPs
http://www.epa.gov/npdes/menuofbmps/pub_inv.htm

Appendices

Appendix 3A – Public Meeting Planning Checklist

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Appendix 3A – Public Meeting Planning Checklist

Phase II Stormwater Management Program
Public Meeting Planning Checklist
(Insert Date)
(Insert Time)
(Insert city)
(Insert Meeting Facility Name, Address, Contact, and Phone Number)

What Do We Need To Do?	Who is Responsible?	When Do We Need to Have This Done?
Secure Meeting Site		As soon as potential dates are decided. Must have this information before producing announcements.
Invitations/Announcements-Producing		6 weeks before meeting
Invitations/Announcements - Mailing (electronically)		At least 4 weeks before meeting
Agenda – Producing		Need to start working on agenda as soon as possible
Agenda - Mailing (electronically)		2 weeks before meeting
Banquet Event Orders- • Audio Visual Equipment Needs • Room Set-up Confirmed		2 weeks before meeting
Meeting Packets or Individual Handouts including the following items: • Agenda • Presentation Materials • Background Information • Worksheets • Public Comment Forms • Contact Information for Submitting Additional Comments		1-2 weeks before meeting
On-site Registration Information		Determined 1-2 weeks before meeting
On-site Note Taking		Determined 1-2 weeks before meeting

Table of Contents

Chapter 4 - Illicit Discharge Detection and Elimination Project 4-1
4.1 Requirements 4-1
What is an "illicit discharge?" 4-2
4.1.1 Allowable Illicit Discharges 4-3
4.2 Benefits/Why This Program is Important 4-4
Illicit Discharge Example Case Studies 4-4
Washtenaw County, Michigan 4-4
Inner Grays Harbor, Washington 4-4
Benefits of controlling illicit discharges 4-4
4.3 Model Program for Illicit Discharge Detection and Elimination 4-5
4.3.1 Storm Sewer System Map 4-5
4.3.2 Ordinance to Prohibit Non-Stormwater Discharges 4-7
4.3.3 Detect and Address Non-Stormwater Discharges 4-8
Illicit discharge detection plan 4-8
4.3.4 Conduct Field Inspections 4-11
4.3.5 Spill Response Plan 4-12
4.3.5.1 Ecology's Emergency Spill Response 4-12
4.3.5.2 Spills/Emergency Response 4-13
4.3.6 Plan for Enforcement Actions 4-14
4.3.7 Train Municipal Staff on Spill and Illicit Discharge BMPs 4-15
4.4 Resources 4-15
Appendices 4-16
Appendix 4A - Sample Outfall Map 4-17
Appendix 4B - Sample Stormwater Ordinance 4-18
Appendix 4C – Visual Tests of Possible Contaminants in Dry Weather Flows 4-34
Appendix 4D – Illicit Discharge Identification Form 4-36
Appendix 4E – Sample Enforcement Plan 4-37

DRAFT

Chapter 4 - Illicit Discharge Detection and Elimination Project

4.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following regulations for illicit discharge detection and elimination. This model program is intended to meet these EPA regulations and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties. The following guidance section from the Phase II Rule provides additional details on the preceding regulations.

Regulations	**40 CFR 122.34(b)(3) Illicit discharge detection and elimination.** (i) You must develop, implement and enforce a program to detect and eliminate illicit discharges (as defined at Sec. 122.26(b)(2)) into your small MS4. (ii) You must: (A) Develop, if not already completed, a storm sewer system map, showing the location of all outfalls and the names and location of all waters of the United States that receive discharges from those outfalls; (B) To the extent allowable under State, Tribal or local law, effectively prohibit, through ordinance, or other regulatory mechanism, non-stormwater discharges into your storm sewer system and implement appropriate enforcement procedures and actions; (C) Develop and implement a plan to detect and address non-stormwater discharges, including illegal dumping, to your system; and (D) Inform public employees, businesses, and the general public of hazards associated with illegal discharges and improper disposal of waste.

Guidance	**40 CFR 122.34(b)(3) Illicit discharge detection and elimination.** EPA recommends that the plan to detect and address illicit discharges include the following four components: procedures for locating priority areas likely to have illicit discharges; procedures for tracing the source of an illicit discharge; procedures for removing the source of the discharge; and procedures for program evaluation and assessment. EPA recommends visually screening outfalls during dry weather and conducting field tests of selected pollutants as part of the procedures for locating priority areas. Illicit discharge education actions may include storm drain stenciling, a program to promote, publicize, and facilitate public reporting of illicit connections or discharges, and distribution of outreach materials.

DRAFT

What is an "illicit discharge?"

An illicit discharge is anything entering a storm drain system discharging to surface water that is not composed entirely of stormwater. Often times, illicit discharges are the result of illegal activity. For example, dumping materials into a storm drain or connecting a wastewater pipe into the storm drain system are both prohibited under various State and local laws, and result in an illicit discharge.

The best way to prevent illicit discharges is to prevent material from entering the storm drain system. This is done through education, enforcing dumping ordinances and controlling spills.

In some limited cases, discharges not composed entirely of stormwater (but potentially containing small amounts of other substances) are allowed into the storm sewer system. These are termed "allowable illicit discharges" and are addressed in Section 4.1.1.

Illicit discharges should not be allowed to enter a storm drain system because municipal separate storm drain systems are not typically designed to accept or treat such wastes. Untreated illicit discharges to the storm drain system can contribute pollutants to rivers, streams, lakes, and groundwater. Although this model program focuses on surface water, illicit discharges to surface waters can also impact groundwater.

In eastern Washington, some examples of illicit discharges include:

- Fruit packing wash water
- Sanitary wastewater from improper or leaking sewage systems
- Surface flow and irrigation drainage from feed lots and hobby farms
- Automobile wastes from commercial car washes or improper oil disposal
- Spills on roadways or parking lots
- Trash and solid waste dumping in drainage ways

An illicit discharge can be either an illegal connection of non-stormwater to the storm drain or the discharge or dumping of a pollutant. Making connections for anything but stormwater to a storm drain system is illegal. Also, spills and other non-stormwater pollutants running off and entering a storm drain constitute an illicit discharge. Illicit discharges often result from one of these illegal activities (illegal connections or dumping/spills).

Discharges from jurisdictions include wastes and wastewater from non-stormwater "illicit" discharges. An illicit discharge in eastern Washington can occur:

1. During dry weather, when there should be no flow in the storm drain.

DRAFT

2. During dry weather, when an allowable flow, such as irrigation water runoff is occurring.

3. During wet weather.

It will be easiest to detect illicit discharges during dry weather, so this program is focused on detecting discharges during that time period.

4.1.1 Allowable Illicit Discharges

EPA's stormwater regulations allow two types of discharges to storm drain system that are not composed entirely of stormwater: discharges under an existing NPDES permit and discharges due to fire fighting activities. The following list of discharges is allowed unless identified as significant contributors of pollutants to the permittee's storm drain system. These allowable illicit discharges include:

- Water line flushing
- Landscape irrigation
- Diverted stream flows
- Rising ground waters
- Uncontaminated ground water infiltration
- Uncontaminated pumped ground water
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Irrigation water
- Springs
- Water from crawl space pumps
- Footing drains
- Lawn watering
- Individual residential car washing
- Flows from riparian habitats and wetlands
- Dechlorinated swimming pool discharges
- Street wash water

Significant contributor criteria

For the above-cited allowable illicit discharges, Ecology's presumption is that these discharges are not impairing water quality. However, in some limited circumstances, the sources cited above could cause a water quality problem and would need to be addressed. These allowable illicit

DRAFT

discharges would be considered significant contributors of pollutants to a waterbody, and would need to be addressed, if they are, singly or cumulatively:

- Identified in a Total Maximum Daily Load (TMDL) as a source of pollutants to an impaired waterbody.
- Identified by Ecology as a source of impairment to receiving waters (under RCW 90.48).

4.2 Benefits/Why This Program is Important

Illicit Discharge Example Case Studies

Two examples of studies documenting the impacts of illicit discharges are from Washtenaw County, Michigan and Inner Grays Harbor, Washington (as cited in EPA, 1993). They are summarized below.

Washtenaw County, Michigan

The Ann Arbor and Ypsilanti water quality projects inspected 660 businesses, homes, and other buildings and identified 14 percent of the buildings as having improper storm sewer drain connections. The program assessment revealed that, on average, 60 percent of automobile-related businesses, including service stations, automobile dealerships, car washes, body shops, and light industrial facilities, had illicit connections to the storm sewer drains. The program assessment also showed that a majority of the illicit discharges to the storm sewer system resulted from improper plumbing and connections, which had been approved by the municipality when installed.

Inner Grays Harbor, Washington

An inspection of urban storm sewer outfalls draining into Inner Grays Harbor indicated that 32 percent of these outfalls had dry weather flows. Of these flows, 21 percent were determined to have elevated pollutant levels.

Benefits of controlling illicit discharges

The example cited above from Michigan found that the elimination of illicit discharges to separate storm sewers caused a measurable improvement in the water quality of the Washtenaw County storm sewers and the Huron River (Washtenaw County Statutory Drainage Board, 1987, as cited in EPA Phase II Final Regulations).

Another study in Houston, Texas found that controlling illicit discharges has significantly improved the water quality of Buffalo Bayou. Houston estimated that illicit flows from 132 sources had a flow rate as high as 500 gallons/minute. Sources of the illicit discharges included broken and plugged sanitary sewer lines flowing into storm drain systems, illicit connections from sanitary lines, and floor drain connections (Glanton,

DRAFT

Garrett and Goloby, 1992, The Illicit Connection: Is it the problem? Wat. Env. Tech. 4(9):63-8 as cited in EPA Phase II Final Regulations).

4.3 Model Program for Illicit Discharge Detection and Elimination

The Model Program for illicit discharge detection and elimination has the following components:

- Development of a storm sewer system map (4.3.1)
- An ordinance to prohibit illicit discharges (4.3.2)
- A plan to detect and address illicit discharges (4.3.3)
- A spill response plan (4.3.4)
- A plan for enforcement actions (4.3.5)
- Screening of outfalls for illicit discharges (4.3.6)
- Train municipal staff on spill and illicit discharge BMPs (4.3.7)

The Phase II regulations require the jurisdiction to "inform public employees, business, and the general public of hazards associated with illegal discharges and improper disposal of waste." (40 CFR 122.34(b)(3)(ii)(D)). This requirement is addressed in both Chapter 2 (Public Education) and Chapter 7 (Good Housekeeping for Municipal Operations).

All the BMPs in this chapter, BMPs 4A – 4G, are required.

4.3.1 Storm Sewer System Map

Required BMP 4A: Create a storm sewer system map showing all known storm drain outfalls to receiving waters

Measurable Goal: Map and filed verify the location of 33% (on average) of all known outfalls and receiving waters each year during permit year 3 - 5

If one does not already exist, a storm sewer system map showing, at a minimum, locations of all outfalls and the names and locations of all waters that receive a discharge from those outfalls is needed. The mapping of storm sewer pipe or storm drain inlet locations is not required, although it is probably desirable for most cities in the long-term to assist with maintenance.

1. Collect existing information

The first step is to collect all existing information about the storm drainage system and discharges (outfalls) to receiving waters. This information may already be available from various city and county government

DRAFT

agencies, such as public works or planning agencies. Many cities already have a map of their storm drain system, and information on receiving waters is readily available from various agencies such as the U.S. Geological Survey.

2. Determine the appropriate specifications for the map

Once existing data are collected, a storm drainage system map is developed to display the information. Decisions on what type of information to place on the map include piping location, sizing, man holes, service laterals, and outfalls. Another decision to be made is on the scale of the map. A scale between 1:9,600 and 1:24,000 is appropriate for many small jurisdictions.

The location of outfalls and receiving waters is essential in the creation of a storm drainage system map. Maps enhanced using other features are more useful tools. Additional features include storm sewer pipes, inlets, stormwater detention basins, streets, political boundaries and major land uses. Drainage areas for each outfall are useful when attempting to pinpoint the contributing area for an illicit discharge. The map developed for this BMP will also help in other program areas; such as proper operation and maintenance of the storm drainage system.

There is no requirement relating to format; either paper or electronic maps are acceptable, as long as it is compatible with existing mapping efforts.

If hydraulic modeling is conducted (for example, to address drainage problems or pollutant loadings), then additional data such as pipe sizes, invert elevations, materials, pipe lengths, detention system operation (stage/volume/discharge), manhole location and lid elevations may be needed to support this activity.

3. Plan out the mapping effort

The mapping effort can take up to five years to complete. The majority of the mapping effort will take place over the last three years of the first permit term. The mapping for BMP 4A and the outfall inspections for BMP 4D can be combined to save time spent in the field.

Make field visits to outfall locations during dry weather. During wet weather, some outfalls become submerged which impedes access to outfall locations.

Identify each outfall on the map using an outfall identification number scheme such as a sequential numbering system or one that identifies the city quadrant or nearby street. Where existing systems to uniquely identify storm drains are in place, extend this identification system to include outfalls.

4. Map outfall and receiving water locations using field surveys

There are three primary purposes of the field surveys: 1) to verify the mapped locations of outfalls and the receiving waters they discharge into;

DRAFT

2) to identify any outfalls in the field missed in the mapping effort; and 3) to identify any potential illicit discharges from the outfall.

Using a standard form, field survey crews verify the location of outfalls and receiving waters, and identify any illicit discharges observed. Consider taking photos of and establishing GPS coordinates for each outfall. An example of a visual outfall inspection form from the Municipality of Anchorage is included in Chapter 7. This form, which can be used for both municipal maintenance activities and dry weather discharge identification, asks for general information on the outfall, end-of-pipe information (including the physical condition of the pipe), and visual observations on flows out of the pipe and sediment or debris accumulation.

A sample portion of an outfall map is included in Appendix 4A.

4.3.2 Ordinance to Prohibit Non-Stormwater Discharges

Required BMP 4B: Develop and enforce an ordinance prohibiting illicit discharges and illegal dumping and authorizing enforcement actions, including on private property.

Measurable Goal: If not already in place, adopt an ordinance that prohibits illicit discharges to the storm drain system by the end of permit year 2.

First, assess whether the required legal authority to prohibit non-stormwater discharges to the storm drainage system currently exists. Look to existing ordinances or municipal codes to identify this legal authority. If adequate legal authority prohibiting illicit discharges does not exist, an ordinance can be drafted based on the example ordinance provided in Appendix 4B (from the City of Boise's stormwater ordinance).

The model ordinance in Appendix 4B includes authority for all three of the ordinances required by EPA's Phase II regulations: ordinances to control illicit discharges, construction site runoff, and post-construction runoff. It may be easier to combine all three ordinances into a single ordinance like the example in Appendix 4B if legal authority does not currently exist.

The key elements of an illicit discharge ordinance include, at a minimum.

- Prohibitions on illegal dumping or discharges to the storm drainage system
- Prohibitions on illicit connections from sanitary sewers to the storm drainage system
- Authority to inspect properties for illicit discharges

DRAFT

- Penalties and enforcement options

Additional elements in an ordinance could include requirements for the property owner to pay for the cost of abatement and a requirement to notify the city or county of any spill or illicit discharge.

Another model ordinance specifically for illicit discharges, and examples of local ordinances, are available from the Stormwater Center (http://www.stormwatercenter.net).

4.3.3 Detect and Address Non-Stormwater Discharges

Required BMP 4C: Develop an illicit discharge detection plan that includes, at a minimum, the following components:

1. Identification of priority areas for assessment;
2. Field assessment activities;
3. Characterize any discharges found;
4. Procedures to trace an illicit discharge; and
5. Procedures to remove an illicit discharge.

Measurable Goal: Develop a plan to detect illicit discharges during permit years 3 – 5.

Illicit discharge detection plan

The primary component of this minimum measure is to develop an illicit discharge detection plan to find, identify and eliminate unknown pollutant discharges to the storm drainage system. The purpose of this plan is to identify priority areas within the storm drainage system that are believed to be more susceptible to illicit discharges, describe field assessment activities, determine one a discharge is found whether it is illicit, and describe procedures to trace the discharge back to its source and eliminate the discharge. The five major components of an illicit discharge detection plan are described below:

1. Identification of Priority Areas for Assessment

Define priority areas

The first step in developing an illicit discharge detection plan is to define priority areas for investigation. In the first permit term, the outfalls represent priority areas, and are inspected and assessed for dry weather discharges while field crews map the outfall locations. After the initial five year permit term, priority areas are defined according to the risk for illicit discharges. An example of how priority areas could be defined is included below.

Example:

Criteria to define priority areas could consist of the following:

DRAFT

- Level 1 areas contain materials from industries or other businesses that have the greatest potential negative effect on stormwater quality. Focus on the following:

  - Significant hazardous materials;

  - Materials from industrial/manufacturing facilities

  - Large quantities of material, especially near receiving waters

- Level 2 areas have the highest number of illicit discharge incidents from past reports. These are the areas mostly likely to have future incidents.

- Level 3 areas are all other lower priority areas.

Past experience and knowledge of the surrounding land use are effective indicators to determine which areas of the storm drain system fall into each of these three levels.

2. Field Assessment Activities

Once priority areas are determined, the next step is to develop a plan for inspecting outfalls that contains guidance on scheduling assessment activities and appropriate procedures. Field assessment activities to identify dry weather flows are contingent upon dry weather. Other factors influencing non-stormwater contributions to the storm drainage system include time of day when residential use of the sanitary sewer system is greatest and increased wastewater flows during periods of the year when a specific industry is especially busy. Effective field assessment plans reflect these temporal factors and schedule field assessment activities accordingly. Field assessment requirements are further described in BMP 4F.

3. Characterize Any Discharges Found

If a discharge is found, then a decision must be made as to whether this discharge is illicit, not contaminated, or an "allowable" illicit discharge identified in Section 4.1.1.

To determine if the discharge is illicit, follow one or more of the following procedures to characterize the pollutants in the discharge. First, visual tests of the suspected illicit discharge can be the quickest and simplest method to identify whether a discharge is illicit or not (see Appendix 4C for example). These visual tests evaluate odor, color, turbidity, floatable matter, lack of normal vegetation and damage to the storm drainage system such as deposits and stains. Second, simple field measurements, such as those obtained by using a pH meter, could be employed as another rudimentary evaluation tool. An abnormally high or low pH can indicate that the discharge is illicit. Third, grab sampling and laboratory analysis of the suspected illicit discharge may be necessary to determine the pollutant types and pollutant concentrations contained in the discharge.

DRAFT

This discharge sampling is intended to help identify the contaminants and possible source of the discharge. A comparison of sampling results to typical stormwater runoff may be useful to indicate the relative pollutant concentrations in the discharge and the possible contributing source(s).

If the discharge appears to be contaminated, then field crews should note and report this according to the enforcement plan (BMP 4E) and established operating procedures. As part of the enforcement plan and operating procedures, there may be circumstances where the illicit discharge poses a significant public health or environmental threat or threat to the conveyance system so that field crews may need to contain the discharge. If so, then sand bags, booms, absorbents, or other mechanisms should be used to quickly contain the discharge. Any contaminated material, including used absorbents, should be disposed of according to local requirements.

After the discharge has been contained, or if the flow is too large to contain, then the next step is to identify the source of the discharge.

4. Procedures to Trace an Illicit Discharge

Once an illicit discharge is identified through inspections or another process, then the source of this discharge must be identified in order to stop it. The following steps could be followed to try to identify a source of pollution found in the storm drain system:

- Visual inspections of surface area
- Visual inspections of storm drain system; and/or
- More detailed inspection procedures

First, make a visual inspection of the surrounding land area and storm drain system to identify potential contributing sources. Field staff are looking for obvious sources of surface runoff and any potential contributing sources as they make this visual inspection.

If the source cannot be quickly identified on the surface, trace the discharge upstream in the storm drain system by opening manholes to determine if the illicit discharge is flowing in that manhole. Following the discharge up the storm drain line narrows the contributing area and allows for a more focused visual inspection of the surface area.

If the source cannot be identified through either inspection of the surface or the storm drain system, then more detailed inspection procedures may be necessary. Equipment such as a mobile video camera, if available to the jurisdiction, could be used to assist in the tracing of illicit discharges. For example, some communities own a remotely operated video camera system to TV sanitary sewers for cracks and inflow/infiltration that are compatible with investigating storm drains. Dye testing is also a useful technique for tracing possible sources.

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5. Procedures to Remove an Illicit Discharge

The procedure necessary for removing the source of an illicit discharge varies depending on the severity and nature of the event. Procedures consist of the steps described below.

a) Notification of appropriate authorities

Depending on the severity of the discharge, the first action is to notify the appropriate authorities. For example, for hazardous or toxic spills or discharges, in most cases the fire department must be notified. Municipal staff usually address minor spills with absorbent. Develop a clear set of procedures for whom to call for different types of spills.

b) Notification of property owner

After the appropriate authorities are notified, notify the property owner of the discharge, the corrective action necessary, and an appropriate timeframe for eliminating the discharge. Contact the property owner or operator first in person or by telephone, then follow up in writing. Provide some guidance or information to homeowners on how to eliminate the discharge; this could include information on financial assistance. Follow-up inspections are necessary to ensure that the property owner took the appropriate action to eliminate the discharge.

c) Escalating enforcement and legal actions if discharge is not eliminated

The use of appropriate enforcement actions may be necessary if the property owner does not take the required actions necessary to eliminate the discharge. These actions are described for BMP 4F.

4.3.4 Conduct Field Inspections

Required BMP 4D: Visually inspect all known outfalls that discharge to surface waters during dry weather (in conjunction with BMP 4A)

Measurable Goal: Visually inspect at least 33% (on average) of all known outfalls each year during permit years 3 – 5.

While field staff are mapping the location of outfalls for BMP 4A, the field staff can also be inspecting outfalls for any signs of illicit discharges. The visual assessment criteria in Appendix 4C can be used to assist field staff with the typical visual signs associated with illicit discharges.

Field inspection activities consist of visiting outfall locations using the system map and recording visual observations at each outfall within a priority area. For accessible outfalls, mark the outfall once it is located and complete the field inspection form (see Chapter 7 for a copy of the form). If an outfall is not accessible, field crews must use the system map and identify the nearest point to access the system. Locate the storm

DRAFT

sewer manhole closest to the outfall and remove the cover to identify signs of dry-weather flow, such as odor or residue.

If an indication of an illicit discharge exists, it should be reported and the steps in BMP 4C followed to identify and eliminate the source of the discharge.

4.3.5 Spill Response Plan

Required BMP 4E: Develop and implement a spill response plan

Measurable Goal: Develop a spill response plan that includes coordination with Ecology's Spill Response Team, sometime during permit years 3 – 5.

A written spill response plan is needed to identify appropriate actions when a spill occurs. Include in the plan, for different kinds of spills, who should be contacted and what the municipality will do in response. The plan also needs to include recordkeeping and reporting requirements so that each spill, the response, and its outcome are tracked.

Ecology's Emergency Spill Response Program, which will be an integral part of a spill response plan, is described below.

4.3.5.1 Ecology's Emergency Spill Response

An effective spill response plan includes information on Ecology's Emergency Spill Response Program, along with any local spill response issues. Under state law, Ecology must be notified when any amount of regulated waste or hazardous material that poses an imminent threat to life, health or the environment is released to the air, land or water, or whenever oil is spilled on land or to waters of the state. The spiller is always responsible for reporting a spill. Failure to report a spill in a timely manner may result in enforcement actions.

What types of emergency incidents should be reported? Typical types of emergency incidents include oil spills, hazardous materials releases, clandestine drug labs, abandoned drums and cylinders, illegal "midnight" dumping, leaking storage tanks, and fish kills.

*How is spill notification made? I*f oil or hazardous materials are spilled to state waters, the spiller must notify both federal and state spill response agencies. The appropriate phone numbers to call are listed in the box below. An Ecology spill responder will normally call the reporting party back to gather more information. Ecology will then determine its response actions.

Spill Reporting Numbers

For oil spills call both:

National Response Center 1-800-424-8802

DRAFT

Washington Emergency Management Division 1-800-258-5990

For all other materials, call your Regional Office:

Ecology Central Regional Office 509-575-2490

(for Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan and Yakima Counties)

Ecology Eastern Regional Office 509-456-2926

(for Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla and Whitman Counties)

When calling, try to have the following information available:

- Where is the spill?
- What spilled?
- How much spilled? How concentrated is the spilled material?
- Who spilled the material?
- Is anyone cleaning up the spill?
- Are there resource damages?
- Who is reporting the spill?
- How can Ecology get back to you?

4.3.5.2 Spills/Emergency Response

A spill response plan usually includes a standard set of procedures on how to handle spills and emergencies into the storm drain system. Include these procedures in the stormwater management program and make them available to municipal staff. The phone numbers of appropriate emergency responders and who to call in specific situations for the general public is also a necessary part of the spill plan.

An example of an illicit discharge/spill form is attached in Appendix 4D. This form aids in tracking the location, type of discharge, impacted waterbody, cleanup procedures used, and action taken.

As an illustration, an example emergency response/reporting protocol is presented below for two possible situations.

Material Discharged into Storm Drain

(This could include petroleum products or unidentified material being discharged into or out of the storm drain to the river, a ditch, pond, or catch basin)

DRAFT

Contact	*Working Hours*	*Off Hours*
Fire Department	911	911
Health District	###-####	###-####
Stormwater program staff	###-####	###-####
National Response Center	1-800-424-8802	1-800-424-8802
Washington Emergency Mgmt Div.	1-800-258-5990	1-800-258-5990
Ecology Regional Office	###-#####	###-#####
Storm Drain Plugged		
Contact	*Working Hours*	*Off Hours*
Public Works Maintenance	###-####	###-####

4.3.6 Plan for Enforcement Actions

Required BMP 4F: Develop and implement an enforcement plan to ensure compliance with local ordinances. This enforcement plan will be used for illicit discharges, construction site discharges, and post-construction discharges.

Measurable Goal: Develop an enforcement plan sometime during permit years 3 – 5.

The enforcement plan developed for this BMP addresses how to handle non-compliance with local ordinances and discharges from illicit sources, construction sites, and post-construction BMPs. Develop the plan so that it is specific enough to give inspectors guidance on the typical penalty for each situation. An example enforcement plan is included below.

Escalating Enforcement Actions

There are various enforcement and legal actions available to ensure compliance with local ordinances; however, the specific action taken depends on legal authority and the severity of the discharge. In general, enforcement actions escalate to the next level if they have not been resolved in an appropriate timeframe. The different levels of enforcement actions include:

- **Warning**: A verbal or written notice to the owner of the identified illicit discharge. This warning gives the owner an appropriate timeframe to fix the problem and notify the owner of potential penalties if the discharge is not eliminated by this time.
- **Administrative Action**: A formal action; also called a notice of violation, order to abate, or cease and desist order. The administrative action requires elimination of the discharge but does not assess any fines or penalties. Similar to a warning, the action specifies a timeframe to correct the problem.

DRAFT

- **Administrative Action with Fine and/or Cost Recovery**: An administrative action with a financial penalty assessed against the owner. Also, this could include the recovery of cleanup and abatement costs.
- **Legal Action**: Any action that brings the owner into the court system, including a formal citation or civil/criminal actions.

The enforcement plan developed should be flexible but specific enough to give detailed guidance to inspectors on the level of penalty to assess. The enforcement plan must include a range of administrative penalties available under the local ordinance.

Some example guidelines to use in developing an enforcement plan are listed in Appendix 4E.

4-1 Feedback Requested:

Section 4.3.6 describes an example enforcement plan with escalating enforcement actions for non-compliance with local ordinances relating to illicit discharges to storm drainage systems.

*Which of these, or other, enforcement actions do you think would be the most effective in your commu*nity? *(Please explain which ones and why.)*

4.3.7 Train Municipal Staff on Spill and Illicit Discharge BMPs

Required BMP 4G: Provide training or coordinate with existing training efforts to educate relevant staff on proper BMPs for spills and illicit discharges.

Measurable Goal: Train relevant staff by the end of permit year 5, and annually thereafter.

Provide training to relevant municipal staff, such as field maintenance crews, illicit discharge inspectors, and other first responders, on the proper BMPs to use for spills and illicit discharges. Include in the training who to call for different types of spills.

This training could be combined with other training of municipal staff conducted in Chapter 7.

4.4 Resources

The following are resources and references for additional information to assist cities in developing and implementing the model illicit discharge program.

EPA's Menu of BMPs for stormwater Phase II
http://www.epa.gov/npdes/menuofbmps/illicit.htm

DRAFT

LA County Model Illicit Discharge Program
http://ladpw.org/wmd/NPDES/ICID_TC.cfm

EPA. 1993. Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide. EPA/600/R-92/238.

M. Lalor and R. Pitt, Use of Tracers to Identify Sources of Contamination in Dry Weather Flow IN: Watershed Protection Techniques. 3(1): 585 - 592

Rouge River, Michigan Illicit Discharge Program
http://www.wcdoe.org/rougeriver/techtop/illicit/index.html

Appendices

Appendix 4A – Sample Outfall Map

Appendix 4B – Sample Stormwater Ordinance

Appendix 4C – Visual Tests of Possible Contaminants in Dry Weather Flows

Appendix 4D – Illicit Discharge Identification Form

Appendix 4E – Sample Enforcement Plan

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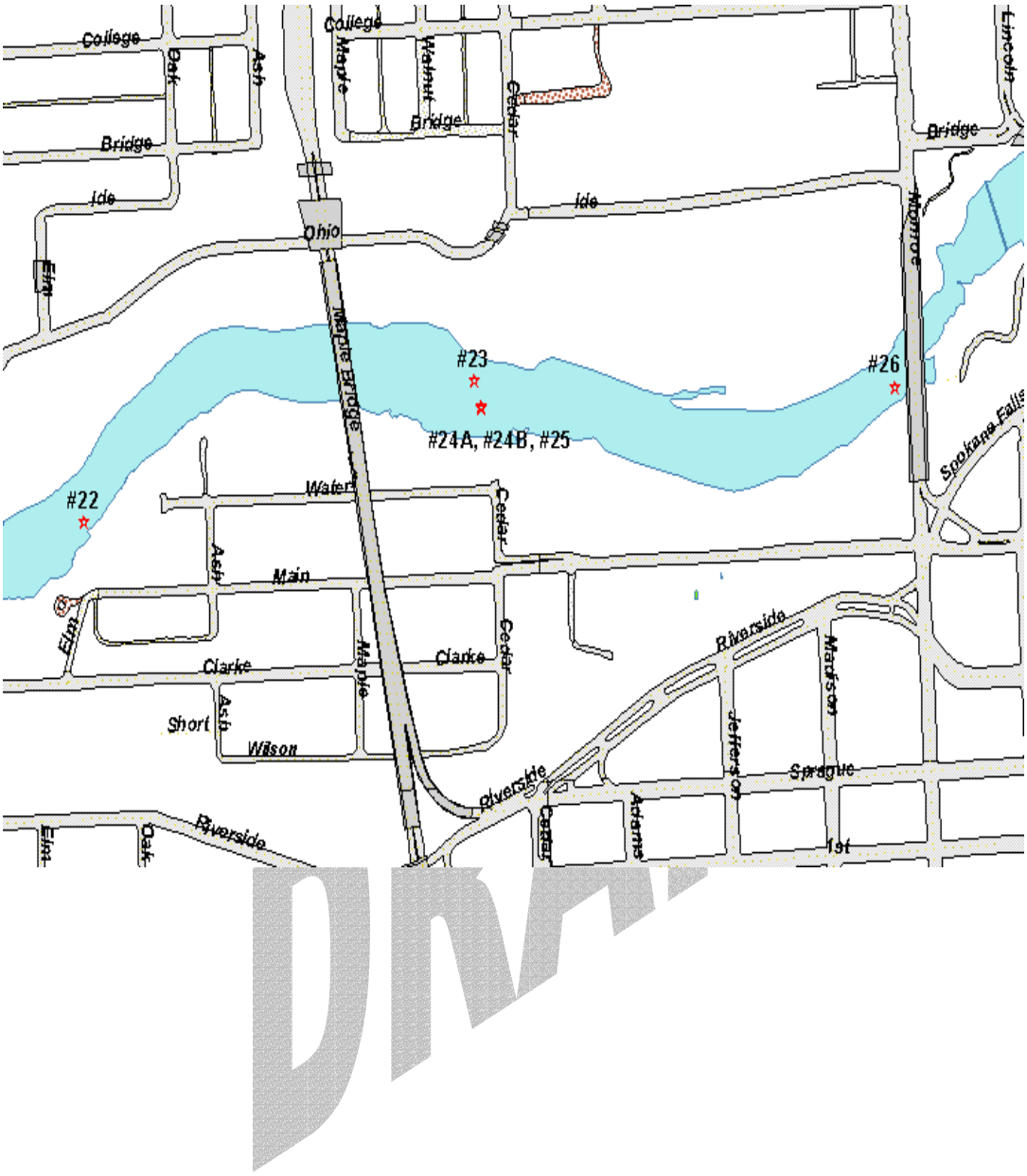
Appendix 4A - Sample Outfall Map



Appendix 4B - Sample Stormwater Ordinance

(City of Boise stormwater management and discharge control ordinance)

NOTE: This ordinance will need to be modified by an eastern Washington city to specifically cite the stormwater manual used (Eastern Washington Stormwater Manual or an approved equivalent manual) and the Department of Ecology instead of EPA (EPA issues the NPDES permit in Idaho). Legal staff or the Department of Ecology have not reviewed this example ordinance.

Chapter 8-15

City of Boise Storm Water Management and Discharge Control Ordinance

Sections:

8-15-01 Title, Purpose, and General Provisions

8-15-02 Discharge Regulations and Requirements

8-15-03 Stormwater Management Plans and Comprehensive Drainage Plans

8-15-04 Inspection and Enforcement

Section 8-15-01 Title, Purpose and General Provisions

8-15-01.1 Title.

This ordinance shall be known as the "City of Boise Storm Water Management and Discharge Control Ordinance" and may be so cited.

8-15-01.2 Purpose and Intent

The purpose and intent of this Ordinance is to:

A. Protect and enhance the water quality of our watercourses, water bodies, groundwater and wetlands in a manner pursuant to and consistent with the Clean Water Act.

B. Control non-storm water discharges to storm drain systems and reduce pollutants in storm water discharges.

C. Provide design, construction and maintenance criteria for permanent and temporary on-site storm water management facilities to control storm water runoff.

D. Encourage the recharge of ground water, where appropriate, and prevent the degradation of ground water quality.

8-15-01.3 Definitions

The terms as used in this Ordinance shall have the following meanings:

DRAFT

A. Authorized Enforcement Agent. The Director of Public Works and/or any individual designated by the Director of Public Works as an Authorized Enforcement Agent.

B. Best Management Practices ("BMPs"). Physical, structural and/or managerial practices that, when used singly or in combination, control site run-off, spillage and leaks, waste disposal and drainage from raw material storage and prevent or reduce the discharge of pollutants directly or indirectly to waters of the state or U.S. BMPs may include schedules of activities, prohibition of practices, design standards, educational activities and treatment requirements.

C. Clean Water Act (CWA). Federal Water Pollution Control Act enacted by Public Law 92-500 as amended by Public Laws 95-217, 95-576, 96-483, and 97-117; 33 USC 1251 et seq.

D. Comprehensive Drainage Plan. A storm water management plan that covers all current and anticipated development on a site greater than 1 acre and sites planned for phased development.

E. Development. Any construction, reconstruction, conversion, structural alteration, relocation, or enlargement of any structure within the jurisdiction of the City of Boise as well as any manmade change or alteration to the landscape, including but not limited to, mining, drilling, dredging, grading, paving, excavating and filling.

F. Director of Public Works. The Director of the Boise City Public Works Department.

G. Illicit Connection. Any physical connection to a publicly maintained storm drain system composed of non-storm water which has not been permitted by the public entity responsible for the operation and maintenance of the system.

H. Illicit Discharge. Any discharge to a storm drain system that is not composed entirely of storm water except discharges pursuant to a NPDES permit, discharges resulting from fire fighting activities, and discharges further exempted in Section 2.6 of this Ordinance.

I. Impervious Surface. A surface which prevents or retards the penetration of water into the ground, including, but not limited to, roofs, sidewalks, patios, driveways, parking lots, concrete and asphalt paving, gravel, compacted native surfaces and earthen materials, and oiled, macadam, or other surfaces which similarly impede the natural infiltration of storm water.

J. Local Agency. One or more of the agencies involved with providing review, approval or oversight of the site's (a) activities; (b) pollution prevention controls; or (c) storm water discharge.

K. Major Modification. An alteration to an existing or planned storm water drainage facility that does one or more of the following: changes the

DRAFT

volume, surface area, depth, capacity, inflow rates, outflow rates or level of treatment by 5% or more; changes the treatment process; adds more than one thousand (1000) square feet of impervious surface; or increases the tributary impervious drainage area to an individual drainage facility component by more than 10%.

L. Municipal NPDES Permit. An area-wide NPDES permit issued to a government agency or agencies for the discharge of storm water from a storm drain system.

M. Municipal Separate Storm Sewer System (MS4). Includes, but is not limited to, those facilities located within the City and owned or operated by a public entity by which storm water may be collected and conveyed to waters of the United States, including any roads with drainage systems, public streets, inlets, curbs, gutters, piped storm drains and retention or detention basins, which are not part of a Publicly Owned Treatment Works ("POTW") as defined at 40 CFR Section 122.2.

N. Non-Storm Water Discharge. See "illicit discharge."

O. National Pollutant Discharge Elimination System (NPDES) Permit. A storm water discharge permit issued by the U.S. EPA, Region X, in compliance with the federal Clean Water Act.

P. Person. Any individual, firm, association, club, organization, corporation, partnership, business trust, company or other entity which is recognized by law as the subject of rights or duties.

Q. Pollutant. Objects including, but not limited to, dredged soil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical waste, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, silt, cellar dirt, industrial, municipal and agricultural waste, gases entrained in water, paints, oil and other automotive fluids, soil, rubbish, trash, debris, refuse, fecal coliform, fecal streptococcus, enterococcus, heavy metals, hazardous waste, road sanding materials, yard waste from commercial landscaping operations, animal waste, materials that result from the process of constructing a building or structure, and nauseous or offensive matter of any kind, which, when discharged to water in excessive quantities, cause or contribute to water pollution.

R. Pollution. The degradation of the physical, thermal, chemical, biological or radioactive properties of the waters of the state or U.S.; the discharge of any pollutant into the waters of the state or U.S., which will or is likely to create a nuisance or to render such waters harmful, detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, recreational, aesthetic, or other beneficial uses.

S. Premises. Any building, lot, parcel of land, or portion of land whether improved or unimproved including adjacent sidewalks and parking strips.

DRAFT

T. Redevelopment. A project for which a building permit is required that proposes to add, replace and/or alter impervious surfaces affecting the existing drainage system, other than routine maintenance, resurfacing, or repair. A project which meets the criteria of a major modification as defined in this section shall be considered a redevelopment.

U. Stormwater. Surface runoff and drainage associated with rain storm events and snow melt.

V. Storm Water BMP Guidebook. A reference document prepared by the Boise City Public Works Department which contains information and recommendations regarding the use of Best Management Practices during and after construction.

W. Storm Water Management. The process of collection, conveyance, storage, treatment, and disposal of storm water to ensure control of the magnitude and frequency of runoff to minimize the hazards associated with flooding and the impact on water quality caused by manmade changes to the land.

X. Storm Water Management Design Manual. The design standards manual prepared by the Boise City Public Works Department which provides design, performance, and review criteria for storm water management practices.

Y. Storm Water Management Plan. Details of the drainage system, structures, BMPs, concepts and techniques that will be used to control storm water, including drawings, engineering calculations, computer analyses, maintenance and operations procedures, and all other supporting documentation.

Z. U.S. EPA. United States Environmental Protection Agency.

AA. Variance. A modification of the requirements of the Ordinance.

8-15-01.4 Applicability

This ordinance shall apply to all activities which may potentially affect the municipal separate storm drain system, any private storm drain system or any body of water within the City of Boise. Additionally, permanent and temporary storm water management controls and facilities, constructed as part of any activities listed in this section, which are located within the Boise City limits, are also subject to this ordinance. The storm water management standards shall apply to industrial, commercial, institutional, and multifamily residential development, as well as subdivision projects with private access.

8-15-01.5 Regulatory Consistency

This Ordinance shall be construed to assure consistency with the requirements of the federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing regulations, and the municipal NPDES Permit and any amendments, revisions or reissuance

DRAFT

thereof. No permit or approval issued pursuant to this Ordinance shall relieve a person of the responsibility to secure permits and approvals required for activities regulated by any other applicable rule, code, act, permit or ordinance.

8-15-01.6 Severability

If any provision, clause, sentence, or paragraph of this Ordinance or the application thereof to any person, establishment, or circumstance shall be held invalid, such invalidity shall not affect the other provisions or application of this Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are hereby declared to be severable.

Section 8-15-02 Discharge Regulations and Requirements

An intentional non-storm water discharge to any storm drain system, including both the municipal storm drain system and private storm drain systems, is a violation of this ordinance unless exempted by provisions 8-15-02.6 and 8-15-02.7 of this ordinance.

8-15-02.1 General Requirements and Prohibitions

A. Any person engaged in activities which will or may result in pollutants entering a storm drain system shall undertake reasonable measures to reduce such pollutants. Examples of such activities include, but are not limited to, use and disposal of household chemicals such as pesticides and fertilizers; and ownership and use of facilities which may be a source of pollutants such as parking lots, gasoline stations, industrial facilities, retail establishments, etc.

B No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, placed, left or maintained, any refuse, rubbish, garbage, or other discarded or abandoned objects, articles, and accumulations, in or upon any street, alley, sidewalk, storm drain inlet, catch basin, conduit or other drainage structures, parking area, or upon any public or private plot of land so that the same might be or become a pollutant, except where such pollutant is being temporarily stored in properly contained waste receptacles or is part of a well defined compost system.

C. No person shall cause or permit any dumpster, solid waste bin, or similar container to leak such that any pollutant is discharged into any street, alley, sidewalk, storm drain, inlet, catch basin, conduit or other drainage structures, business place, or upon any public or private plot of land in the City.

D. The occupant or tenant, the owner, lessee, or proprietor of any real property in the City where there is located a paved sidewalk or parking area shall maintain said paved surface free of dirt or litter to the extent reasonable and practicable and provide an adequate means for the disposal of refuse, rubbish, garbage, or other articles so as to prevent such matter from entering a storm drain system. Sweepings from said sidewalk shall

DRAFT

not be swept or otherwise made or allowed to go into the gutter or roadway, but shall be disposed of in receptacles maintained on said real property.

E. No person shall throw or deposit any pollutant in any fountain, pond, lake, stream, or any other body of water in a park or elsewhere within the City, except as otherwise permitted under local, state or federal law.

8-15-02.2 Illicit Connections

It is prohibited to establish, use, maintain or continue illicit drainage connections to the municipal separate storm drain system, or to commence or continue any illicit discharges to the municipal separate storm drain system**.**

8-15-02.3 Parking Lots and Similar Structures

Persons owning or operating a paved parking lot, gas station pavement, paved private street or road, or similar structure, shall clean and maintain those structures in a manner that does not result in discharge of pollutants to a storm drain system.

8-15-02.4 Outdoor Storage Areas – Commercial and Industrial Facilities

In outdoor areas, no person shall store grease, oil or other hazardous substances in a manner that will or may result in such substances entering a storm drain system. In outdoor areas, no person shall store motor vehicles, machine parts, or other objects in a manner that may leak grease, oil, or other hazardous substances to a storm drain system. To prevent the discharge of hazardous substances to the municipal separate storm drain system, the City may require the installation of a spill containment system. Spill containment systems may consist of a system of dikes, walls, barriers, berms, or other devices as required. No person shall operate a spill containment system such that it allows incompatible liquids to mix and thereby create a hazardous condition.

8-15-02.5 Construction Sites

Any person performing construction work in the City of Boise shall comply with the provisions of this Ordinance and shall provide erosion and sediment controls that effectively prevent discharges of pollutants to a storm drain system. The Director of Public Works may establish standards and guidelines implementing BMPs designed to provide erosion and sediment control from construction sites.

8-15-02.6 Discharge of Pollutants

Discharges from the following activities will not be considered a source of pollutants to waters of the state or U.S. when properly managed: water line flushing and other discharges from potable water sources, landscape irrigation and lawn watering, irrigation water, diverted stream flows, rising ground waters, groundwater infiltration to separate storm drains,

DRAFT

uncontaminated pumped ground water, foundation and footing drains, roof drains, water from crawl space pumps, residential air conditioning condensation, springs, individual residential and non-profit group car washes, flows from riparian habitats and wetlands, dechlorinated swimming pool discharges or flows from fire fighting activities and training. Accordingly, discharges from such activities are not subject to this prohibition. With written concurrence of the U.S. EPA, the City may exempt in writing other non-storm water discharges which are not a source of pollutants to the waters of the state or U.S.

8-15-02.7 Discharge Pursuant to NPDES Permit

The prohibition of discharges shall not apply to any discharge regulated under a NPDES permit issued and administered by the EPA, provided that the discharger is in full compliance with all requirements of the permit and other applicable laws or regulations.

8-15-02.8 Discharge in Violation of Permit

Any discharge that would cause a violation of a Municipal NPDES Permit and any amendments, revisions or reissuance thereof, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person(s) causing or responsible for the discharge, and the City shall seek to have such persons defend, indemnify and hold harmless the City in any administrative or judicial enforcement action against the permit holder relating to such discharge as provided by applicable rules of law.

8-15-02.9 Compliance with General Permits.

Any industrial discharger, discharger associated with construction activity, or other discharger subject to any NPDES permit issued by the U.S. EPA, shall comply with all provisions of such permits, including notification to and cooperation with local entities as required by Federal regulations. Proof of compliance with said NPDES General Permits may be required in a form acceptable to the Director of Public Works prior to issuance of any grading, building or occupancy permits.

8-15-02.10 Notification of Spills

All persons in charge of a facility or responsible for emergency response for a facility are responsible to train facility personnel, maintain records of such training and maintain notification procedures to assure that immediate notification is provided to the City Public Works Department upon becoming aware of any suspected, confirmed or unconfirmed release of material, pollutants or waste creating a risk of discharge into the municipal separate storm drain system. As soon as any person in charge of a facility or responsible for emergency response for a facility has such knowledge, such person shall take all necessary steps to ensure the containment and clean up of such release and shall notify the City Public Works Department of the occurrence no later than the next business day.

DRAFT

The notification requirements of this section are in addition to any other notification requirements set forth in Federal, state or local regulations and/or laws.

Section 8-15-03 Storm Water Management Plans and Comprehensive Drainage Plans

8-15-03.1 Requirements

To minimize the discharge and transport of pollutants to storm drain systems and prevent the deterioration of water quality, certain new developments and redevelopment projects will be required to submit for approval a storm water management plan or a comprehensive drainage plan to control the quality, volume and rate of storm water runoff. The 2000 Boise City Storm Water Management Design Manual establishes standards and guidelines for implementing BMPs and storm water management plans and is incorporated by reference and made part of this ordinance. The Boise City Storm Water BMP Guidebook may also be used to implement BMPs during and after construction; however, where a conflict exists between the Design Manual and the Guidebook, the Design Manual shall be the overriding authority.

A. Storm water management plans or comprehensive drainage plans are required for industrial, commercial, and institutional developments which require a building permit and multifamily residential developments that are not part of a larger subdivision project, as well as subdivision projects that have private access, which also require a building permit.

B. Redevelopment projects may be required to submit complete storm water management plans or operation and maintenance plans if they meet the criteria found in the Boise City Storm Water Design Manual.

C. Storm water management plans and comprehensive drainage plans shall provide for the following:

1. Prevention of any direct discharge of untreated storm water, either on or off-site.

2. Prevention of increased post-development discharge rates.

3. Removal of a minimum amount, determined by the percentage of impervious parcel area, of annual total suspended solids generated from development or redevelopment runoff prior to any off-site discharge.

4. Continuation of BMPs for appropriate periods of time.

5. Protection of ground water from instances of development runoff infiltration.

D. Storm water management plans and comprehensive drainage plans shall be developed in accordance with the Boise City Storm Water Management Design Manual or equivalent, and shall include:

DRAFT

1. Site evaluation.

2. Drainage system report.

3. Peak flow rates and runoff volume calculations.

4. Safety requirements.

5. Grading plans.

6. Operation and maintenance plan.

7. All other necessary BMPs not covered in the areas listed above.

E. All drainage system reports, peak flow rates and runoff volume calculations, safety requirements, and grading plans shall be certified by a licensed professional authorized by the State of Washington to perform such functions.

F. Drainage plans that are conceptual only, without engineering specifications, shall not be considered as comprehensive drainage plans.

G. Drainage systems shall have the following minimum requirements:

1.Designed to provide primary conveyance for runoff from a 50 year frequency storm on sites with less than 15% slope or a 100 year frequency storm on sites with greater than 15% slope.

2. Designed to provide secondary conveyance for runoff for all flows up to the 100 year frequency storm, within defined rights of way or drainage easements.

3. Designed to prevent an increase of peak flows at any location for the 2, 10, 25 and 100 year frequency storm which could cause increased inundation of any building or roadway surface.

4. Achievement of peak flow regulation by on-site discharge, off-site discharge with permission or participation in an approved Regional Storm Water Management facility.

H. The Boise City Council reserves the right to amend, modify and/or add requirements to the Boise City Storm Water Management Design Manual.

8-15-03.2 Submission and Review Process

A. Storm water management plans and comprehensive drainage plans shall be submitted at the time building plans are submitted. The plans shall be submitted to the Building Department with a permit fee in an amount provided for in a fee schedule adopted by the Boise City Council. The plans shall be reviewed by the Boise City Public Works Department for their compliance with the Boise City Storm Water Management Design Manual and other applicable rules and standards. Plans developed to meet federal or state requirements may be submitted, and will be approved if they substantially conform to the requirements of this Ordinance. Where physical submission of plans would be too cumbersome, the Boise City

DRAFT

Public Works Department may waive the requirement for physical submission when granted full access to review the on-site plans.

1. No plan shall be approved that increases the peak level of storm water runoff from impervious areas, unless the plan identifies measures to control and limit runoff to peak levels no greater than would occur from the site if left in its natural, undeveloped condition.

2. No development or use of land which requires a grading permit, involves more than 500 square feet of impervious surface, or would create more than 500 square feet of impervious surface shall be permitted without an approved storm water management plan or comprehensive drainage plan.

3. No building permit or certificate of occupancy shall be issued without an approved storm water management plan if required under this section.

B. The City shall be notified of the commencement of any development covered by a comprehensive drainage plan and the owner or responsible person shall be required to provide engineering certification that the development is in conformity with the previously approved comprehensive drainage plan.

C. Any modifications to comprehensive drainage plans shall be submitted to the Boise City Public Works Department for approval, provided, however, for comprehensive drainage plans approved pursuant to this Ordinance as amended, only major modifications must be submitted for approval. All modifications to singular storm water management plans must be submitted to the Boise City Public Works Department with a request for approval and a new storm water management plan shall be submitted upon request of the Boise City Public Works Department.

D. Approval of the storm water management plan or comprehensive drainage plan does not relieve the owner or responsible party from the duty to ensure the systems and their safety measures function as designed.

E. Approval may be suspended or revoked at any time if conditions are not as stated or shown in the approved application or implementation of the plan is not proceeding in the approved manner.

F. Approval of a storm water management plan or a comprehensive drainage plan may be suspended if the project is not completed within a two year period or development has ceased for a period of more than two years; however, a one year extension may be granted upon a written request which provides the reason(s) for the delay or cessation of development and specifies a time frame for completion or commencement of development.

G. If suspension or revocation of approval is necessary, the owner will receive notice of this decision and may appeal to the Public Works

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Commission. A written request for appeal and hearing must be made within ten days from the notice of suspension or revocation.

H. If approval is suspended or revoked, the owner shall be required to submit a new plan for approval, with the requisite fee, prior to starting or continuing the planned project or development.

I. If undue hardship would result from strict application of the requirements of this ordinance, a person may request a variance.

1. The variance request must be submitted in writing to the Boise City Public Works Department with a fee in an amount provided for in a fee schedule adopted by the Boise City Council.

2. The person requesting a variance shall state in detail the reason for the request and provide supporting documentation.

3. If a request for variance is denied by the Boise City Public Works Department, the denial may be appealed to the Public Works Commission within ten days of notice of denial. The Commission shall provide the aggrieved party with a hearing date and an opportunity to present argument in favor of the variance request. The Commission will not accept additional supporting documentation if the information was reasonably available at the time the request for variance was made and could have been submitted to the Public Works Department.

4. A variance shall not be considered a right or special privilege.

J. Approval of any plans by the Boise City Public Works Department shall not create a liability on the part of or cause of action against the City or any officer or employee thereof regarding the plan or its operation.

8-15-03.3 Maintenance of Storm Water Facilities

A. Storm water facilities shall be maintained by the owner or other responsible party and shall be repaired and/or replaced by such person when such facilities are no longer functioning as designed.

B. Disposal of waste from maintenance of facilities shall be conducted in accordance with applicable federal, state and local laws and regulations.

C. Records of installation and maintenance and repair shall be retained by the owner or other responsible party for a period of five years and shall be made available to the Public Works Department upon request.

D. Any failure to maintain facilities or correct problems with facilities after receiving due notice from the City may result in criminal or civil penalties and the City may perform corrective or maintenance work which shall be at the owner's expense.

Section 8-15-04 Inspection and Enforcement

8-15-04.1 Inspections

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A. Storm water systems shall be inspected by the Boise City Public Works Department during and after construction to assure consistency with the approved storm water management plan.

B. All storm water systems shall be subject to the authority of the on-site detention inspection program of the Boise City Public Works Department to ensure compliance with this Ordinance and may be inspected when deemed necessary.

C. The owner or other responsible party shall make annual inspections of the facilities and maintain records of such inspections for a period of five years.

D. Whenever necessary to make an inspection to enforce any of the provisions of this Ordinance, or whenever an Authorized Enforcement Agent has reasonable cause to believe that there exists in any building or upon any premises any condition which may constitute a violation of the provisions of this Ordinance, the agent may enter such building or premises at all reasonable times to inspect the same or perform any duty imposed upon the agent by this Ordinance; provided that (1) if such building or premises is occupied, he or she first shall present proper credentials and request entry; and (2) if such building or premises is unoccupied, he or she first shall make a reasonable effort to locate the owner or other persons having charge or control of the building or premises and request entry.

E. The property owner or occupant has the right to refuse entry but, in the event such entry is refused, the agent is hereby empowered to seek assistance from any court of competent jurisdiction in obtaining such entry and performing such inspection.

F. Routine or area inspections shall be based upon such reasonable selection processes as may be deemed necessary to carry out the objectives of this ordinance, including but not limited to, random sampling and/or sampling in areas with evidence of storm water pollution, illicit discharges, or similar factors.

18-15-04.2 Sampling

With the consent of the owner or occupant or with Court consent, any Authorized Enforcement Agent may establish on any property such devices as are necessary to conduct sampling or metering operations. During all inspections as provided herein, the agent may take any samples deemed necessary to aid in the pursuit of the inquiry or to record the on-site activities, provided that owners or occupants shall be entitled to split samples.

18-15-04.3 Testing and Monitoring

A. Whenever the Director of Public Works or his designee determines that any person engaged in any activity and/or owning or operating any facility may cause or contribute to storm water pollution or illicit discharges to the

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storm water system, the Director of Public Works or his designee may, by written notice, order that such person undertake such monitoring activities and/or analyses and furnish such reports as the Director of Public Works or his designee may recommend. The written notice shall be served either in person or by certified or registered mail, return receipt requested, and shall set forth the basis for such order and shall particularly describe the monitoring activities and/or analyses and reports required. The burden to be borne by the owner or operator, including costs of these activities, analyses and reports, shall bear a reasonable relationship to the need for the monitoring, analyses and reports and the benefits to be obtained. The recipient of such order shall undertake and provide the monitoring, analyses and reports within the time frames set forth in the order.

B. Within 20 days of the date of receipt of the order notice, the recipient shall respond personally or in writing advising the City of the recipients position with respect to the Order's requirements. Thereafter, the recipient shall be given the opportunity to meet with the Public Works Director or his designee to review the Order's requirements and revise the Order as the Public Works Director or his designee deem necessary. Within 10 days of such meeting, the Public Works Director or his designee shall issue a final written order. Final Orders of the Public Works Director or his designee may be appealed to the Public Works Commission by the filing of a written appeal with the Public Works Department within 10 days of receipt of the final Order. The appeal notice shall set forth the particular Order requirements or issues being appealed. The Public Works Commission shall hear the appeal at its earliest practical date and may either firm, revoke or modify the Order. The decision of the Public Works Commission shall be final.

C. In the event the owner or operator of a facility fails to conduct the monitoring and/or analyses and furnish the reports required by the Order in the time frames set forth therein, the City may cause such monitoring and/or analyses to occur and assess all costs incurred, including reasonable administrative costs and attorney's fees, to the facility owner or operator. The City may pursue judicial action to enforce the Order and recover all costs incurred.

8-15-04.4. Violations Constituting Misdemeanors

The knowing violation of any provision of this Ordinance, or knowing failure to comply with any of the mandatory requirements of this Ordinance shall constitute a misdemeanor.

8-15-04.5 Continuing Violation

Unless otherwise provided, a person, firm, corporation or organization shall be deemed guilty of a separate offense for each and every day during any portion of which a violation of this Ordinance is committed, continued or permitted by the person, firm, corporation or organization and shall be punishable accordingly, as herein provided.

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8-15-04.6 Concealment

Causing, permitting, aiding, abetting or concealing a violation of any provision of this Ordinance shall constitute a violation of such provision.

8-15-04.7 Acts Resulting in Violation of Federal Clean Water Act.

Any person who violates any provision of this Ordinance, any provision of any permit issued pursuant to this Ordinance, or who discharges waste or wastewater which causes pollution, or who violates any cease and desist order, prohibition, or effluent limitation, also may be in violation of the federal Clean Water Act and may be subject to the sanctions of that Act including civil and criminal penalties.

8-15-04.8 Violations Deemed a Public Nuisance

A. In addition to the penalties hereinbefore provided, any condition caused or permitted to exist in violation of any of the provisions of this Chapter shall be considered a threat to the public health, safety, welfare and the environment, may be declared and deemed a nuisance by the Director of Public Works or his designee, and may be summarily abated and/or restored by the City and/or civil action taken to abate, enjoin or otherwise compel the cessation of such nuisance**.**

B. The cost of such abatement and restoration shall be borne by the owner of the property and the cost thereof shall be a lien upon and against the property and such lien shall continue in existence until the same shall be paid.

C. If any violation of this Ordinance constitutes a seasonal and recurrent nuisance, the Director of Public Works or his designee shall so declare. Thereafter such seasonal and recurrent nuisance shall be abated every year without the necessity of any further declaration.

D. In any administrative or civil proceeding under this Ordinance in which the City prevails, the City may be awarded all costs of investigation, administrative overhead, out-of-pocket expenses, costs of administrative hearings, costs of suit and reasonable attorneys' fees.

8-15-04.9 Civil Actions

In addition to any other remedies provided in this section, any violation of this section may be enforced by civil action brought by the City. In any such action, the City may seek, and the Court shall grant, as appropriate, any or all of the following remedies:

A. A temporary and/or permanent injunction.

B. Assessment of the violator for the costs of any investigation, inspection, or monitoring survey which led to the establishment of the violation, and for the reasonable costs of preparing and bringing legal action under this subsection.

DRAFT

C. Costs incurred in removing, correcting, or terminating the adverse effects resulting from the violation.

D. Compensatory damages for loss or destruction to water quality, wildlife, fish and aquatic life. Assessments under this subsection shall be paid to the City to be used exclusively for costs associated with monitoring and establishing storm water discharge pollution control systems and/or implementing or enforcing the provisions of this Ordinance.

8-15-04.10 Administrative Enforcement Powers

In addition to the other enforcement powers and remedies established by this ordinance, any Authorized Enforcement Agent has the authority to utilize the following administrative remedies.

A. Cease and Desist Orders. When an Authorized Enforcement Agent finds that a discharge has taken place or is likely to take place in violation of this Ordinance, the agent may issue an order to cease and desist such discharge, or practice, or operation likely to cause such discharge and direct that those persons not complying shall: (a) comply with the requirement; (b) comply with a time schedule for compliance, and/or (c) take appropriate remedial or preventive action to prevent the violation from recurring.

B. Notice to Clean. Whenever an Authorized Enforcement Agent finds any oil, earth dirt, grass, weeds, dead trees, tin cans, rubbish, refuse, waste or any other material of any kind, in or upon the sidewalk abutting or adjoining any parcel of land, or upon any parcel of land or grounds or in close proximity to any open drain or ditch channel, which may result in an increase in pollutants entering the storm drain system or a nonstorm water discharge to the storm drain system, he or she may give notice to remove and lawfully dispose of such material in any manner that he or she reasonably may provide. The recipient of such notice shall undertake the activities as described in the notice within the time frames set forth therein.

In the event the owner or operator of a facility fails to conduct the activities as described in the notice, the Director of Public Works or his designee may cause such required activities as described in the notice to be performed, and the cost thereof shall be assessed and invoiced to the owner of the property. If the invoice is not paid within sixty (60) days, a lien shall be placed upon and against the property.

8-15-04.11 Nonexclusively of Remedies

Remedies under this Ordinance are in addition to and do not supersede or limit any and all other remedies, civil or criminal. The remedies provided for herein shall be cumulative and not exclusive.

8-15-04.12 Appeal

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Any person, firm, corporation or organization notified of non-compliance with this Ordinance or required to perform monitoring, analyses, reporting and/or corrective activities who is aggrieved by the decision of the Authorized Enforcement Agent may appeal such decision in writing to the Boise City Public Works Commission within 10 days following the effective date of the decision. Upon receipt of such request, the Public Works Commission shall request a report and recommendation from the Authorized Enforcement Agent and shall set the matter for administrative hearing at the earliest practical date. At said hearing, the Public Works Commission may hear additional evidence, and may revoke, affirm or modify the Authorized Enforcement Agent's decision. Such decision shall be final.

8-15-04.13 Disclaimer of Liability

The degree of protection required by this Ordinance is considered reasonable for regulatory purposes and is based on scientific, engineering and other relevant technical considerations. The standards set forth herein are minimum standards and this Ordinance does not imply that compliance will ensure that there will be no unauthorized discharge of pollutants into the waters of the United States. This Ordinance shall not create liability on the part of the City, any agent or employee thereof for any damages that result from reliance on this Chapter or any administrative decision lawfully made thereunder.

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Appendix 4C – Visual Tests of Possible Contaminants in Dry Weather Flows

(From EPA. 1993. *Investigation of Inappropriate Pollutant Entries into Storm Drainage Systems: A User's Guide*. EPA/600/R-92/238.).

Odor - Most strong odors, especially gasoline, oils, and solvents, are likely associated with high responses on the toxicity screening test. Typical obvious odors include: gasoline, oil, sanitary wastewater, industrial chemicals, decomposing organic wastes, etc.

• *Sewage*: Smell associated with stale sanitary wastewater, especially in pools near outfall.

• *Sulfur ("rotten eggs")*: Industries that discharge sulfide compounds or organics (meat packers, canneries, dairies, etc.).

• *Rancid-sour*: Food preparation facilities (restaurants, hotels, etc.).

• *Oil and gas*: petroleum refineries or many facilities associated with vehicle maintenance or petroleum product storage.

Color - Important indicator of inappropriate industrial sources. Industrial dry-weather discharges may be of any color, but dark colors, such as brown, gray, or black, are most common.

• *Yellow*: Chemical plants, textile and tanning plants.

• *Brown*: Meat packers, printing plants, metal works, stone and concrete, fertilizers, and petroleum refining facilities.

• *Green*: Chemical plants, textile facilities.

• *Red*: Meat packers.

• *Gray*: Dairies.

Turbidity - Often affected by the degree of gross contamination. Dry-weather industrial flows with moderate turbidity can be cloudy, while highly turbid flows can be opaque. High turbidity is often a characteristic of undiluted dry-weather industrial discharges.

• *Cloudy*: Sanitary wastewater, concrete or stone operations, fertilizer facilities, automotive dealers.

• *Opaque*: Food processors, lumber mills, metal operations, pigment plants.

Floatable matter - A contaminated flow may contain floating solids or liquids directly related to industrial or sanitary wastewater pollution. Floatables of industrial origin may include animal fats, spoiled food, oils, solvents, sawdust, foams, packing materials, or fuel.

• *Oil sheen*: Petroleum refineries or storage facilities and vehicle service facilities.

DRAFT

• *Sewage*: Sanitary wastewater.

Deposits and stains - Refer to any type of coating near the outfall and are usually of a dark color. Deposits and stains often will contain fragments of floatable substances. These situations are illustrated by the grayish-black deposits that contain fragments of animal flesh and hair which often are produced by leather tanneries, or the white crystalline powder which commonly coats outfalls due to nitrogenous fertilizer wastes.

• *Sediment*: Construction site erosion.

• *Oily*: petroleum refineries or storage facilities and vehicle service facilities.

Vegetation - Vegetation surrounding an outfall may show the effects of industrial pollutants. Decaying organic materials coming from various food product wastes would cause an increase in plant life, while the discharge of chemical dyes and inorganic pigments from textile mills could noticeably decrease vegetation. It is important not to confuse the adverse effects of high stormwater flows on vegetation with highly toxic dry-weather intermittent flows.

• *Excessive growth*: Food product facilities.

• *Inhibited growth*: High stormwater flows, beverage facilities, printing plants, metal product facilities, drug manufacturing, petroleum facilities, vehicle service facilities and automobile dealers.

Damage to Outfall Structures - Another readily visible indication of industrial contamination. Cracking, deterioration, and spalling of concrete or peeling of surface paint, occurring at an outfall are usually caused by severely contaminated discharges, usually of industrial origin. These contaminants are usually very acidic or basic in nature. Primary metal industries have a strong potential for causing outfall structural damage because their batch dumps are highly acidic. Poor construction, hydraulic scour, and old age may also adversely affect the condition of the outfall structure.

• *Concrete cracking*: Industrial flows

• *Concrete spalling*: Industrial flows

• *Peeling paint*: Industrial flows

• *Metal corrosion*: Industrial flows

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Appendix 4D – Illicit Discharge Identification Form

(a) Illicit Discharge/Connection Reporting and Response

Date/Time: _____

Reported by: _____

Address: _____

Phone: _____

Location: _____

Storm Drain ID/Stream Name: _____

Material Type

- Hazardous
- Sediment
- Wastewater
- Oil/Grease
- Other_____
- Unknown

Observed Land Use

- Residential
- Commercial
- Industrial
- Public

Est. Quantity: _____

Direct/Constructed Connections Found? ___ Yes ___ No

Description: _____

Source Investigation Conducted? ___ Yes ___ No Source Identified? ___Yes ___ No

Source/Owner of Discharge/Connection:

_____

Entered Storm Drain System/Receiving Waters? ___Yes ___ No

(b) Action and Closure

Referred To: _____

Phone: _____

City: _____

Dept.: _____

Action Taken: _____

Date Closed: _____

DRAFT

Appendix 4E – Sample Enforcement Plan

Sample Enforcement Plan (from City of Sacramento's Guidelines for Determining Administrative Penalties for Prohibited Non-Stormwater Discharges)

NOTE: The plan below is an example only, and may not exactly match current requirements in Washington State laws and regulations.

Cite and summarize legal authority

Section X.X of the city code prohibits the discharge of non-stormwater into the city's storm drain system. This section also prohibits illegal dumping. Section X.X of the city code requires construction sites disturbing greater than one acre to comply with the Eastern Washington Stormwater Manual and prohibits discharges from these sites to the city's storm drain system or to waters of the State. Section X.X of the city code authorizes various enforcement actions for violations of these sections, including the imposition of administrative penalties.

Amount of Administrative Penalty:

This guidance shall be used to determine the amount of an administrative penalty for violations of the city's ordinances cited above. This guidance applies where there is not already a separate and distinct administrative penalty already described in city code, resolution, or guidance. Each day a violation continues or occurs constitutes a separate violation. Unless otherwise provided, administrative penalties may be imposed in any amount not less than one hundred dollars ($100) nor more than ten thousand dollars ($10,000) per violation. In determining the amount of the administrative penalty to be imposed, the city official shall consider factors including but not limited to:

- The seriousness of the violation
- The responsible party's efforts to correct the violation
- The injury/damage, if any, suffered by any member of the public
- The economic advantage the party gained by not complying with the ordinance
- Any instances in which the responsible party has been in violation of the same or similar code provisions in the previous three years
- The amount of staff time which was expended investigating or addressing the violation
- The amount of administrative penalties which have been imposed in similar situations

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Levels of Violations

The amount of the administrative penalty shall be set according to one of the following four levels of violations:

Level A violations are violations that present a substantial probability that death or serious physical harm to the public at large or person(s) would result. Level A violations shall be subject to an administrative penalty of five thousand dollars ($5,000) to ten thousand ($10,000).

Level B violations are violations that either (1) present the threat, but not substantial probability, that serious physical harm to the public at large or person(s) would result; or (2) present circumstances that are likely to cause and/or do cause serious harm to public or private property; or (3) present a conscious and willful disregard of (i) a hearing examiner's order(s), or (ii) orders or notices of violation issued by an agency authorized to issue such orders or notices. Level B violations shall be subject to an administrative penalty of two thousand five hundred dollars ($2,500) to four thousand nine hundred ninety-nine dollars ($4,999).

Level C violations are violations that are violations that present circumstances that either (1) are likely to cause and/or do cause harm to public or private property, or (2) show repeated or continuous noncompliance with (i) a hearing examiner's order(s), or (ii) orders or notices of violation issued by an agency authorized to issue such orders or notices. Level C violations shall be subject to an administrative penalty of one thousand dollars ($1,000) to two thousand four hundred ninety-nine dollars ($2,499).

Level D violations are violations other than Level A, B, or C violations. Level D violations shall be subject to an administrative penalty of one hundred dollars ($100) to nine hundred and ninety-nine dollars ($999).

Guidelines for determining penalty amounts

The following guidelines are established for determining administrative penalty amounts.

Residential – Non-hazardous non-stormwater discharges

Non-hazardous materials include dirt/gravel/sand, vegetation, gray water, food waste, chlorinated pool water, detergents, etc.

Extenuating circumstances can include the responsible party was grossly negligent, failed to contain and clean up the prohibited material within the time frame prescribed by the city, attempted to mislead the city with incorrect information and/or refused to comply with the city's enforcement action(s).

First Violation:

Issuance of a notice of violation, cease and desist order and/or notice to clean and abate, but no imposition of administrative penalties. If the ity

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enforcement official determines that extenuating circumstances exist, then a minimum penalty of $100, not to exceed $999 (Level D) shall apply.

Second Violation:

Minimum penalty of $100, not to exceed $999 (Level D). Determination of the penalty amount within this range will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

Subsequent Violations:

If the City enforcement official has imposed an administrative penalty on the same responsible party for a violation of city Code within the preceding three years, the maximum administrative penalty for subsequent violations may be increased to $2,499 (Level C). The circumstances of the subsequent violations need not be similar to those of the previous violation(s). The maximum administrative penalty for subsequent violations may be increased to $4,999 (Level B) if the city enforcement official determines that extenuating circumstances exist. Determination of the penalty amount within these ranges will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

<u>Residential – Hazardous Non-Stormwater Discharges</u>

Hazardous materials include oils, fuels, latex, oil or water based paint, stucco or concrete waste/wastewater, sewage, antifreeze, paint thinners, herbicides, pesticides, pool chemicals, cleaners, solvents, acids, etc.

First Violation:

Minimum penalty of $200, not to exceed $2,499 (Level C or D) for the first prohibited non-stormwater discharge identified as a hazardous material. Determination of the penalty amount within these ranges will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

Subsequent Violations:

If the City enforcement official has imposed an administrative penalty on the same responsible party for a violation of city Code within the preceding three years, the maximum administrative penalty for subsequent violations may be increased to $4,999 (Level B). The circumstances of the subsequent violations need not be similar to those of the previous violation(s). Determination of the penalty amount within these ranges will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

<u>Business – Non-hazardous non-stormwater discharges</u>

First Violation:

DRAFT

Issuance of a notice of violation, cease and desist order and/or notice to clean and abate, but no imposition of administrative penalties. If the City enforcement official determines that extenuating circumstances exist, then a minimum penalty of $250, not to exceed $999 (Level D) shall apply.

Second Violation:

Minimum penalty of $250, not to exceed $2,499 (Level C or D). Determination of the penalty amount within this range will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

Subsequent Violations:

If the City enforcement official has imposed an administrative penalty on the same responsible party for a violation of city Code within the preceding three years, the maximum administrative penalty for subsequent violations may be increased to $2,499 (Level C). The circumstances of the subsequent violations need not be similar to those of the previous violation(s). The maximum administrative penalty for subsequent violations may be increased to $4,999 (Level B) if the City enforcement official determines that extenuating circumstances exist. Determination of the penalty amount within these ranges will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

BMPs:

The responsible party may, upon approval by the city enforcement officer, apply the administrative penalty amount toward the purchase of structural BMPs to eliminate any reasonable possibility of a future prohibited non-stormwater discharge.

<u>Business – Hazardous non-stormwater discharges</u>

First Violation:

Minimum penalty of $500, not to exceed $2,499 (Level C or D) for the first prohibited non-stormwater discharge identified as a hazardous material. If extenuating circumstances exist, then the maximum administrative penalty may be increased to $4,999. Determination of the penalty amount within these ranges will be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

Subsequent Violations:

If the city enforcement official has imposed an administrative penalty on the same responsible party for a violation of city Code within the preceding three years, the maximum administrative penalty for subsequent violations may be increased to $9,999 (Level A). The circumstances of the subsequent violations need not be similar to those of the previous violation(s). Determination of the penalty amount within these ranges will

DRAFT

be made based on consideration of the factors associated with the violation and comparison to similar administrative penalties issued previously.

BMPs:

The responsible party may, upon approval by the city enforcement officer, apply the administrative penalty amount toward the purchase of structural BMPs to eliminate any reasonable possibility of a future prohibited non-stormwater discharge.

Other Enforcement Actions: Cost Recovery

The imposition of administrative penalties for violations of city Code X.X shall not prevent the city or any other authorized agency from exercising any additional enforcement authority authorized or provided in any law or regulation. The imposition of administrative penalties shall be in addition to the recovery of costs incurred by the city in cleaning up and abating a violation, or the recovery of costs granted to the city after prevailing in an administrative, civil or criminal proceeding.

DRAFT

Table of Contents

Chapter 5 - Construction Site Stormwater Runoff Control Program 5-1
5.1 Requirements 5-1
5.1.1 Ecology's Statewide NPDES Construction Permit 5-2
5.1.2 Relationship of the Statewide Construction Permit with the Phase II Construction Minimum Measure 5-3
5.2 Benefits/Why This Program is Important 5-3
5.3 Model Program for Construction Site Stormwater Runoff Control 5-4
5.3.1 Adopt an Erosion and Sediment Control Ordinance 5-4
5.3.2 Train Plan Reviewers and Field Inspectors 5-6
5.3.3 Review Site Plans for Erosion and Sediment (E&S) Controls 5-6
5.3.4 Receive Information from the Public 5-8
5.3.5 Inspect Construction Sites 5-8
5.3.6 Provide Information on Training for Construction Operators 5-9
5.4 Resources 5-10
Appendices 5-10
Appendix 5A – Department of Ecology Notice of Intent for Construction Activity 5-11
Appendix 5B – Example Inspection Report 5-15

DRAFT

Chapter 5 - Construction Site Stormwater Runoff Control Program

5.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following regulations for construction site stormwater runoff control. This model program is intended to meet these EPA regulations and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties. The following guidance section from the Phase II Rule provides additional details on the preceding regulations.

Regulations	**40 CFR 122.34(b)(4) Construction site stormwater runoff control** (i) You must develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of stormwater discharges from construction activity disturbing less than one acre must be included in your program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more. If the NPDES permitting authority waives requirements for stormwater discharges associated with small construction activity in accordance with Sec. 122.26(b)(15)(i), you are not required to develop, implement, and/or enforce a program to reduce pollutant discharges from such sites. (ii) Your program must include the development and implementation of, at a minimum: (A) An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State, Tribal, or local law; (B) Requirements for construction site operators to implement appropriate erosion and sediment control best management practices; (C) Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality; (D) Procedures for site plan review, which incorporate consideration of potential water quality impacts;

DRAFT

Regulations	**40 CFR 122.34(b)(4) Construction site stormwater runoff control** (E) Procedures for receipt and consideration of information submitted by the public, and (F) Procedures for site inspection and enforcement of control measures.

Guidance	**40 CFR 122.34(b)(4) Construction site stormwater runoff control** Examples of sanctions to ensure compliance include non-monetary penalties, fines, bonding requirements and/or permit denials for non-compliance. EPA recommends that procedures for site plan review include the review of individual pre-construction site plans to ensure consistency with local sediment and erosion control requirements. Procedures for site inspections and enforcement of control measures could include steps to identify priority sites for inspection and enforcement based on the nature of the construction activity, topography, and the characteristics of soils and receiving water quality. You are encouraged to provide appropriate educational and training measures for construction site operators. You may wish to require a stormwater pollution prevention plan for construction sites within your jurisdiction that discharge into your system. See Sec. 122.44(s) (NPDES permitting authorities' option to incorporate qualifying State, Tribal and local erosion and sediment control programs into NPDES permits for stormwater discharges from construction sites). Also see Sec. 122.35(b) (The NPDES permitting authority may recognize that another government entity, including the permitting authority, may be responsible for implementing one or more of the minimum measures on your behalf.)

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5.1.1 Ecology's Statewide NPDES Construction Permit

Similar to private developers, cities and counties in Washington are required to obtain a NPDES construction permit from Ecology for all soil disturbing activities (including grading, stump removal, demolition) of 5 or more acres. This NPDES construction permit is required if the project discharges stormwater to a receiving water (e.g., wetlands, creeks, unnamed creeks, rivers, marine waters, ditches, estuaries), and/or storm drains that discharge to receiving water. If the construction owner plans on retaining all stormwater on site, but detention facilities need to be constructed to retain the stormwater, permit coverage is still required.

When Phase II becomes effective in 2003, this five (5) acre threshold will fall to one (1) acre. A permit is required from any construction owner, including local governments. Construction operators who fall under these requirements will be required to submit an application to Ecology. A copy of this application form (or Notice of Intent) is found in Appendix 5A.

The construction general permit is currently being reissued, and a notice of appeal has been filed on the reissued permit. In addition, a partial stay has been issued for construction sites that discharge to 303(d) impaired waterbodies. For the latest information on this permit, see Ecology's stormwater web site:

http://www.ecy.wa.gov/programs/wq/stormwater/index.html

5.1.2 Relationship of the Statewide Construction Permit with the Phase II Construction Minimum Measure

The Statewide Construction Permit, issued by Ecology and described in Section 5.1.1, applies to all construction activity disturbing at least one acre that has a discharge (i.e., the stormwater from that site enters a storm drain or a surface waterbody).

The Construction Minimum Measure, which this chapter addresses, only applies within the Phase II boundary described in Chapter 1, Section 1.4.2.

Therefore, construction projects outside of a Phase II boundary will only need to apply for Ecology's Statewide Construction Permit (if applicable), and comply with any local requirements, if they exist.

Construction projects within the Phase II boundary will need to apply for Ecology's Statewide Construction Permit and comply with the local construction program (described in this chapter).

5.2 Benefits/Why This Program is Important

Construction sites with improper erosion and sediment controls have been shown to cause significant water quality impacts. These impacts are the result of both sediment discharged and the associated pollutants absorbed onto particles found with the sediment. Sediment discharges from construction sites smother aquatic habitat and spawning grounds for fish, fill reservoirs and channels, and increase the cost of filtration for water treatment plants.

EPA cites a number of studies documenting the impacts of construction site runoff. One study in Wisconsin found that before construction, runoff sampled from a commercial site had an average of 138 mg/L of total solids concentrations. Runoff sampled during construction, however, averaged more than 15,000 mg/L while post-construction runoff averaged only 200 mg/L.

The economic impacts of construction site erosion-related problems are difficult to quantify. A study by Paterson et al. in 1993 cited in Brown and Caraco (1997) estimated the nation's total urban erosion-related problems cause between $192 million and $2.2 billion per year in damaged (in 1985 dollars). These economic impacts vary greatly depending on location and type of waterbody impacted.

DRAFT

5.3 Model Program for Construction Site Stormwater Runoff Control

The Model Program described below is implemented in coordination with the Stormwater Management Manual for Eastern Washington where adopted in ordinance by local governments. The Manual provides the technical standards with which construction site operators must comply; while the model program specifies the activities certain cities and counties will follow.

All the BMPs in this chapter, BMPs 5A – 5F, are required. BMP 5C includes an optional practice that can be implemented at the discretion of the jurisdiction.

5.3.1 Adopt an Erosion and Sediment Control Ordinance

Required BMP 5A: For permits or authorizations issued by the jurisdiction for construction operators disturbing at least 1 acre, require through ordinance erosion and sediment controls in compliance with the Stormwater Management Manual for Eastern Washington or an approved equivalent manual. Jurisdictions may, at their discretion, require erosion and sediment controls for smaller sites based on local conditions and needs.

Measurable Goal: Adopt a final ordinance by the end of permit year 2.

An ordinance to require erosion and sediment controls on construction sites is needed to ensure compliance. This ordinance effectively requires local construction operators to follow the Stormwater Management Manual for Eastern Washington, or another approved equivalent manual. An effective ordinance also includes penalties to ensure compliance. At a minimum, this ordinance applies to all construction activity disturbing at least one (1) acre. Incorporate these ordinance requirements into an existing grading permit process, requiring sites to submit erosion and sediment control plans and implement BMPs before a grading permit is issued.

A "model" ordinance, based on the City of Boise's stormwater ordinance, is found in Appendix 4B (Illicit Discharge Chapter). This ordinance covers the legal authority required for construction and post-construction control by requiring construction operators to follow a stormwater manual.

Include in the local ordinance a requirement that construction sites comply with a stormwater management design manual, or the Stormwater Management Manual for Eastern Washington. The details on the types of controls construction sites must implement are contained in the Manual, not the ordinance.

The State Building Code can also provide the legal authority, however, in most cases it is probably better to have the legal authority specified in the

DRAFT

local municipal code. The State Building Code Council's Endangered Species Act (ESA) Technical Advisory Group is drafting erosion control and spill prevention standards to address requirements of the Endangered Species Act. When these standards are completed, they may also provide additional legal authority.

The Stormwater Management Manual for Eastern Washington provides the basic guidance to meet two of the requirements in the construction minimum measure:

- Erosion and sediment controls (as required in 40 CFR 122.34(b)(4)(ii)(B))
- Construction site waste (40 CFR 122.34(b)(ii)(C))

The manual provides the technical standards for construction site BMPs and the maintenance requirements for those BMPs. This model program requires construction operators to follow the Stormwater Management Manual for Eastern Washington, which effectively implements these two requirements.

Progressive enforcement plan

To ensure compliance with the local erosion and sediment control ordinance, develop and follow an enforcement plan that includes enforcement of inadequate construction erosion and sediment controls. This enforcement plan is described in Chapter 4, Section 4.3.5. A single enforcement plan can be developed to address illicit discharges, construction erosion and sediment controls, and post-construction controls.

Include in the enforcement plan a description of the different levels of enforcement actions available to inspectors, such as warnings, administrative actions, and fines. In addition, include in the plan a description of the recommended level of enforcement response for first, second, and subsequent violations of the local erosion and sediment control ordinance provisions.

An effective mechanism for construction sites, if available, is a stop work order. Consistent violations of construction site erosion and sediment control requirements could prompt the inspector to issue a stop work order. This type of order usually brings a prompt response from the owner.

DRAFT

5.3.2 Train Plan Reviewers and Field Inspectors

Required BMP 5B: Provide training or coordinate with existing training efforts to educate plan reviewers and field inspectors in erosion and sediment control BMPs and requirements.

Measurable Goal: Train plan reviewers and inspectors by the end of permit year 5, and annually thereafter.

Sections 5.3.3 and 5.3.5 describe the process to review site plans for erosion and sediment controls and inspect construction sites for proper BMP installation and maintenance. To help implement these activities, provide training to plan reviewers and field inspectors in developing and implementing an effective erosion and sediment control plan. This training can be developed in-house, or a variety of organizations offer training courses on construction site sediment and erosion control. Course information for a few of these trainings is available on the internet at the addresses below.

International Erosion Control Association
http://www.ieca.org/public/articles/index.cfm?cat=24

Association of General Contractors of Washington
http://www.agcwa.com/soil.asp

University of Washington's Engineering Professional Program
http://www.engr.washington.edu/~uw-epp/Pepl/cec.html

Whenever possible, coordinate the training for erosion and sediment control with training on post-construction stormwater management, as described in Chapter 6. This will ensure staff obtain training in both areas while promoting efficient use of resources.

5.3.3 Review Site Plans for Erosion and Sediment (E&S) Controls

Note: This BMP should be conducted in coordination with BMP 6D.

Required BMP 5C: Review site plans prior to construction to ensure that they include E&S controls and post-construction controls in compliance with local ordinances and the Stormwater Management Manual for Eastern Washington or an approved equivalent manual. NPDES requires that all construction sites greater than one disturbed acre be subject to plan review. Jurisdictions may, at their discretion, require plan review for smaller sites based on local conditions and needs.

Measurable Goal: Review all site plans subject to the local ordinance by the end of permit year 5.

To ensure that construction sites include the required stormwater controls, review pre-construction site plans to ensure that they include appropriate

DRAFT

erosion and sediment controls and post-construction controls in compliance with the local ordinance and the Stormwater Management Manual for Eastern Washington. Combine this pre-construction review of E&S controls with the review of post-construction controls to streamline the review time and conserve resources.

EPA recommends that procedures for site plan review include the review of individual pre-construction site plans to ensure consistency with local sedimentation and erosion control requirements. The pre-construction site plan review process needs to be integrated into the existing plan review process, either through the grading and building permit review process or a similar building review process, and address both E&S controls and post-construction controls. Use this review process to verify that the site contains appropriate and adequate E&S controls and post-construction controls before construction begins.

At a minimum, include review of all plans for construction sites disturbing at least one acre in the site plan review process. Factors to verify during the site plan review process include:

- Erosion and sediment controls consistent with Stormwater Management Manual for Eastern Washington (or approved equivalent) are planned and clearly described on the plan.
- The plan meets all local erosion and sediment control requirements.
- The construction operator is aware of their responsibility for implementing and maintaining; and erosion and sediment controls, and is aware of the penalties for failing to do so.
- Post-construction controls consistent with the Stormwater Management Manual for Eastern Washington (or approved equivalent) are planned and clearly described on the plan.
- The construction operator and landowner are aware of the responsibility for implementing and maintaining the post-construction controls, and are aware of the penalties for failing to do so.

A pre-construction site plan meeting between the City/County and the construction operator is a good way to ensure that both parties are comfortable with the plan and requirements.

Optional Practice: As an optional practice, consider having plan reviewers check to determine if an NOI (Notice of Intent) has been submitted to Ecology for all projects that disturb greater than one acre. A copy of the NOI would be necessary before the plan is approved by the city or county.

Measurable Goal: During each plan review, the plan reviewer will verify that an NOI has been submitted to Ecology, if required for that project.

DRAFT

Construction activity disturbing at least one acre will, in addition to complying with the local jurisdiction's stormwater ordinance, also generally have to submit a Notice of Intent (NOI) to be covered by Ecology's statewide construction general permit. The plan review process can include a check to verify that this required NOI has been submitted. If the NOI has not been submitted to Ecology, the local jurisdiction can hold approval of the construction plan.

This helps educate local construction operators on their responsibility to comply with both state and local requirements.

5.3.4 Receive Information from the Public

Required BMP 5D: Publish a phone number, or equivalent system, to receive information from the public on construction site runoff issues. Set up a process to pass this information off to field inspectors.

Measurable Goal: Publish a phone number or equivalent system by the end of permit year 5.

To meet this requirement, list a phone number for "construction-related complaints" in the local government pages, published in brochures and listed on the jurisdictions web site, if available. Direct this phone number to the appropriate staff person, such as an administrative assistant for the public works department or a construction inspector.

Keep written logs of all complaints that include the date and time of the call, location of the construction site, and the nature of the complaint. Provide information on these complaints to the local construction inspectors by the end of the day; the goal is to have inspectors follow-up on each complaint within three days.

5.3.5 Inspect Construction Sites

Required BMP 5E: Inspect all construction sites during the construction period that are regulated by the ordinance adopted in BMP 5A.

Measurable Goal: Inspect all construction sites meeting NPDES threshold criteria and not subject to a waiver. Inspection frequency will be based on prioritization criteria, however, all construction sites must be inspected at least once.

Once site plans receive approval for E&S controls, it is extremely important to ensure that E&S controls are properly installed and maintained, and that the site plan reflects changes made on-site (e.g., different types of controls used, changed location of controls, etc.). Frequent and consistent inspections are the key to ensuring proper installation and maintenance of E&S controls. The frequency for inspecting construction sites varies based on local conditions and

DRAFT

priorities. At a minimum, inspect all construction sites at least once during the project period.

Set inspection priorities based upon local goals, resources, and known problem areas. These priority sites can be based on particular areas or the priority sites can be based on specific operators with past problems or larger construction sites. Suggested criteria for priority setting include:

- Construction sites on steep slopes or highly erodible areas
- Construction sites operated by contractors with past violations
- Construction sites disturbing more than five acres and/or
- Construction sites following rain events

Document the criteria used to set inspection priorities, and describe the frequency of inspection for these sites. The example inspection form provided in Appendix 5B can be completed when conducting site inspections to help inspectors determine what to look for.

The frequency of inspections will vary based on the priority of the site. Inspect each construction site at least once during the construction period. More frequent inspections may be required during wet weather and for sites identified as priorities.

Consider training other local inspectors, such as building or infrastructure inspectors, on proper erosion and sediment controls and requirements. These inspectors are often on construction sites for other inspection purposes, and could more cost-effectively perform E&S inspections rather than sending a separate E&S inspector to the site. Alternatively, designate a single inspector to be dedicated to E&S controls, and have that inspector visit sites to ensure compliance.

5.3.6 Provide Information on Training for Construction Operators

Required BMP 5F: Provide information on local training available to construction operators on how to install and maintain effective erosion and sediment control and how to comply with the Stormwater Management Manual for Eastern Washington, or an approved equivalent manual.

Measurable Goal: Training information to be provided to local construction operators, upon request, by the end of permit year 5.

Local jurisdictions do not need to conduct this training for local construction operators, but should direct construction operators to available training resources if requested. This could be provided as a single page handout during the pre-construction meeting or as requested.

The training described in Section 5.3.2 also applies to local construction operators. In fact, many classes will include a mix of both municipal

DRAFT

construction plan reviewers and inspectors, along with local construction operators.

5-1 Feedback Requested:

Chapter 5 describes a variety of best management practices related to erosion and sediment control at construction sites that disturb more than 1 acre of land.

Which of the best management practices do you feel will be the most effective at reducing erosion and water quality impacts associated with construction activities? (Please explain which ones and why.)

Are there other sediment and erosion control best management practices that you think should be considered or included? (Please indicate yes or no, and explain your ideas.)

5.4 Resources

This section includes resources and references for additional information to assist cities in developing and implementing the model program.

EPA's Menu of BMPs for stormwater Phase I
http://www.epa.gov/npdes/menuofbmps/con_site.htm

Stormwater Management Manual for Western Washington
http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Appendices

Appendix 5A – Department of Ecology Notice of Intent for Construction Activity

Appendix 5B – Example Inspection Report

DRAFT

Appendix 5A – Department of Ecology Notice of Intent for Construction Activity

DRAFT

Application for General Permit to
Discharge Stormwater Associated with

Construction Activity

(Notice of Intent)

❑ Change of Information

Permit # SO3 - __ __ __ __ __ __

(Please print in ink or type)

Please Read NOI Instructions Before Filling Out This Form

I. Contact Person

Contact Name	Phone No.
Company	
Mailing Address	
City	State Zip + 4

II. Owner/Representative of Site

(All correspondence will be mailed here)

Owner's Name	Phone No.
Company Name	
Mailing Address	
City	State Zip + 4

III. Site Location/Address

Site Name	
Street Address (or Location Description)	
City (or nearest city)	Zip + 4
County	

IV. Billing Address

Contact Name	Phone No.
Company Name	
Mailing Address	
City	State Zip + 4

Provide legal description if no address for site (attach separate sheet if necessary)

V. Receiving Water Information (check all that apply)

A. **Does your construction site discharge stormwater to:**

1. ❑ Storm drain system - Owner of storm drain system (name) _____
2. ❑ Indirectly or directly to surface waters (❑ River ❑ Lake ❑ Creek ❑ Estuary ❑ Ocean ❑ Wetland)
3. ❑ Directly to ground waters of Washington state. ❑ Dry Well ❑ Drainfield ❑ Other

B. **Name(s) of receiving water(s)** _____

Initial discharge is to an unnamed receiving water? ❑ Yes ❑ No (❑ Ditch ❑ Wetland ❑ Unnamed Stream)

C. **Location of discharges** (Use any of the following to most accurately identify location of discharge. Attach a supplemental sheet if more than one discharge point and/or numerous receiving waters.):

1. Map enclosed (Mark discharge point on map and provide distance from receiving water.)

(Specify degrees, minutes, and seconds.)

2. _____¼ _____¼; Section _____ Township _____ Range _____
   _____¼ _____¼; Section _____ Township _____ Range _____
   _____¼ _____¼; Section _____ Township _____ Range _____
3. Latitude _____ Longitude _____
   Latitude _____ Longitude _____
   Latitude _____ Longitude _____

VI. Construction Activity Information

1. Total size of site _____ acres Total area to be disturbed _____ acres How many phases? _____
2. Will any portion of the project be sold to private developers? ❑ Yes ❑ No
3. Projected startup date _____/_____ (month year) Proposed completion date _____/_____ (month year)
4. Will there be dewatering activity? ❑ Yes ❑ No If yes, give brief description of location of such activity and how water will be disposed of: _____
5. Check all construction (soil disturbing activities) that apply. Attach a supplemental sheet if necessary.

❑ Clearing	❑ Utilities	❑ Landscaping	Homes	(How many?)	❑ Other _____
❑ Grading	❑ Stormwater Facilities	❑ Trails	❑ Single-family	_____	❑ Other _____
❑ Demolition	❑ Roads/Streets	❑ Parks	❑ Multi-family	_____	❑ Other _____
❑ Importing Soil	❑ Retaining Walls	Industrial Buildings	❑ Townhomes	_____	❑ Other _____
❑ Exporting Soil	❑ Piping Systems	Type _____	❑ Condominiums	_____	❑ Other _____
❑ Stockpiling	❑ Filling Wetland	Site _____			

ECY 020-85 (Rev. 3/01) Page 1 of 3

VII. Stormwater Pollution Prevention Plan (SWPPP)

A. **Best Management Practices (BMPs)** (Check all that apply.) Attach supplemental list if needed to include other BMPs.

❑ Silt Fencing	❑ Wheel Wash Area	❑ Riprap Channel Lining	❑ Slope Reduction
❑ Vegetated Strips	❑ Nets and Blankets	❑ Interceptor Trenches/Ditches	❑ Chemical Treatment (Polyacrylamides)
❑ Straw Bales	❑ Swale	❑ Culverts	❑ Kiln Dust
❑ Mulching	❑ Diverted Flows	❑ Pipes	❑ Dust Control
❑ Hydroseed	❑ Dikes	❑ Berms	❑ Other _____
❑ Plastic Covering	❑ Check Dams	❑ Terracing	❑ Other _____

B. **Stormwater Pollution Prevention Plan (SWPPP)**

Has a SWPPP been developed that includes a narrative and drawings? ❑ Yes ❑ No

If NO, will a plan be developed prior to the start of construction? ❑ Yes ❑ No

If you answered "NO" to the above question, notify Ecology in writing when a final Plan has been developed. A permit will not be issued until a confirmation letter has been received by Ecology. The SWPPP is to be implemented when construction activity commences on your project.

VIII. State Environmental Policy Act (SEPA)

If the SEPA process has not been completed at the time of NOI submittal, a follow-up letter must be sent to Ecology with the following information prior to Ecology granting permit coverage.

Has a SEPA review been completed? ❑ Yes ❑ No ❑ Exempt

Type of SEPA document ❑ DNS ❑ Final EIS ❑ MDNS

Agency issuing DNS, Final EIS, or Exemption _____ ; Date _____

Are you aware of an appeal of the adequancy of the SEPA document? ❑ Yes ❑ No

(If yes, please attach explanatory letter.)

SEPA requirements must be complied with prior to permit issuance.

IX. Public Notice

The public notice must be published at least once each week for 2 consecutive weeks, in a single newspaper which has general circulation in the county in which the construction is to take place. See the NOI instructions for the public notice language requirements. Permit coverage will not be granted sooner than 31 days after the date of the second public notice. ***Note: This NOI must be submitted to Ecology on or before the date of the first public notice.***

PUBLIC NOTICE

_____*(Name of owner; or name of owner % engineering firm, architect, etc.)*

_____*(Address of owner, or % Representative)* is seeking coverage under the Washington Department of Ecology's NPDES General Permit for Stormwater Discharges Associated with Construction Activities.

The proposed _____ *(Total acres)* project, known as _____ *(Project name)* is located _____ _____*(Street address, intersection, crossroads, or other descriptive site location)* in _____ *(Name of nearest city)*. Approximately _____ *(Number of disturbed acres)* will be disturbed for construction of _____ _____ _____

(List all construction activity, e.g., clearing, importing/exporting materials, demolition, grading, stormwater facilities, roads, utilities, number buildings/homes and type, sidewalks, landscaping.) Stormwater will be _____ _____ _____*(Brief description of how the stormwater will be cleaned and controlled)*, prior to discharging _____ _____

(Clarify the direction of the stormwater flows) (List wetlands, unnamed and named receiving waters and storm drains; clarify if buffers will be used to protect sensitive waterbodies.)

Any person desiring to present their views to the Department of Ecology concerning this application, may notify Ecology in writing within 30 days from the last date of publication of this notice. Comments may be submitted to: Dept. of Ecology, Stormwater Unit, PO Box 47696, Olympia, WA 98504-7696

Provide the exact dates (mm/dd/yy) that the first and second public notices will appear in the newspaper: Date of the first notice __ / __ / __ ;

Date of second notice __ / __ / __

Name of the newspaper which will run the public notices _____

Ecology is no longer requiring the submittal of the affidavit of publication.

Complete the above public notice information or provide a copy of the notice to be published.

ECY 020-85 (Rev. 3/01) Page 2 of 3

X. Regulatory Status

A. ❑ NPDES Permit (e.g., industrial stormwater) Permit No. _____	C. ❑ Air Notice of Construction, Permit, or Order Agency _____
B. ❑ State Waste Discharge Permit Permit No. _____	D. ❑ State/USEPA Hazardous Waste ID No. _____

XI. Certification of Permittee(s)

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

_____ _____
Owner/Representative's Printed Name Title

_____ _____
Owner/Representative's Signature Date

Sign and return this document to the following address; for questions call (360) 407-6437: Washington Department of Ecology, Water Quality Program, Stormwater Unit, PO Box 47696, Olympia, WA 98504-7696

The Department of Ecology is an equal opportunity agency and does not discriminate on the basis of race, creed, color, disability, age, religion, national origin, sex, marital status, disabled veteran's status, Vietnam Era veteran's status, or sexual orientation.

ECY 020-85 (Rev. 3/01) Page 3 of 3

Appendix 5B – Example Inspection Report

(i) Erosion and Sediment Control Inspection Checklist

(i) Inspection Report

Sheet ___ of ___

Project Name:_____

File No._____

Inspection Date:_____ Time:_____

Inspected by: _____

Stage of Construction

___ Pre-Construction Conference ___ Rough Grading ___ Finish Grading

___ Clearing and Grubbing ___ Building Construction ___ Final Stabilization

==========

(ii) Inspection Checklist

Yes	No	NA	
[ ]	[ ]	[ ]	Have all denuded areas requiring temporary or permanent stabilization been stabilized? Seeded? yes/no Mulched? yes/no Graveled? yes/no
[ ]	[ ]	[ ]	Are soil stock piles adequately stabilized with seeding and/or sediment trapping measures?
[ ]	[ ]	[ ]	Does permanent vegetation provide adequate stabilization?
[ ]	[ ]	[ ]	Have sediment trapping facilities been constructed?
[ ]	[ ]	[ ]	For perimeter sediment trapping measures, are earthen structures stabilized?
[ ]	[ ]	[ ]	Are sediment basins installed where needed?
[ ]	[ ]	[ ]	Are finished cut and fill slopes adequately stabilized?
[ ]	[ ]	[ ]	Are on-site channels and outlets adequately stabilized?
[ ]	[ ]	[ ]	Do all operational storm sewer inlets have adequate inlet protection?
[ ]	[ ]	[ ]	Are stormwater conveyance channels adequately stabilized with channel lining and/or outlet protection?
[ ]	[ ]	[ ]	Is in-stream construction conducted using measures to minimize channel damage?
[ ]	[ ]	[ ]	Are temporary stream crossings of non-erodible material installed where applicable?
[ ]	[ ]	[ ]	Is necessary restabilization of in-stream construction complete?
[ ]	[ ]	[ ]	Are utility trenches stabilized properly?
[ ]	[ ]	[ ]	Are soil and mud kept off public roadways at intersections with site access roads?
[ ]	[ ]	[ ]	Have all temporary control structures that are no longer needed been removed?
[ ]	[ ]	[ ]	Have all control structure repairs and sediment removal been performed?

DRAFT

[ ] [ ] [ ] Are properties and waterways downstream from development adequately protected from erosion and sediment deposition due to increases in peak stormwater runoff?

==========

Comments:_____

_____

_____

_____

Verbal/Written notification given to:

_____

Report by: _____ Date: _____

DRAFT

Table of Contents

Chapter 6 - Post Construction Stormwater Management Program 6-1
6.1 Requirements 6-1
6.2 Benefits/Why This Program is Important 6-3
6.3 Model Program for Post-Construction Stormwater Management 6-3
6.3.1 Ordinance Requiring Post-Construction Controls 6-4
6.3.1.1 City of Spokane Stormwater Ordinance 6-5
6.3.1.2 Spokane County Stormwater Ordinance 6-5
6.3.1.3 City of Pasco Impervious Surfaces Ordinance 6-5
6.3.2 Develop a Plan to Address Post-Construction Runoff 6-6
6.3.3 Training for Plan Reviewers and Field Inspectors 6-7
6.3.4 Site Plan Review for Post-Construction BMPs 6-7
6.3.5 Inspections of Structural Post-Construction BMPs 6-7
6.3.5.1 Requirements for Private Property Owners to Maintain Facilities 6-8
6.3.5.2 Database of Structural BMPs 6-8
6.3.5.3 Inspection Procedures, Including a Schedule for Conducting Inspections 6-8
6.3.5.4 Inspection Form 6-9
6.4 Resources 6-9
Appendices 6-9
Appendix 6A – City of Spokane Ordinance for Stormwater Facility Inspections and Maintenance 6-10
Appendix 6B – Pasco Impervious Surfaces Ordinance 6-23
Appendix 6C – Olympia Maintenance Agreement 6-24
Appendix 6D – New Development Inspection Form 6-27

DRAFT

Chapter 6 - Post Construction Stormwater Management Program

6.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following information as regulations for post-construction stormwater management. This model program is intended to meet these EPA regulations and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties. The following guidance section from the Phase II Rule provides additional details on the preceding regulations.

Regulations	**40 CFR 122.34(b)(5) Post-construction stormwater management in new development and redevelopment** (i) You must develop, implement, and enforce a program to address stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common plan of development or sale, that discharge into your small MS4. Your program must ensure that controls are in place that would prevent or minimize water quality impacts. (ii) You must: (A) Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for your community; (B) Use an ordinance or other regulatory mechanism to address post-construction runoff from new development and redevelopment projects to the extent allowable under State, Tribal or local law; and (C) Ensure adequate long-term operation and maintenance of BMPs.
Guidance	**40 CFR 122.34(b)(5) Post-construction stormwater management in new development and redevelopment** If water quality impacts are considered from the beginning stages of a project, new development and potentially redevelopment provide more opportunities for water quality protection. EPA recommends that the BMPs chosen: be appropriate for the local community; minimize water quality impacts; and attempt to maintain pre-development runoff conditions. In choosing appropriate BMPs, EPA encourages you to participate in locally-based watershed planning efforts which attempt to involve a diverse group of stakeholders including interested citizens.

DRAFT

Guidance	**40 CFR 122.34(b)(5) Post-construction stormwater management in new development and redevelopment** When developing a program that is consistent with this measure's intent, EPA recommends that you adopt a planning process that identifies the municipality's program goals (e.g., minimize water quality impacts resulting from post-construction runoff from new development and redevelopment), implementation strategies (e.g., adopt a combination of structural and/or non-structural BMPs), operation and maintenance policies and procedures, and enforcement procedures. In developing your program, you should consider assessing existing ordinances, policies, programs and studies that address stormwater runoff quality. In addition to assessing these existing documents and programs, you should provide opportunities to the public to participate in the development of the program. Non-structural BMPs are preventive actions that involve management and source controls such as: policies and ordinances that provide requirements and standards to direct growth to identified areas, protect sensitive areas such as wetlands and riparian areas, maintain and/or increase open space (including a dedicated funding source for open space acquisition), provide buffers along sensitive water bodies, minimize impervious surfaces, and minimize disturbance of soils and vegetation; policies or ordinances that encourage infill development in higher density urban areas, and areas with existing infrastructure; education programs for developers and the public about project designs that minimize water quality impacts; and measures such as minimization of percent impervious area after development and minimization of directly connected impervious areas. Structural BMPs include: storage practices such as wet ponds and extended-detention outlet structures; filtration practices such as grassed swales, sand filters and filter strips; and infiltration practices such as infiltration basins and infiltration trenches. EPA recommends that you ensure the appropriate implementation of the structural BMPs by considering some or all of the following: pre-construction review of BMP designs; inspections during construction to verify BMPs are built as designed; post-construction inspection and maintenance of BMPs; and penalty provisions for the noncompliance with design, construction or operation and maintenance. Stormwater technologies are constantly being improved, and EPA recommends that your requirements be responsive to these changes, developments or improvements in control technologies.

DRAFT

Inspections of existing post-construction controls

This minimum measure only applies to post-construction controls created for new projects, not older, existing post-construction BMPs. Phase II jurisdictions could choose to include inspections of these post-construction BMPs in their program if they wish. New post-construction controls will

be included in this program after they are subject to the plan review requirements described below in Section 6.3.4. Phase II jurisdictions do have responsibility for proper operation and maintenance of their own storm drain systems. This is addressed in Chapter 7, Good Housekeeping.

6.2 Benefits/Why This Program is Important

Development alters the natural landscape by increasing impervious surfaces and introducing pollutants, which are then transported in stormwater runoff. These land use changes impact stormwater in primarily two ways: by increasing stormwater flows (quantity) and the pollutants available to be transported in stormwater runoff (quality).

Increases in stormwater quantity can result in downstream flooding, streambank erosion, and decreases in infiltration or recharge of groundwater. The impacts on water resources caused by increased impervious surfaces have been well documented, with a generally linear relationship between increased imperviousness and decreased water quality (Center for Watershed Protection, *The Importance of Imperviousness, Watershed Protection Techniques*, 1(3): 100-111).

Development also impacts water quality by introducing pollutant loads into stormwater runoff. Oils, grease, litter and toxic substances collect on impervious surfaces easing their entry into waters of the U.S. Studies in Washington have shown a direct correlation between total impervious area and instream aquatic habitat for salmonid species (C. May, E. Welch, R. Horner, J. Karr, and B. Mar. 1997. *Quality Indices for Urbanization Effects in Puget Sound Lowland Streams*. Water Resources Series Technical Report No. 154. Ecology Publication No. 98-04).

6.3 Model Program for Post-Construction Stormwater Management

The model post-construction program contains the following five main components, described below:

- Ordinance requiring post-construction controls (6.3.1)
- Develop a plan to address post-construction runoff (6.3.2)
- Training for plan reviewers and field inspectors (6.3.3)
- Site plan review for post-construction BMPs (6.3.4)
- Inspections of structural post-construction BMPs (6.3.5)

All the BMPs in this chapter, BMPs 6A – 6E, are required.

DRAFT

6.3.1 Ordinance Requiring Post-Construction Controls

Required BMP 6A: For permits or authorizations issued by the jurisdiction for construction operators disturbing at least one (1) acre, require through an ordinance the installation and proper maintenance of post-construction runoff controls in compliance with the Stormwater Management Manual for Eastern Washington or an approved equivalent manual. Jurisdictions may, at their discretion, require post development stormwater controls for smaller sites based on local conditions and needs.

Measurable Goal: Adopt a final ordinance by the end of permit year 2.

Combine the post-construction ordinance with the illicit discharge and construction ordinance, described in Chapters 4 and 5 respectively, into a single stormwater ordinance. An example of this type of ordinance is included in Appendix 4B. This ordinance largely requires local construction sites to comply with a local Stormwater Manual. After the ordinance is adopted by the end of permit year 2, plan on evaluating the effectiveness of this ordinance during years 3 – 5 of the permit and periodically thereafter.

The Stormwater Management Manual for Eastern Washington provides the basic guidance on two of the requirements in the post-construction minimum measure:

- Develop and implement strategies which include a combination of structural and/or non-structural best management practices (BMPs) appropriate for the community; and
- Ensure adequate long-term operation and maintenance of BMPs.

The Stormwater Management Manual for Eastern Washington contains the technical standards for post-construction BMPs and the operation and maintenance (O&M) requirements for those BMPs. This Model Program requires construction operators to follow the Manual, which effectively implements these two requirements.

EPA only requires the ordinance to "address post-construction runoff from new development and redevelopment projects" but does not say specifically what the ordinance must include. The ordinance could be as simple as requiring post-construction runoff to be no greater than pre-construction runoff, as required in the City of Spokane's ordinance below.

Ensure that the ordinance addresses post-construction runoff from new developments and redevelopment projects that disturb more than one acre. EPA states in the Phase II rule preamble that "redevelopment" should refer to alterations of a property that change the "footprint" of a site or building in such a way that results in the disturbance of equal to or greater than one acre of land. This term is not intended to include such activities as exterior remodeling, which would not be expected to cause adverse

DRAFT

stormwater quality impacts and offer no new opportunity for stormwater controls. (64 FR 68760)

In addition to the stormwater ordinance cited in Appendix 4B, other ordinances in eastern Washington include specific requirements for post-construction controls. These ordinances are cited below.

6.3.1.1 City of Spokane Stormwater Ordinance

The City of Spokane requires new development stormwater controls in the Moran Prairie Area under the Moran Stormwater Controls Ordinance (11.09A.200). A copy of this ordinance is included in Appendix 6A. Specifically, this ordinance requires that:

- "Volume and rate of surface runoff after new development shall be no greater than the runoff volume and rate leaving the site prior to development…" (11.09A.220(A)(5)); and
- "Drainage plans submitted for development proposals shall comply with the City of Spokane Design Standards…" (11.09A.220(A)(7))

In addition, this ordinance allows the Director of Engineering Services to require drainage easements, and requires a designated entity to be "responsible for maintaining drainage easements." (11.09A.220(A)(8 & 9))

This ordinance also authorizes the Wastewater Director to intervene in emergencies or cases of non-responsiveness to perform the work; provides an appeal process; and allows the city to recoup its costs.

6.3.1.2 Spokane County Stormwater Ordinance

Another local example of new development ordinances is found in Spokane County. The Glenrose/Central Park and North Spokane areas of the county have specific ordinances to address flooding and post-construction runoff concerns. The Glenrose/Central Park ordinance requires "the volume of surface runoff from new development sites shall be restricted to the existing volume leaving the sites prior to development…" for high risk drainage problem areas.

6.3.1.3 City of Pasco Impervious Surfaces Ordinance

A third example of a local ordinance is from the City of Pasco (Appendix 6B) which requires a building permit for the installation of any impervious surface improvements, except for single family residences and impervious surfaces covering less than 1,000 square feet. The ordinance requires the site to be "designed to drain, confine, and/or impound stormwater or site-generated water within the private property upon which the improvement is to be located" (Chapter 16.05).

DRAFT

6.3.2 Develop a Plan to Address Post-Construction Runoff

Required BMP 6B: Develop a plan to address post-construction stormwater runoff during the plan review, construction inspection, and post-construction maintenance inspection process.

Measurable Goal: Develop and adopt a plan by the end of permit year 5.

To develop a plan to address post-construction stormwater runoff, consider the key water quality and water quantity issues in your area. Incorporate existing flood management and stormwater planning strategies into the post-construction plan. Also, evaluate the existing plan review process to identify opportunities to integrate post-construction controls. For example, new developments under plan review provide an opportunity to reduce impervious surfaces or incorporate swales, drywells or other BMPs.

Where water quality impairments have been identified by Ecology within the jurisdiction, include strategies or BMPs in the post-construction plan targeted to reducing those pollutants.

Comprehensive Planning/Growth Management

Cities and counties under the Growth Management Act must ensure that any revisions to their comprehensive plan and development regulations include considerations for post-construction runoff. An example of this is found in Spokane County's Comprehensive Plan. The water quality section within the Land Use Element includes the following objective (10.1.n) "minimize the amount of pollution caused by stormwater runoff" with the following decision guideline "where increased stormwater runoff potential exists due to a proposed development, runoff management procedures should be a condition of approval."

6-1 Feedback Requested:

Chapter 6 describes best management practices related to reducing pollutants from new developments (post-construction).

Which of the best management practices do you feel will be the most effective at reducing water quality impacts associated with post-construction developments? (Please explain which ones and why.)

Are there other post-construction best management practices that you think should be considered or included? (Please indicate yes or no, and explain your ideas.)

DRAFT

6.3.3 Training for Plan Reviewers and Field Inspectors

Required BMP 6C: Provide training or coordinate with existing training efforts to educate construction plan reviewers and field inspectors on post-construction runoff control BMPs and maintenance standards.

Measurable Goal: Hire and train plan reviewers and inspectors by the end of permit year 5, and retrain annually thereafter.

Coordinate post-construction training for plan reviewers and field inspectors with BMP 5B, training for erosion and sediment control.

Potential sources for this training include the Center for Watershed Protection (http://www.cwp.org) or the NEMO Project – Nonpoint Education for Municipal Officials (http://nemo.uconn.edu/index.htm).

6.3.4 Site Plan Review for Post-Construction BMPs

Required BMP 6D: In accordance with the plan developed in BMP 6B, review site plans prior to construction to ensure that they include post-construction controls in compliance with local ordinances and the Stormwater Management Manual for Eastern Washington or an approved equivalent manual. Require submittal of information pertaining to the proper operation and maintenance of storm drain components and BMPs.

Measurable Goal: Review all site plans subject to the local ordinance by the end of permit year 5.

The site plan review process, for both erosion and sediment control practices and post-construction control practices, is described in Section 6.3.4. Conduct both of these reviews at the same time to ensure that plans include all the practices necessary to meet the Stormwater Management Manual for Eastern Washington.

6.3.5 Inspections of Structural Post-Construction BMPs

Required BMP 6E: In accordance with the plan developed in BMP 6B, inspect priority structural post-construction BMPs for compliance with operation and maintenance (O&M) standards.

Measurable Goal: Inspect structural post-construction BMPs based on the frequency recommended in the Stormwater Management Manual for Eastern Washington or an approved equivalent manual.

Develop a program to ensure the long-term O&M of structural stormwater BMPs. This requirement only applies to new BMPs installed as part of new construction; existing BMPs installed prior to the effective date of the Phase II stormwater program are not specifically addressed.

The post-construction O&M program includes the following components:

DRAFT

- Requirements for private property owners to maintain facilities
- Database of structural BMPs
- Inspection procedures, including a schedule for conducting inspections, and
- Inspection form

The Stormwater Management Manual for Eastern Washington is the primary reference for BMP maintenance procedures.

6.3.5.1 Requirements for Private Property Owners to Maintain Facilities

Require all new stormwater detention/retention practices and stormwater quality devices to be maintained by the property owner. This can be accomplished by including a maintenance requirement in the local ordinance. In addition, residential owners could be required to sign a maintenance agreement before final permits are issued. This agreement could require the property owners to submit annual forms certifying that an inspection and any necessary maintenance have been completed.

An example of a residential agreement to maintain stormwater management facilities is included in Appendix 6C (from City of Olympia, WA).

6.3.5.2 Database of Structural BMPs

To track the number and location of structural BMPs that the jurisdiction needs to inspect, develop a database. This database only needs to track new structural BMPs installed after the Phase II program is established, however, existing BMPs may also be tracked if considered a priority.

Suggested fields to consider in the development of a structural BMP database include:

- Property owner name and address
- Structural BMP
- BMP size
- Date of Last inspection by jurisdiction
- Compliance Status, and
- Notes

6.3.5.3 Inspection Procedures, Including a Schedule for Conducting Inspections

Not all structural BMPs need to be inspected. A subset of high priority BMPs could be inspected based on:

DRAFT

- The type of BMP (e.g., detention ponds, dry wells, commercial stormwater device, etc.)
- The size of the BMP (e.g., ponds holding more than 1 acre-feet)
- The location of the BMP (e.g., near sensitive waters), and/or
- Past maintenance problems

Additional inspections could occur at random and by responding to complaints.

Base the inspection maintenance standards on the BMP maintenance requirements in the Stormwater Management Manual for Eastern Washington, or an approved equivalent manual.

6.3.5.4 Inspection Form

Inspectors must document the condition of BMPs and any maintenance requirements on a standard form. A simple new development inspection form for this purpose is included in Appendix 6D. A more specific new development inspection form could be created for individual types of BMPs, such as ponds or proprietary stormwater devices.

6.4 Resources

This section includes resources and references for additional information to assist Phase II cities and counties in developing and implementing the model program.

Puget Sound LID pages
http://www.wa.gov/puget_sound/Programs/LID.htm

EPA's Menu of BMPs for stormwater Phase II
http://www.epa.gov/npdes/menuofbmps/post.htm

Stormwater Management Manual for Western Washington
http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Appendices

Appendix 6A – City of Spokane Ordinance for Stormwater Facility Inspections and Maintenance

Appendix 6B – Pasco Impervious Surfaces Ordinance

Appendix 6C – Olympia Maintenance Agreement

Appendix 6D – New Development Inspection Form

DRAFT

Appendix 6A – City of Spokane Ordinance for Stormwater Facility Inspections and Maintenance

City of Spokane Ordinance for inspection of new stormwater runoff facilities and enforcing maintenance standards.

Article I General Provisions.

Listing 11.09A.010 Definitions.

Listing 11.09A.020 Findings.

Listing 11.09A.030 Nuisance declared; remedy; no duty.

Listing 11.09A.040 Standards.

Listing 11.09A.050 Duties of Property Owners; Others; Private Rights Reserved.

Listing 11.09A.060 Plats; Permits.

Listing 11.09A.070 Implementation.

Listing 11.09A.080 Notice of Inquiry.

Listing 11.09A.090 Departmental Hearing.

Listing 11.09A.100 Appeal.

Listing 11.09A.110 Provisions Optional; Exhaustion.

Listing 11.09A.120 Stop Work; Penalty.

Article I General Provisions

Listing 11.09A.010 Definitions.

The following definitions apply to this chapter, except as may be modified or supplemented in specific sections:

A. "Development" is any land use activity permitted or approved under a municipal regulator process. There are two classes of developments: "commercial" and "residential". "Residential" development is a development designed for single family or duplex type residential use. "Commercial" development is a development other than residential.

B. "Onsite stormwater facilities", also sometimes referenced as "onsite stormwater control facilties", are physical improvements or design characteristics on a premises with a function, as recognized by the Director of Engineering Services, to control, prevent, diminish, dissipate, treat, deflect, or slow down the rate and/or volume of stormwater runoff or flows entering the public right of way, the public sanitary or storm sewer system, or to reduce flooding and erosion on public or private property. Examples are catch basins, pipes, ponds, impoundments, inlets and drains,

DRAFT

as well as biotic or landscaping components such as grassy swales, drainage areas, easements, or other kinds of onsite drainage systems.

C. "Stormwater" is any runoff flow occurring during or following any form of natural precipitation, and resulting from such precipitation, including snowmelt. "Stormwater" further includes any locally accumulating ground or surface waters, even if not directly associated with natural precipitation events, where such waters contribute or have a potential to contribute to runoff onto the public right of way, public storm or sanitary sewers, or flooding or erosion on public or private property, in the judgment of the Director of Engineering Services.

11.09A.020 Findings.

The City Council finds and declares:

1. That effective stormwater management is a necessary component to maintain a healthful and safe environment for the general public, to reduce flooding and erosion on public and private lands, and to facilitate compliance with environmental laws relating to water quality and water pollution;

2. That reduction of stormwater runoff and flow loads into public storm and sanitary sewer systems is in the public interest and has a positive environmental value. Likewise, reduction of stormwater flows onto the public right of way and public lands reduces pollution and contamination from stormwater runoff, and enhances the safe and efficient use of the public right of way for public travel and emergency vehicle access and the use of public lands for intended purposes;

3. That it is in the public interest to develop and enforce effective requirements for stormwater management through onsite stormwater facilities. Such a policy develops a solution to stormwater problems at the earliest stage, reduces the public costs of stormwater management, and encourages premises and local areas to participate in responding to stormwater management needs at the initial stages of the problem.

4. That onsite stormwater facilities should be installed and kept in good maintenance, repair and operational effectiveness as an essential part of a stormwater management program in the public interest.

11.09A.030 Nuisance declared; remedy; no duty.

A. The City Council declares that failure of an owner or occupant to install a required onsite stormwater facility, or maintain the same at a level of full function and efficiency tends to augment the discharge of stormwater, surface or groundwater flows onto the public right of way and other public or private property, as well as into public storm and sanitary sewers. Such discharge contributes to flooding, erosion, water quality impairment and other problems as set forth in the findings in this chapter. Such failure comprises a public nuisance.

DRAFT

B. The City Council declares that obstruction of or interference with the full and efficient functioning of any onsite stormwater facility on public or private property, whether by failure, neglect, or affirmative or intentional action, comprises a public nuisance.

C. Such public nuisances may be abated by the city as an expense of providing sewer utility service to the premises concerned, in addition to any other remedy available in contract or law.

D. Notwithstanding any other provision of this chapter, no special duty to any particular person or class of persons shall ever be deemed created by this chapter or actions taken pursuant thereto on the part of the city. Any such direct or indirect duty nonetheless determined to arise shall be only to the general public.

11.09A.040 Standards

A. The Director of Engineering Services determines stormwater control design standards and regulations (also referenced as "standards"), including those for onsite stormwater facilities, and determines their applicability to particular areas of the City of Spokane, plats and premises, in the exercise of sound discretion, considering the legislative findings of this chapter. The director may similarly modify or exempt a particular premises from such requirements for good cause shown, but such action always remains revocable.

B. Standards references. Applicable standards enforced under this chapter are shown in the following references. These are general requirements, and may be modified or supplemented in other specific sections.

1. Standard Specifications of the Washington State Department of Transportation, latest edition on file with the Director of Engineering Services;

2. Supplemental Specifications of the City of Spokane, latest edition on file with the Director of Engineering Services;

3. City of Spokane Design Standards and Standard Plans, latest edition on file with the Director of Engineering Services.

C. The general references are periodically republished. Between a general republication of the standards references, the Director of Engineering Services revise a standard for general purposes by publishing said modification once in the Official Gazette. The director also maintains a distribution list of parties requesting such updates. Unless otherwise ordered, the changes are effective 30 calendar days from the date of the Gazette issue in which they are published.

11.09A.050 Duties of Property Owners; Others; Private Rights Reserved

A. Every owner and occupant of premises must install, maintain, and keep in good function and order any onsite stormwater facility in accord with applicable requirements. Such requirements may be reflected as conditions

DRAFT

of land use or property development in plats, building or special use permits, or other permits, or may be imposed as a consequence of other regulatory action, including code enforcement or nuisance abatement.

B. No party shall obstruct or interfere with the full and efficient function of any onsite stormwater facility.

C. Enforcement action taken under this chapter does not affect a right of a party to seek subrogation or further recovery against any other parties determined to be responsible.

11.09A.060 Plats; Permits

Where deemed appropriate, the Director of Engineering Services may include or request inclusion of provision for stormwater facilities in plat as well as by recorded notice on the property title as a condition of issuance of a building permit or other permit, but no duty on the part of the City is created hereby. Such language may include the following provisions:

1. With respect to any increased stormwater flows accruing as a result of any development, each property owner, on its own behalf and the behalf of its successors in interest, fully accepts without reservation, the obligation to obstruct and artificially contain and collect all natural or artificially generated or enhanced drainage flows across or upon said owner's property. The purpose of this requirement is to avoid causing or potentially contributing to flooding, erosion, or stormwater loads on other private or public properties and the public sewer system.

2. A property owner shall, by recorded notice on title, in a form approved by the City Attorney, state its understanding and awareness, on its own behalf and the behalf of its successors in interest, of conditions relating to stormwater controls, including drainage easements on the respective lots as well as any requirements for onsite stormwater control facilities, as may be referenced in Ch. 11.09A of the Spokane Municipal Code and as adopted and on file with the City of Spokane Director of Engineering Services.

3. Property owner, on its own behalf and the behalf of its successors in interest, acknowledges and agrees that no building permit shall be issued for any lot in this plat until evidence satisfactory to the City of Spokane Director of Engineering Services has been provided showing that the recommendations of the "Spokane Aquifer 208 Study" and applicable onsite stormwater facilities requirements have been satisfied. Drainage easements as shown on said plat or permit and on the street plans on file with the office of the Director of Engineering Services are hereby granted.

4. Each property owner, on its own behalf and the behalf of its successors in interest, acknowledges and accepts full responsibility to maintain drainage facilities within all drainage easements, and to maintain and protect any onsite stormwater control facilities. Under no

DRAFT

circumstances does the City of Spokane, its officers or agents, accept any responsibility to maintain onsite stormwater control facilities, drainage courses or drainage pipes on private lots within this development or otherwise within drainage easements or flood plain areas,

5. The City of Spokane is not a guarantor of public improvements with respect to protection of property from flooding or damage from stormwater, excessive groundwater levels, soil erosion, movement, or related risks. Property owners, acting on their own behalf and the behalf of their successors in interest and assigns, forever waive any claim for loss, liability, or damage to people or property because of stormwater or drainage problems and related risks against any governmental entity arising from platting or permit approvals, or the construction and maintenance of public facilities and public property within the plat or subdivision. This waiver is intended to include application to the City of Spokane, its officers and agents, and includes any claims for loss or for damage to lands or property adjacent to or otherwise affected by any street or public way or easement by the established construction, design and maintenance of said streets or public ways or easements, including the construction, drainage and maintenance of said streets, not by way of limitation. Property owners, on their own behalf and the behalf of their successors and assigns, further stipulate and agree that this waiver decreases property value in an amount at least equal to $1.00 or more and intend and agree that it run with the land.

6. (Where applicable) Property owner, on its own behalf and the behalf of its successors in interest, acknowledges its property to be in a High Risk Drainage Problem Area, as identified by the City of Spokane Director of Engineering Services, and waives claims against the City from flooding, erosion or other drainage problems to said lots. This specifically includes, but is not limited to, claims for deficient design, installation, construction or maintenance of drainage courses in drainage easements on private property or failure to maintain onsite stormwater control facilities.

11.09A.070 Implementation

A. The Director of Engineering Services has overall enforcement authority for this chapter. Specific functions are also delegated to other named officials. A named official may function through a designee. In performing functions under this chapter, public officials shall be guided by section 11.09A.020.

B. The Engineering Services Department specifically enforces stormwater design standards and other applicable specifications relating to design and installation of onsite stormwater facilities for commercial developments, where applicable. Issuance of any permit or approval for commercial developments is conditioned upon certification by a civil engineer licensed

DRAFT

by the State of Washington of the following statements under penalty of perjury on such forms as may be supplied by the department:

1. That the engineer is familiar with all current City of Spokane onsite stormwater facility requirements;

2. That the engineer has personally inspected onsite stormwater facility requirements applicable to the pending development; and

3. That the development meets or exceeds all applicable municipal requirements relating to onsite stormwater facilities and applicable stormwater and drainage control, as designed, installed, and functioning.

4. In lieu of such certification, the director may require an inspection for stormwater by municipal staff, services billed at an hourly rate of $50.00/hour, with a minimum charge of $100.00, anticipating two inspections will be needed.

C. The Building Department enforces stormwater design standards and other applicable specifications for residential development. In addition to other applicable fees, a building permit applicant for residential development must pay a stormwater inspection fee of $50.00, with a minimum charge of $100.00, anticipating two inspections will be needed.

D. The Wastewater Management Department enforces maintenance requirements for onsite stormwater facilities after installation and determines any questions relating to proper functional level and efficiency of said facilities. Said department develops a record of onsite stormwater facilities locations and takes any enforcement action needed to keep them fully and efficiently functioning. Said department reviews plans or design specifications on file or otherwise accessible to determine the nature and extent of onsite stormwater facility requirements applicable to any specific premises, and may conduct further inquiry and/or site inspections as deemed necessary to enforce said requirements and this chapter.

11.09A.080 Notice of Inquiry

A. Whenever there is reason to believe a violation of this chapter has occurred, a written notice of inquiry is prepared by the enforcing department and sent to any known owner or owner's agent, as well as to the occupants of the premises concerned. If a party not an owner or occupant is believed to be obstructing or interfering with an onsite stormwater facility, notice may be given to said party also. Additionally, the notice is sent to the regular billing address for the premises if municipal utility services are furnished and the billing address is different from the address where notice is otherwise being sent.

B. The notice includes the following information:

1. the date of the notice, which is when the notice is mailed or sent;

2. a general description of the onsite stormwater facility;

DRAFT

3. the address of the premises where located and utility billing address for the premises, if different;

4. the basis for the inquiry or belief that there is a violation;

5. the date, time, office and place for the hearing, and information to contact the hearing official.

6. advising that any interested person come to the hearing and/or file a response with supporting materials, where to file such information, and a deadline for filing such items; and

7. advising that the purpose of the hearing is to determine whether there is a violation of this chapter and that as a result of the hearing, an order may be issued directing the violation be corrected, and that if satisfactory action does not occur, the city may thereafter correct the problem and costs thereof may be added to the utility bill for the premises concerned.

11.09A.090 Departmental Hearing

A. The designated departmental director in Section 11.09A.070 B, C, or D conducts the hearing not less than ten (10) calendar days from the date of the notice unless said official determines a shorter time is necessary because of exigent circumstances, or on mutual consent by the parties concerned. Time extensions are granted by said official, with notice to parties previously identified.

B. The director enters an appropriate order from the results of the hearing, and makes findings, including

1. A determination whether or not there is a violation and any specific problems noted.

2. The corrective action necessary and a schedule for correction of any violation.

3. An estimate of the cost of corrective action by the city if the schedule is not met, but such estimate does not preclude the city from recovering actual costs if greater, if the city is thereafter obliged to correct the problem; and

4. A statement that in absence of correction of a violation determined within the time stated that the deficiencies will be corrected by the City of Spokane, and the cost thereof be added to the regular utility bill for said premises and/or other effort to collect the amounts expended be made in addition thereto.

5. A statement of a right of appeal to the City Hearings Examiner as provided hereafter under section 10.09A.100A.

11.09A.100 Appeal

A. An interested party may appeal an order made under Section 11.09A.090 to the City Hearings Examiner by filing written notice of

DRAFT

appeal, together with a statement of reasons therefore and any supporting materials, within ten (10) calendar days of the issuance of the decision of the designated officer. A copy of the appeal documents shall also be served on the officer issuing the appealed decision.

B. Within fifteen (15) calendar days of receiving a notice of appeal, the Hearings Examiner sets a date and time for the hearing that shall not be more than forty five (45) calendar days from the date of the appeal. The Examiner conducts the hearing and issues a written decision. The Examiner's decision is final.

11.09A.110 Provisions Optional; Exhaustion

The provisions respecting hearings and appeals are optional and do not prevent contact by the enforcing officials with affected persons to achieve informal resolution of problems subject to this chapter. Such provisions are supplemental and in addition to any other applicable remedies in contract or law, but in the event the complaint and hearings process procedures are initiated, any notified party thereunder shall be required to exhaust administrative remedies as a condition to pursue further appeals or proceedings.

11.09A.120 Stop Work; Penalty

A. Whenever any work is being performed contrary to the provisions of this chapter, the Director of Engineering Services, Building Director, or Director of Wastewater Management may order the work stopped by notice in writing served on any persons engaged in the doing or causing such work to be done, and posted at the site, and any such persons shall forthwith stop such work until authorized by the enforcing official to proceed with the work.

B. Civil penalties for violation of the Chapter are as follows:

1. first time violation: $100.00
2. second time violation: $250.00
3. third time violation and thereafter: $500.00.

C. Unless an urgency is declared by the enforcing official, and except for a stop work order which is immediately effective, a twenty (20) day grace period is allowed for first time violators before a penalty is imposed. Thereafter, each week of a continuing violation may be deemed a new and separate violation. All civil penalties stated herein are in addition to other sanctions and costs of correction.

Article II Moran Stormwater Controls Ordinance.

11.09A.200 Applicability.

Article II applies to the Moran Prairie Area, described as follows:

[see Appendix A attached]

DRAFT

A map of said area is further attached as Appendix B (map on file in Office of the City Clerk). In case of conflict or ambiguity, the written description shall govern.

11.09A.210 Purpose; Findings

A. The purpose of this Article II is to reduce the incidence of flooding and erosion problems for both existing and future development in the Moran Prairie Area within the City of Spokane.

B. The City Council finds that development largely replaces natural vegetation and exposed soil with impervious surfaces and lawn that generate additional stormwater runoff during rainstorms or when snow melts, and similar groundwater associated flooding problems, particularly within the Moran Prairie Area. Stormwater collection systems concentrate this flow and infiltration systems speed the movement of surface runoff down to groundwater levels. Additional runoff resulting from development can increase flows in existing channels, create new flows, increase or cause ponding in low areas, and raise groundwater levels. Flooding of new and existing structures, water over roadways, saturated soils, and increased erosion can result from post-development surface runoff and groundwater levels.

11.09A.220 Requirements

A. Runoff and Infiltration Controls.

1. The Runoff and Infiltration Controls below pertain to stormwater disposal and are intended to prevent the deterioration of existing flooding and erosion problems in the Moran Prairie Area.

2. Street and alley paving projects within the applicable area and funded by Local Improvement Districts are exempt from the controls in this Article II.

3. Unless otherwise waived by the Director of Engineering Services, drainage plans shall be prepared and submitted for review and approval for all proposed plats and land disturbing activities prior to issuance of any permits for site disturbance, including but not limited to grading permits and building permits. Evaluation of a waiver request will consider elements of the proposed project including, but not limited to:

a. soil characteristics and depth

b. number of lots

c. infill development

d. percent impervious area

e. pass-through drainage

f. history and trends of runoff-related problems

DRAFT

4. No land disturbing activities will be allowed on any property until all final grading, erosion sediment control, and bonding requirements have been accepted by the Director of Engineering Services.

5. The volume and rate of surface water runoff after new development shall be no greater than the runoff volume and rate leaving the site prior to development, unless the Director of Engineering Services approves the discharge of additional runoff based on a comprehensive drainage plan.

6. Drainage plans for development proposals shall not rely on infiltration (e.g. swales, drywells, galleries, or unlined ponds) to accommodate the additional runoff resulting from the proposed development.

7. Drainage plans submitted for development proposals shall comply with the City of Spokane Design Standards, as approved by and on file with the Director of Engineering Services, in the design of onsite stormwater facilities, including any limitations applicable to the Moran Prairie Area, used to accommodate runoff from the proposals.

8. The Director of Engineering Services may require that drainage easements be reserved for the conveyance and/or disposal of stormwater flows. The development sponsor's architect or engineer shall perform the analyses required and the appropriate size of drainage easements shall be indicated in the comprehensive drainage plan. Drainage easements shall constitute a deed restriction and title notification of the easement shall be made to subsequent owners of the affected property.

9. The developer, property owner, or other responsible designated entity acceptable to the Director of Engineering Services (e.g. a homeowners association) shall be responsible for maintaining drainage easements. The developer shall provide a perpetual maintenance plan, including funding mechanisms, for such drainage easements acceptable to the Director of Engineering Services.

10. New plats shall expressly identify parcels of land devoted to the conveyance and/or disposal of stormwater flows.

B. Sublevel Construction Controls.

1. The Sublevel Construction Controls below pertain to design and construction and are intended to reduce the possibility that a new structure will experience flooding from surface runoff or high groundwater.

2. The Moran Prairie Area as designated in 11.09A.200 is hereby designated a High Risk Drainage Problem Area [cross reference Spokane County Resolution No. 0-01610 (6/00), said resolution as on file with the Director of Engineering Services.] The requirements set forth hereafter shall also apply.

DRAFT

3. The lowest finished or unfinished floor level of any structure, or addition thereto, shall be elevated a minimum of 12 inches above the highest elevation of Finished Grade. For the purposes of this Section, "Finished Grade" is defined as the elevation of an imaginary line located a distance of five (5) feet from the perimeter of the foundation of the structure. The structure shall meet all requirements of the Uniform Building Code, as adopted by the City of Spokane, for drainage and slope setback. Basements, other floor levels, garages, useable or habitable space, or space with appliances or equipment, located below this floor level and that are also lower than twelve (12) inches above the highest elevation of Finished Grade, shall be hereinafter referred to as sublevel structures and will not be permitted unless the following steps are taken:

a. Site-specific geotechnical analysis shall be performed by a civil engineer currently licensed in the State of Washington qualified in geotechnical engineering. The geotechnical engineer shall consider readily available subsurface information on file at the City of Spokane and Spokane County for surrounding properties in the evaluation of the feasibility of the construction of sublevel structures.

b. Sublevel structures shall be designed by an architect registered with the State of Washington or a civil engineer licensed to practice in the State of Washington ("design professional"), to prevent the intrusion of surface water and groundwater. The design shall include current standards of practice and technology (e.g. sub-surface drains, sealant, and positive drainage away from the structure), and the recommendations of the geotechnical engineer. The design professional or his/her designee shall conduct an inspection and certify on a form provided by the City that the sublevel construction conforms to the design.

c. The property owner shall prepare and file with the County Auditor a notice to be placed on the title of the property. The notice shall include the legal description, tax parcel number, and address of the property. The notice shall take the form of a signed affidavit under penalty of perjury by the property owner on a form supplied by the Director of Engineering Services, and shall include the following statements and certifications:

i. Property owner, on his/her/its own behalf and the behalf of all successors and assigns, acknowledges and understands that the property is in a High Risk Drainage Area, as identified by the City of Spokane Director of Engineering Services, and a potentially high groundwater problem area; and

ii. Property owner verifies that he/she/it is familiar with City of Spokane stormwater and groundwater construction and design standards for the Moran Prairie Area, and verifies that all

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requirements to prevent water from entering sublevel areas and other requirements relating to flooding and groundwater problems have been satisfied, and referring the reader for further information in connection with applicable requirements to the City of Spokane Engineering Services Department applicable file for said development (specifying the file no.__)

iii. The notice shall further include the following statement:

"Property owner understands that the premises are in a High Risk Drainage Problem area, as identified by the City of Spokane Director of Engineering Services, where disposal or management of storm, surface and subsurface waters, during natural precipitation events and other times may accumulate and cause flooding, erosion and other damages to the premises, basements or other subsurface installations and other structures. No assurances have been given by any governmental agency including the City of Spokane of the suitability of building or use of said property for any purpose, considering the high risk involved, or the reliability of storm or flood control measures now or hereafter adopted by the City of Spokane. Said measures may be subject to change and the City expressly undertakes no duty or obligation to said premises or property relating to storm, surface or subsurface waters or ground saturation, the owner understanding use and occupancy of the premises are at said owner's sole and exclusive risk. Owner further covenants and agrees, on its own behalf and its heirs and assigns, to notify any occupant of said premises of the high risk drainage problem and to hold the City, its officers and employees harmless from any claim for loss or liability arising out of flooding, drainage or surface or subsurface water problems."

d. Evidence of recording is required for issuance of a building permit on the property, to include a sublevel structure as designed under Spokane Municipal Code section 11.09A.220 subsection 4.B herein. The City of Spokane Engineering Services Department shall prepare and make available forms to be used by a property owner to assist in meeting the responsibilities of this section. These requirements are supplemental and in addition to any other applicable laws and regulations.

Section 2. That SMC 13.03.1137 be amended to read as follows:

13.03.1137 Stormwater Charge

A. All premises within the City's Storm sewer service area shall pay a storm sewer user or stormwater charge. The stormwater charge is computed based upon classification of the account or premises served as

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domestic or commercial. The minimum charge is at least one Domestic User charge for all accounts, notwithstanding any other provision. The storm sewer user charge is calculated by the Director for storm sewer service to all premises in accord with Appendix C.

B. For those subject to a commercial charge, the Director shall grant a ten percent discount upon application by the customer, and a showing of approved onsite stormwater detention facility. Such facilities may include drywells, detention ponds, grassy swales, and the like. An additional ten percent discount shall be granted to those qualifying under the first discount category, who also apply therefore and demonstrate approved onsite stormwater treatment practices, such as grassy swales.

C. To obtain a discount under subsection B, a customer must file a completed written application therefore on forms approved by the Director and pay a $35 inspection fee. The inspection certification approving discount eligibility is good for one year. The Director administers this program with such additional rules as he/she shall provide, and may assess additional charges for administrative costs not encompassed herein.

D. Notwithstanding other provisions of this section, any premises determined to be in violation by the director of wastewater management of any requirements of Ch. 11.09.A SMC is ineligible for any stormwater charge rate discount.

Section 4. Effective Date. This ordinance takes effect forty five (45) days after final approval through the legislative process.

Passed by the City Council May 21, 2001.

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Appendix 6B – Pasco Impervious Surfaces Ordinance

From: http://www.ci.pasco.wa.us/pmc/Title16.html
Downloaded on January 21, 2002

TITLE 16 - BUILDINGS AND CONSTRUCTION

CHAPTER 16.05 - IMPERVIOUS SURFACES

Sections:

16.05.010 Purpose.
16.05.020 Impervious surfaces defined.
16.05.030 Permit required.
16.05.040 Exemptions.
16.05.050 Drainage requirements.

16.05.010 PURPOSE. The purpose of this chapter is to protect the public health, safety and general welfare of the citizens of the City of Pasco by regulating the surface drainage of private properties within the City through the use of a permit system. (Ord. 2465 Sec. 1 (part), 1983.)

16.05.020 IMPERVIOUS SURFACES DEFINED. For the purpose of this chapter, "impervious surfaces" shall mean any asphalt concrete, cement concrete, or other substance rolled, layed, poured, or otherwise installed to create a layer of material upon the ground which does not absorb water or through which water cannot drain into the underlying ground. (Ord. 3316 Sec. 4, 1998; Ord. 2465 Sec. 1 (part), 1983.)

6.05.030 PERMIT REQUIRED. It is unlawful for any person to install any impervious surface improvement upon private property within the City of Pasco without first obtaining a building permit authorizing such improvement from the Building Inspector, except as provided in Section 16.05.040 or as may be otherwise provided for within the Pasco Municipal Code. Application for such permits shall be made on forms supplied by the Community Development Department, shall include a site sketch depicting proposed direction of surface drainage and location of components or methods to be used to drain the impervious surface. (Ord. 2465 Sec. 1 (part), 1983).

16.05.040 EXEMPTIONS. The provisions of this chapter shall not apply to impervious surfaces in either of the following instances:

(1) To be installed in conjunction with a new or existing single-family residence.

(2) The combined total of surface area, existing and proposed, will cover less than one thousand square feet. (Ord. 2465 Sec. 1 (part), 1983).

16.05.050 DRAINAGE REQUIREMENTS. An impervious surface improvement shall be designed to drain, confine and/or impound stormwater or site-generated water within the private property upon which the improvement is to be located. The Building Inspector shall determine the adequacy of all plans and methods for the drainage or proposed impervious surface improvements. (Ord. 2465 Sec. 1 (part), 1983).

DRAFT

Appendix 6C – Olympia Maintenance Agreement

AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO IMPLEMENT A POLLUTION SOURCE CONTROL PLAN BY AND BETWEEN THE CITY OF OLYMPIA AND _____, AND ITS HEIRS, SUCCESSORS, OR ASSIGNS (HEREINAFTER "OWNER")

(CORPORATE)

The upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices (BMPs) is essential to the protection of water resources in the City of Olympia. All property owners are expected to conduct business in a manner that promotes environmental protection. This Agreement contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs. The authority to require maintenance and pollution source control is provided in City Ordinance 5123 and in Development Policy 13009, "Maintenance Required for Private Stormwater Drainage Systems."

Legal Description

Whereas, Owner has constructed improvements, including but not limited to, buildings, pavement, and stormwater facilities on the property described above. In order to further the goals of the City to ensure the protection and enhancement of Olympia's water resources, the City and Owner hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

Owner Shall

(1) Implement the stormwater facility maintenance program included herein as Attachment "A".

(2) Implement the pollution source control program included herein as Attachment "B".

(3) Maintain a record (in the form of a log book) of steps taken to implement the programs referenced in (1) and (2) above. The log book shall be available for inspection by City staff at Owner's business during normal business hours. The log book shall catalog the action taken, who took it, when it was done, how it was done, and any problems encountered or follow-on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected on a monthly or more frequent basis as necessary. Owner is encouraged to photocopy the individual checklists in Attachment A and use them to complete its monthly inspections. These completed checklists would then, in combination, comprise the monthly log book.

DRAFT

(4) Submit an annual report to the City regarding implementation of the programs referenced in (1) and (2) above. The report must be submitted on or before May 15 of each calendar year and shall contain, at a minimum, the following:

(a) Name, address, and telephone number of the business, the person, or the firm responsible for plan implementation, and the person completing the report.

(b) Time period covered by the report.

(c) A chronological summary of activities conducted to implement the programs referenced in (1) and (2) above. A photocopy of the applicable sections of the log book, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties not affiliated with Owner, include a copy of the invoice for services.

(d) An outline of planned activities for the next year.

The City of Olympia Shall

(1) Provide technical assistance to Owner in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request, and as City time and resources permit, at no charge to Owner.

(2) Review the annual report and conduct a minimum of one (1) site visit per year to discuss performance and problems with Owner.

(3) Review this agreement with Owner and modify it as necessary at least once every three (3) years.

Remedies

(1) If the City determines that maintenance or repair work is required to be done to the stormwater facility existing on the Owner property, the Director of the Department of Public Works shall give the owner of the property within which the drainage facility is located, and the person or agent in control of said property, notice of the specific maintenance and/or repair required. The Director shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by the Director, written notice will be sent to the persons who were given notice stating the City's intention to perform such maintenance and bill the owner for all incurred expenses. The City may also revoke stormwater utility rate credits for the quality component or invoke surcharges to the quantity component of the Owner bill if required maintenance is not performed.

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(2) If at any time the City determines that the existing system creates any imminent threat to public health or welfare, the Director may take immediate measures to remedy said threat. No notice to the persons listed in (1), above, shall be required under such circumstances.

(3) The owner grants unrestricted authority to the City for access to any and all stormwater system features for the purpose of performing maintenance or repair as may become necessary under Remedies (1) and/or (2).

(4) The persons listed in (1), above, shall assume all responsibility for the cost of any maintenance and for repairs to the stormwater facility. Such responsibility shall include reimbursement to the City within 30 days of the receipt of the invoice for any such work performed. Overdue payments will require payment of interest at the current legal rate for liquidated judgments. If legal action ensues, any costs or fees incurred by the City will be borne by the parties responsible for said reimbursements.

(5) The owner hereby grants to the City a lien against the above-described property in an amount equal to the cost incurred by the City to perform the maintenance or repair work described herein.

This Agreement is intended to protect the value and desirability of the real property described above and to benefit all the citizens of the City. It shall run with the land and be binding on all parties having or acquiring from Owner or their successors any right, title, or interest in the property or any part thereof, as well as their title, or interest in the property or any part thereof, as well as their heirs, successors, and assigns. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof, or interest therein, and to the benefit of all citizens of the City.

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Appendix 6D – New Development Inspection Form

Project: _____

BMP: _____

Location: _____

Installation	**Maintenance**			
Date Installed:	Inspected by:	Date Inspected:	Maintenance Satisfactory?	If no, correction action needed
Date Inspected:	1)		___ Yes ___ No	
Inspected by:	2)		___ Yes ___ No	
Installation satisfactory? ___ Yes ___ No	3)		___ Yes ___ No	
If No, Corrective Actions Needed: _____	4)		___ Yes ___ No	
	5)		___ Yes ___ No	

DRAFT

Table of Contents

Chapter 7 - Pollution Prevention/Good Housekeeping Program 7-1
7.1 Requirements 7-1
7.2 Benefits/Why This Program Is Important 7-2
7.3 Model Program for Pollution Prevention/Good Housekeeping 7-3
7.3.1 Operation and Maintenance (O&M) Plan 7-4
7.3.2 Park and Open Space Maintenance 7-6
7.3.2.1 Pesticide, Herbicide, and Fertilizer Management 7-6
7.3.2.2 Landscaping Waste Disposal 7-7
7.3.2.3 Trash Management 7-7
7.3.3 Vehicle and Equipment Washing 7-8
7.3.4 New Construction and Land Disturbances 7-8
7.3.5 Dust Control Practices 7-9
7.3.6 Stormwater System Maintenance 7-9
7.3.6.1 Open Channels and Structural Stormwater Controls 7-10
7.3.6.2 Road and Highway and Parking Lot Maintenance 7-11
7.3.6.3 Flood Management Projects 7-12
7.3.7 Employee Training on O&M Plan Implementation 7-12
7.4 Resources 7-13
Appendices 7-13
Appendix 7A – Visual Inspection Form for Outfalls 7-15

DRAFT

Chapter 7 - Pollution Prevention/Good Housekeeping Program

7.1 Requirements

The Stormwater Phase II Final Rule, published in December 1999, lists the following information as the regulatory requirements for pollution prevention/good housekeeping for municipal operations. This model program is intended to meet these EPA regulations and form the primary basis for meeting the Phase II general permit the Department of Ecology will issue to eastern Washington cities/counties.

Regulations	**40 CFR 122.34(b)(6) Pollution prevention/good housekeeping for municipal operations.** (i) You must develop and implement an operation and maintenance program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. Using training materials that are available from EPA, your State, Tribe, or other organizations, your program must include employee training to prevent and reduce stormwater pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and stormwater system maintenance.

Guidance	**40 CFR 122.34(b)(6) Pollution prevention/good housekeeping for municipal operations** EPA recommends that, at a minimum, you consider the following in developing your program: • Maintenance activities, maintenance schedules, and long-term inspection procedures for structural and non-structural stormwater controls to reduce floatables and other pollutants discharged from your separate storm sewers; • Controls for reducing or eliminating the discharge of pollutants from streets, roads, highways, municipal parking lots, maintenance and storage yards, fleet or maintenance shops with outdoor storage areas, salt/sand storage locations and snow disposal areas operated by you, and waste transfer stations; • Procedures for properly disposing of waste removed from the separate storm sewers and areas listed above (such as dredge spoil, accumulated sediments, floatables, and other debris); and

DRAFT

Guidance	**40 CFR 122.34(b)(6) Pollution prevention/good housekeeping for municipal operations** • Ways to ensure that new flood management projects assess the impacts on water quality and examine existing projects for incorporating additional water quality protection devices or practices. Operation and maintenance should be an integral component of all stormwater management programs. This measure is intended to improve the efficiency of these programs and require new programs where necessary. Properly developed and implemented operation and maintenance programs reduce the risk of water quality problems.

7.2 Benefits/Why This Program Is Important

As the permittee, it is important that a municipality's own operations minimize contamination of stormwater discharges and serve as a model for the entire regulated area. Municipal operations can contribute significant amounts of pollutants to stormwater. Examples of municipal operations that can negatively impact stormwater runoff – and ultimately water quality – include:

- Landscaping and maintaining parks, golf courses, and other municipal open spaces (e.g., sidewalks, plazas, etc.). These areas can contribute pesticides, herbicides, fertilizers, litter, and sediment to the storm drainage system if they are not properly maintained, or if municipal staff do not carry out maintenance activities in an efficient manner.
- Washing, repairing, and fueling municipally-owned vehicles and equipment. Spills and leaks not contained during repairs and fueling can contribute gasoline, oil, and grease to the storm drainage system.
- Maintaining city surfaces, including streets, parking lots, and buildings. Roads and other paved areas collect pollutants such as heavy metals, oil and grease, sediment, and litter from vehicles and motorists. These materials collect and wash into the storm drainage system during the "first flush" of a rain event. Many municipalities have street sweeping programs in place for aesthetic, safety, and public health reasons; these programs, if implemented properly, can reduce the amount of pollutants entering the storm drainage system. Sand and/or salt for deicing operations can also enter the storm drainage system. Another avenue for pollutants to enter the storm drainage system is from power washing or sand blasting buildings.
- Waste and materials storage, particularly in uncovered areas. Given all the activities that a municipality conducts, there is a vast array of materials and wastes stored at municipally-owned facilities. If spills

DRAFT

or leaks of these materials occur, it is possible for pollutants to drain to the storm drainage system.

- Construction activities and other land disturbances. Like any other type of construction activity, those initiated by the municipality can contribute sediment and other pollutants associated with construction equipment to stormwater runoff.

By implementing good housekeeping and pollution prevention procedures, employees can ultimately reduce stormwater pollutants and save the municipality money over time. Preventing litter and other debris from entering the system can reduce damage to the system and reduce the need for expensive, time-consuming repairs and maintenance.

7.3 Model Program for Pollution Prevention/Good Housekeeping

The model program for pollution prevention/good housekeeping has the following components:

- Development and implementation of an operation and maintenance (O&M) plan with a focus on pollution prevention that addresses the municipal operations specified below; and
- Development and implementation of a training program for targeted municipal employees.

The following section describes the development of the O&M Plan that addresses pollution prevention and good housekeeping procedures for six municipal activities. The last section addresses employee training on the procedures contained within the O&M Plan.

Note: This pollution prevention/good housekeeping program only applies to operations and maintenance facilities within the municipality's Phase II boundary. See Chapter 1 for more information on how the Phase II boundary is defined.

All the BMPs in this chapter, BMPs 7A – 7I, are required. BMP 7A, the O&M Plan, is the primary BMP and will include descriptions of all the other Good Housekeeping BMPs.

DRAFT

7-1 Feedback Requested:

Chapter 7 describes best management practices that must be implemented by regulated jurisdictions to reduce pollutants from their municipal operations.

Which of the best management practices do you feel will be the most effective at reducing water quality impacts associated with municipal operations? (Please explain which ones and why.)

Are there other best management practices that you think should be considered or included in Chapter 7? (Please indicate yes or no, and explain your ideas.)

7.3.1 Operation and Maintenance (O&M) Plan

The primary goal of this program is to develop and implement a municipal O&M Plan that addresses pollution prevention and good housekeeping procedures for the following municipal activities (7.3.1.1 – 7.3.1.6 below):

- Park and Open Space Maintenance
- Fleet and Building Maintenance
- New Construction and Land Disturbances
- Stormwater System Maintenance
- Roads, Highways, and Parking Lot Maintenance, and
- Flood Management Project Assessment

Required BMP 7A: Develop and implement a municipal O&M Plan that considers, where appropriate, BMPs 7B – 7I.

Measurable Goal: Complete development of an O&M Plan during permit year 3 and implement the procedures described in the O&M Plan during the remainder of the permit term.

An O&M plan is essential to ensure that all municipal activities and programs impacting stormwater are implemented efficiently and effectively. The O&M plan is intended to reduce the amount of pollutants carried by stormwater runoff into the storm drainage system. Comprised of a description of procedures and associated schedules, the O&M plan serves as a tool for all municipal employees that are directly involved in stormwater management or administer programs that impact stormwater. It also serves as the basis for the employee training program described in Section 7.3.2 below.

An O&M Plan contains the following information:

- Description of the required maintenance activities and procedures as it relates to existing municipal operations and programs

DRAFT

- List of responsible departments and personnel for each activity, and
- Schedule of activities, including maintenance, inspections and reporting

1. Collect information on existing municipal operations.

To gain an understanding of existing municipal operations in the six areas the O&M plan must address, assemble and review existing materials from various municipal departments who perform these activities. In reviewing information on existing programs, pay specific attention to the following: frequency of maintenance activities; types of substances used; materials storage, handling, and disposal practices; type and frequency of employee training; record keeping practices; and inspection procedures and frequencies. If documentation on activities does not exist, it may be necessary to conduct brief interviews with staff from the various departments to gain a thorough understanding of how they implement existing municipal operations. If no municipal program exists for a certain activity (e.g., stormwater system maintenance), then determine which department is best suited to take on this activity.

2. Determine how to incorporate required procedures into existing activities.

Examine the required pollution prevention and good housekeeping procedures for each of the municipal operations that the O&M Plan must address. These procedures are described in Sections 7.3.1.1 – 7.3.1.7 below. Using information about existing municipal activities, determine how to best incorporate these procedures into current practices.

3. Create the O&M Plan.

Include in the O&M plan the following information: 1) a description of the municipality's revised operating procedures that reflect the required pollution prevention and good housekeeping procedures; 2) the responsible departments for each municipal activity and program; and 3) the associated schedule for each activity. The final O&M plan should serve as a reference manual for all municipal employees involved in these activities and programs, ensuring that all employees consistently implement these activities using the appropriate procedures. Finally, provide training for municipal staff on the information contained in the O&M plan (described in Section 7.3.2).

IMPORTANT: The six municipal activities below are typically found in many municipal governments. If one or more of these activities does not exist, then the O&M plan does not need to address that activity.

DRAFT

7.3.2 Park and Open Space Maintenance

Required BMP 7B: In accordance with the O&M plan developed in BMP 7A, implement park and open space maintenance pollution prevention/good housekeeping practices.

Measurable Goal: Implement all pollution prevention/good housekeeping practices for park and open space maintenance at all park areas and other open spaces maintained by the jurisdiction by the end of permit year 5.

Municipal maintenance practices at parks and other open spaces (e.g., golf courses, picnic areas, recreational facilities, right-of-ways, landscaped areas in parking lots, plazas, etc.) can include fertilizer, herbicide, and pesticide application; vegetation maintenance and disposal; and trash management. To ensure these activities do not negatively impact stormwater runoff, incorporate these pollution prevention and good housekeeping procedures into existing municipal operations for maintaining parks and other open spaces.

7.3.2.1 Pesticide, Herbicide, and Fertilizer Management

To minimize the impact that use of pesticides, herbicides, and fertilizers have on stormwater quality, implement the following procedures:

- Applicator Certification. Ensure that all personnel who apply pesticides have the appropriate license from the program administered by the Washington State Department of Agriculture. Renew this license annually, in accordance with existing state regulations (Chapter 17.21 RCW, Washington Pesticide Application Act).
- Application and Record Keeping. Apply and handle pesticides and herbicides and keep detailed records in accordance with existing state regulations (Chapter 17.21 RCW, Washington Pesticide Application Act; Chapter 16-228 WAC, General Pesticide Rules). The General Pesticide Rules contain recordkeeping forms to track the location, frequency, and materials used during application.
- Storage and Inspection. Store pesticides, herbicides and fertilizers and inspect storage areas in accordance with existing state regulations (Chapter 16-228 WAC, General Pesticide Rules; Chapter 15.58 RCW, Washington Pesticide Control Act; Chapter 16-229 WAC, Secondary and Operational Area Containment for Bulk Pesticides), as well as applicable federal and county regulations. In general, these regulations require storage of materials in enclosed or covered areas; secondary containment of materials; inspections of storage areas for spills, leaks, and/or unsafe storage methods.
- Scheduling. Existing state regulations (Chapter 17.21 RCW, Washington Pesticide Application Act) address wind conditions when

DRAFT

applying pesticides, but do not address rain events. Follow existing state regulations that set forth requirements about appropriate times and frequencies of pesticide application. In addition, do not apply pesticides, herbicides, and fertilizers under the following conditions:

- Within one day of a rain event forecasted to be greater than 0.25 inches (except for application of pre-emergent herbicides)
- During rain events, and
- When water is running off-site

7.3.2.2 Landscaping Waste Disposal

Landscaping waste can consist of leafy and woody debris from clipping, cutting, mowing, and other maintenance activities. These materials can accumulate in the storm sewer system and/or discharge into receiving waters. To ensure that these waste materials do not enter the storm drainage system, implement the following procedures:

- Temporary stockpiling. Place materials to be temporarily stockpiled away from waterbodies and cover stockpiles.
- Proper disposal. Ensure that all municipal employees and contractors generating landscaping waste dispose of it at an approved location (e.g., composting pile or permitted landfill).

7.3.2.3 Trash Management

Open spaces such as parks, sports fields, and picnic areas receive a lot of visitors and can collect a large amount of litter and other debris. The following procedures will help to limit the amount of trash reaching the storm drainage system:

- Provide and maintain receptacles. Ensure that visitors can easily locate and access trash receptacles, and that there are enough on-site to serve the number of guest the area receives. Some areas may require more receptacles than others due to number of visitors, even if the size of the area may not seem to warrant more receptacles. Use past information about trash management from each site to make this determination. Also ensure that receptacles do not have cracks, holes, and other types of damage that could allow litter and other debris to escape and potentially enter the storm drain system.
- Increase collection frequency according to site use. During times of peak visitation, increase the frequency of trash collections at each area to ensure trash does not enter the storm drain system.

DRAFT

7.3.3 Vehicle and Equipment Washing

Required BMP 7C: In accordance with the O&M plan developed in BMP 7A, implement publicly-owned vehicle and equipment washing pollution prevention/good housekeeping practices.

Measurable Goal: Conduct all vehicle and equipment washing in a self-contained covered building or a designated wash area that meets the required criteria by the end of permit year 5.

Washwater from vehicle/equipment cleaning can contain oil and grease, suspended solids, heavy metals, organics, and other pollutants from detergents. Follow the procedures for washing vehicles/equipment below to prevent washwater from entering storm drains.

Whenever possible, conduct vehicle/equipment cleaning in a self-contained, covered building. This includes:

- A commercial washing business in which the washing occurs in an enclosure and drains to a municipal sanitary sewer system, a treatment facility, a dead end sump or evaporative pond, or
- A building constructed specifically for washing of vehicles and equipment which is plumbed to a drain to a municipal sanitary sewer system, a treatment facility, or a dead end sump.

If the two types of enclosed facilities are not available for vehicle/equipment cleaning, conduct this activity in a designated uncovered wash area that meets the following criteria:

- Discharging onto an impervious surface that is graded to collect all washwater in a drain system and constructed as a spill containment pad to prevent the run-on of stormwater from adjacent pavement areas. Extend the containment pad out a minimum of four feet on all sides of the vehicles/equipment being washed.
- Discharging to a municipal sanitary sewer system, a treatment facility, or a dead-end sump for transportation to the nearest treatment facility.
- Discharging through a pipe that has a positive control valve (manual or automatic) that is shut when washing is not occurring to prevent the entry of stormwater. Post signs to inform employees of the operation and purpose of the valve, and
- Cleaned before a rain event to ensure pollutants collected on the impervious surface do not drain to the storm drain system.

7.3.4 New Construction and Land Disturbances

Follow procedures outlined in Chapter 5. Public construction projects are required to follow all the same requirements and procedures as private construction projects. Ensure that construction activities initiated by the

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municipality follow requirements applicable to all other construction site operators.

7.3.5 Dust Control Practices

Required BMP 7D: In accordance with the O&M plan developed in BMP 7A, implement dust control practices where necessary on public projects.

Measurable Goal: Implement required dust control procedures on all public projects by the end of permit year 5.

Follow appropriate BMPs to minimize and control dust from public construction projects. Dust control BMPs are described in the Stormwater Management Manual for Eastern Washington.

7.3.6 Stormwater System Maintenance

Pollutants that do manage to enter the storm drainage system can impede proper functioning of the system and can create the need for costly repairs. Storm drain maintenance is conducted to prevent water quality impacts and to prevent local flooding does not occur due to a clogged pipe or catch basin. A long-term preventative maintenance program helps ensure that the system functions effectively while reducing the potential for pollution and significant infrastructure damage. Procedures for this municipal activity include regular inspections, cleaning, proper disposal of waste removed from the system, and record keeping. Conduct these activities year-round, increasing the frequency of these activities during the rainy season (if necessary).

When maintenance activities include stormwater outfalls, consider performing a visual inspection of the outfall for both maintenance needs and identification of any illicit discharges. See the example visual inspection form from the Municipality of Anchorage in Appendix 7A.

Required BMP 7E: In accordance with the O&M plan developed in BMP 7A, implement catch basin cleaning and stormwater system maintenance pollution prevention/good housekeeping practices.

Measurable Goal: Inspect and maintain, as needed, catch basins and other stormwater system facilities based on a schedule described in the O&M plan by the end of permit year 5.

- Catch Basin Inspections and Cleaning. Inspect catch basins and clean inlets at least once a year during the dry season. Based on inspection results, clean (i.e. remove debris from) catch basins as required to prevent water quality impacts. During or before the wet season, perform inspection, clearing, and cleaning in areas that generate large quantities of waste and debris during rainstorms and snowmelt events.

DRAFT

Using adaptive management, optimize maintenance activities and frequencies.

- Proper Waste Disposal. Dewater wastes collected during storm drain cleaning and maintenance, if necessary, into the municipal sanitary sewer. Do not dewater near a storm drain or stream. Store solid waste and debris in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain. Dispose of sediment waste appropriately, depending on the level of contaminants.
- Record keeping. Document the following information for inspections and cleaning of catch basins: 1) date; 2) location of catch basin; 3) activity performed (e.g., inspection or cleaning); and 4) description of condition or overall amount of material removed (estimated in either volume or dry weight).

7.3.6.1 Open Channels and Structural Stormwater Controls

Required BMP 7E: In accordance with the O&M plan developed in BMP 7A, implement structural stormwater control pollution prevention/good housekeeping practices.

Measurable Goal: Inspect structural stormwater controls on a schedule described in the O&M Plan or as specified by the Stormwater Management Manual for Eastern Washington or an approved equivalent manual.

- Open Channel and Structural Controls Inspections and Cleaning. Inspect open channels and structural controls (e.g., detention ponds, commercial stormwater technologies) for trash and debris, and clean if necessary, at least once a year during dry season. Inspect and clean open channels and structural stormwater controls in areas that generate significant waste and debris during rainy season.
- Proper Waste Disposal. Dewater wastes collected during storm drain cleaning and maintenance, if necessary, into the municipal sanitary sewer. Do not dewater near a storm drain or stream. Store solid waste and debris in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain. Sediment may contain elevated levels of lead, hydrocarbons, and oil and grease. If sediment contains elevated levels of these pollutants, dispose of as hazardous waste.
- Record keeping. Document the following information for inspections and cleaning of open channels and structural controls, including catch basins: 1) date; 2) location; 3) activity performed (e.g., inspection or cleaning); 4) description of condition or overall amount of material removed (estimated in either volume or dry weight).

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7.3.6.2 Road and Highway and Parking Lot Maintenance

Required BMP 7G: In accordance with the O&M plan developed in BMP 7A, implement deicing and snow removal pollution prevention/good housekeeping practices for roads, highways, and parking lots.

Measurable Goal: Implement required procedures on all roads, highways, and parking lots by the end of permit year 5.

Maintaining roads, highways, and parking lots for public safety purposes can generate pollutants that will enter the storm drainage system, particularly those related to deicing and snow removal. Include in the O&M plan pollution prevention procedures related to deicing and snow removal described below.

- Deicing Materials (e.g., Salt/Sand) Storage. Locate all new salt/deicing material storage piles outside the 100-year floodplain. Continue operations of any existing storage piles within the 100-year floodplain until all materials are gone. Once materials are gone from these locations, close and relocate the storage area outside the 100-year floodplain. Cover all new salt/deicing material storage piles with tarps, hard shelters or contain them with dikes or berms.
- Deicing Activities. Apply deicing materials according to manufacturer's recommendations for the given circumstance. When determining the amount to apply, consider road width, traffic concentration, proximity to surface waters, and road temperature to prevent over-application. If possible, use trucks with calibration devices on their spreaders exclusively. In areas in which drain to sensitive or impaired waters, consider applying alternative deicing materials, such as sand or salt substitutes
- Snow Disposal Areas. Designate "Snow Storage Areas" around the municipality for temporary storage of snow that has been removed from the roadways. Designate snow storage areas at least 100 feet from surface waters or groundwater drinking water sources. Clean each snow storage area after snow has melted by collecting debris and trash picked up in the snow removal process. This will aid in preventing floatables from entering surface waters.

Optional BMP Street Sweeping: Street sweeping is not required under Phase II, but communities already conducting street sweeping activities can take credit for this. Benefits include improved air quality, trash and debris removal, and decreased maintenance costs of removing debris from catch basins. Street sweeping debris should be disposed of properly.

DRAFT

7.3.6.3 Flood Management Projects

Required BMP 7H: In accordance with the O&M plan developed in BMP 7A, implement flood management project evaluation and review procedures.

Measurable Goal: All new flood management project evaluations will include water quality considerations by the end of permit year 5. Priority existing flood management projects will be identified and re-evaluated with water quality considerations by the end of permit year 5.

Flood control has been the traditional focus of stormwater management in many communities. Traditional approaches to flood management often include projects such as widening channels, dredging riverbeds, or creating dikes, levees or embankments. The purpose of these controls is to increase the capacity of the main channel or decrease the amount of water moving into the main channel (i.e., stormwater management), traditionally without consideration of impacts to water quality. For example, concrete lined channels do not provide for aquatic habitat and tend to increase potentially erosive velocities and ambient water temperature. These types of controls can be expensive and have limited effectiveness in the long-term, because they do little to discourage increases in impervious surfaces – a significant factor in flooding.

By incorporating water quality considerations into project review criteria, negative impacts to water quality from new flood management projects can be decreased.

In designing and/or evaluating flood management projects, attempt to employ more natural solutions and use controls that preserve the hydrology of a site (e.g., swales and natural channels, riparian buffers) as a first-line of flood control.

Evaluate existing flood management projects to determine whether or not additional water quality protection devices should be added. Do this by identifying several priority projects for review over the permit term to determine if additional water quality treatment can be achieved.

7.3.7 Employee Training on O&M Plan Implementation

Required BMP 7I: Develop materials and conduct employee training on the procedures contained in the O&M plan developed in BMP 7A.

Measurable Goal: By the end of permit year 5, all employees involved in stormwater management or municipal maintenance will receive training on the procedures in the O&M plan.

At a minimum, employees in targeted positions (generally employees involved in stormwater management or municipal maintenance) should be trained on the requirements in the stormwater program by the end of permit term. Consider providing brief (1 hour) training to all municipal

DRAFT

employees. More specific, specialized training can be developed for specific program areas. For example, provide additional training on proper operation and maintenance of the equipment for municipal employees involved in vehicle washing. Train municipal employees engaged in field work on the basics of identifying and reporting illicit discharges and spills, including what constitutes an illicit discharge and who to contact if they see an illicit discharge.

In addition to more intensive training, ensure that municipal employees have access to the public education materials produced under the public education minimum measure (Chapter 2). Even if a municipal employee's responsibilities do not directly impact stormwater management activities, their day-to-day actions can impact stormwater quality.

7.4 Resources

Vehicle and Equipment Washwater Discharges/Best Management Practices Manual

http://www.ecy.wa.gov/biblio/95056.html

Recommended Practices Manual: A Guideline for Maintenance and Service of Unpaved Roads, produced by Choctawhatchee, Pea and Yellow Rivers Watershed Management Authority

http://www.epa.gov/owow/nps/unpavedroads.html

EPA's National Menu of BMPs
http://www.epa.gov/npdes/menuofbmps/poll.htm

Appendices

Appendix 7A – Visual Inspection Form for Outfalls

DRAFT

Appendix 7A – Visual Inspection Form for Outfalls

Municipality of Anchorage

VISUAL INSPECTION FORM

Department of Public Works — Watershed Management

Outfall Number: _____

Part 1 General Information

1. Map to location is? ☐ OK ☐ Incorrect, explain in Part 4, Comments
2. Date: _____ ☐ Time: _____ ☐ Inspection Crew Lead: _____
3. How long since last rainfall? ☐ Raining now ☐ 0-2 days ☐ 3 or more days ☐ Unknown
4. Access to end of pipe is? ☐ OK ☐ Far from road, _____ feet ☐ Steep ☐ Ground wet or soft ☐ Blocked ✪

   If blocked, by what? ☐ Fence gate/unlocked ☐ Fence gate/locked ☐ Vegetation ☐ Water ☐ Other: _____

Part 2 End-of-Pipe Information

5. End of pipe flows into: ☐ Lake ☐ Stream ☐ Wetland ☐ Ditch ☐ Other _____
6. End of pipe submerged? ☐ No ☐ Yes *If yes, how much?* ☐ less than 25% ☐ about 50% ☐ more than 50%
7. End of pipe crushed? ☐ No ☐ Yes *If yes, how much?* ☐ less than 25% ☐ about 50% ✪ ☐ almost closed ✪
8. Grate on end of pipe? ☐ No ☐ Yes *If yes, is grate locked?* ☐ No ☐ Yes

   If yes, is grate plugged? ☐ less than 25% ☐ about 50% ✪ ☐ almost closed ✪

Part 3 Visual Observations

9. Water flowing from end of pipe? ☐ No ☐ Yes

   If yes, what does water look like? ☐ Clear ☐ Colored, what color? _____ ☐ Muddy

   If yes, are petroleum products present? ☐ No ☐ Yes, in the form of: ☐ Floating globs ☐ Moving sheen
10. Sediment accumulation in pipe? ☐ No ☐ Yes

    If yes, how much? ☐ less than 25% full ☐ about 50% full ✪ ☐ more than 50% full ✪
11. Debris accumulation in pipe? ☐ No ☐ Yes

    If yes, how much? ☐ less than 25% full ☐ about 50% full ✪ ☐ more than 50% full ✪

    Describe debris: _____
12. If end of pipe flows to a ditch, is there (near end of pipe):

    Sediment accumulation in ditch? ☐ No ☐ Yes

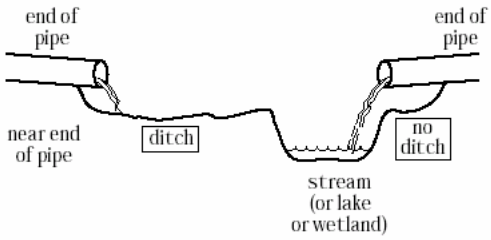
    If yes, how much? ☐ less than 25% full ☐ about 50% full ✪ ☐ more than 50% full ✪

    Debris accumulation in ditch? ☐ No ☐ Yes

    If yes, how much? ☐ less than 25% full ☐ about 50% full ✪ ☐ more than 50% full ✪

    Describe debris: _____

Part 4 Comments



NOTE: If the answer to a question has this symbol ✪ next to the entry, flag this form for a supervisor's attention by placing an "x" in the box to the right. ☐

INSTRUCTIONS FOR COMPLETION OF THE VISUAL INSPECTION FORM

A separate form must be filled out for each major outfall. Answer all questions on the form.

PART 1 GENERAL INFORMATION

1. ***Map to Location, and Outfall Number:*** Verify the map guiding you to the outfall location is accurate. Make location corrections to the map and/or in the inspection form, Part 3, Comments. If the outfall cannot be found based on inspection crew experience or map information make a note and return the uncompleted form and map to supervisor.

2. ***Outfall Number, Date, Time and Field Crew Lead.*** When you arrive at an outfall to conduct the inspection, write the outfall identification number on the inspection form. The outfall identification number can be found on the location map. Record the date and time the inspection is made. Fill in the name of the field crew lead conducting the inspection.

3. ***How Long Since Last Rainfall?*** Check the box that best represents when the last rainfall occurred. **"Rainfall"** is defined as a rainstorm big enough to cause runoff from the streets to enter the local storm drains being inspected. Indicate if you do not know the date of the last rainfall.

PART 2 VISUAL OBSERVATIONS

The "**end-of-pipe**" is defined as the open-end of a pipe discharging storm water from a piped storm water conveyance system into the environment.

4. ***Water Flowing from End-of-Pipe?*** Check the NO box if there is no water flowing out of the end-of-pipe. Note: If you see standing water in the end-of-pipe or the end-of-pipe is partially submerged in water and you cannot determine if the water is actually flowing out of the pipe, also check the NO box. Check the YES box only if water is flowing out of the end-of-pipe. If you checked the YES box, you also need to answer the questions about the quality of the water flowing out of the pipe. Check the appropriate boxes for the water quality questions.

If yes, what does water look like?

Clear (not colored): Imagine a glass of drinking water, you can see through the water and the water is not colored. Is this what the water flowing from the end-of-pipe looks like?

Colored: Imagine a glass of tea, you can see through the water, but the water is colored. Is this what the water looks like? Be careful not to let the color of subsurface objects fool you. For example, green algae under the water can give water the appearance of being green. Color can range from light to dark. If the water seems very lightly colored but you are in doubt, do not mark the "Colored" box.

Muddy: You cannot see through the water (it has a cloudy or muddy appearance).

If yes, are petroleum products present in water? Imagine pouring new or used motor oil into water. Do you see this effect in the water flowing from the end-of-pipe? Unless you see floating globs or a moving sheen of oil in the water mark NO.

5. ***Sediment Accumulation in Pipe?*** If you can see sediment in the pipe, check the YES box. Then estimate how much sediment is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box.

Note: If you checked the "about ½ full" or "more than ½ full" box, also check the box at the bottom of the page to flag the form for a supervisor's attention.

6. ***Debris Accumulation in Pipe?*** If you see any debris piled up in the pipe, check the YES box. Then estimate how much debris is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box.

Note: If you checked the "about ½ full" or "more than ½ full" box, also check the box at the bottom of the page to flag the form for a supervisor's attention.

7. ***If the "End of Pipe" Flows into a Ditch, is there (near end of pipe) Sediment Accumulation in Ditch?*** If you can see sediment in the pipe, check the YES box. Then estimate how much sediment is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box.

   Note: If you checked the "about ½ full" or "more than ½ full" box, also check the box at the bottom of the page to flag the form for a supervisor's attention.

Debris Accumulation in Ditch? If you see any debris piled up in the pipe, check the YES box. Then estimate how much debris is present in the pipe (less than ¼ full, about ½ full, or more than ½ full) and check the appropriate box.

Note: If you checked the "about ½ full" or "more than ½ full" box, also check the box at the bottom of the page to flag the form for a supervisor's attention.

PART 3 COMMENTS

As needed, explain answers in Parts 1-2. Record anything unusual about the site not covered by the questions on the form.

FIELD EQUIPMENT CHECKLIST

❒ Appropriate protective work clothing and boots ❒ Safety and communication equipment ❒ Outfall location maps ❒ Clipboard
❒ Major outfall identification number list ❒ Visual Inspection Forms ❒ Pencil or Waterproof permanent ink pen

Table of Contents

Chapter 8 - Evaluation and Assessment Record Keeping and Reporting..... 8-1
8.1 Evaluation and Assessment..... 8-1
8.2 Record Keeping 8-2
8.3 Annual Reporting..... 8-2
Appendices..... 8-3
Appendix 8A – Eastern Washington Stormwater Phase II Annual Report Form..... 8-4

DRAFT

Chapter 8 - Evaluation and Assessment Record Keeping and Reporting

8.1 Evaluation and Assessment

Under federal NPDES regulations, operators of regulated small MS4s are required to evaluate the appropriateness of their identified BMPs and progress toward achieving their identified measurable goals.

The purpose of this evaluation is to determine whether or not the MS4 is meeting the requirements of the minimum control measures. The NPDES permitting authority is responsible for determining whether and what types of monitoring needs to be conducted and may require monitoring in accordance with State/Tribe monitoring plans appropriate to the watershed. EPA does not encourage requirements for "end-of-pipe" monitoring for regulated small MS4s. Rather, EPA encourages permitting authorities to carefully examine existing ambient water quality and assess data needs. Permitting authorities should consider a combination of physical, chemical, and biological monitoring or the use of other environmental indicators such as exceedance frequencies of water quality standards, impacted dry weather flows, and increased flooding frequency. For a discussion of monitoring in greater detail, see Claytor, R. and W. Brown, 1996, *Environmental Indicators to Assess Storm Water Control Programs and Practices,* Center for Watershed Protection, Silver Spring, MD - Section II.L., Water Quality Issues.

Under the federal regulations, the NPDES permitting authority is encouraged to consider the following watershed objectives in determining monitoring requirements:

(1) To characterize water quality and ecosystem health in a watershed over time,

(2) To determine causes of existing and future water quality and ecosystem health problems in a watershed and develop a watershed management program,

(3) To assess progress of a watershed management program or effectiveness of pollution prevention and control practices, and

(4) To support documentation of compliance with permit conditions and/or water quality standards.

The federal rules are intended to provide flexibility to both MS4s and permitting authorities regarding appropriate evaluation and assessment. Permitting authorities can specify monitoring or other means of evaluation when writing permits. If additional requirements are not specified, MS4s

DRAFT

can decide what they believe is the most appropriate way to evaluate their storm water management program.

8.2 Record Keeping

In order to track program implementation and progress, thorough, timely and accurate record keeping is essential. This can be accomplished through either a series of organized, printed files or electronically via a database or similar tracking system.

Record keeping is conducted for two primary purposes. First, record keeping is conducted in order to track and more effectively manage the day-to-day activities of the stormwater program. This could include keeping track of activities and staff time for cost accounting purposes, and tracking inspections, incidents or responses for later follow-up. Second, record keeping is conducted to collect data on program performance that is reported to Ecology, the city/county Council, ratepayers, or the public. This will consist primarily of record keeping on the jurisdiction's progress in meeting measurable goals.

Records required by the NPDES Phase II permit must be kept for at least 3 years and must be submitted to Ecology when requested. Jurisdictions are required to make records, including their stormwater management program, available to the public at reasonable times during regular business hours (a reasonable charge for providing information can be assessed in accordance with State laws governing open records requests). Jurisdictions can require that a member of the public provide advance notice.

8.3 Annual Reporting

EPA's federal regulations require that jurisdictions permitted under Phase II submit reports annually during the first permit term (five years). EPA requires that the annual report include the following information (from 40 CFR 122.34(g)(3)):

- The status of compliance with permit conditions, an assessment of the appropriateness of your identified best management practices and progress towards achieving your identified measurable goals for each of the minimum control measures.
- Results of information collected and analyzed, including monitoring data, if any, during the reporting period.
- A summary of the stormwater activities you plan to undertake during the next reporting cycle.
- A change in any identified best management practices or measurable goals for any of the minimum control measures, and
- Notice that you are relying on another governmental entity to satisfy some of your permit obligations (if applicable).

DRAFT

The annual report form in Appendix 8A is an example of what this report could look like. The general Phase II permit issued by Ecology for Eastern Washington will contain the annual report form that must be used. This example form contains the following six sections:

Section I – Contact Person

This will be the primary contact for Ecology, other state agencies, and the public for stormwater Phase II issues in this jurisdiction. This does not necessarily need to be the individual who signed the NPDES permit application.

Section II – MS4 Location

Information on the jurisdiction the report covers, the type of jurisdiction, and the major receiving water body.

Section III – BMP and Measurable Goal Status

For each BMP and measurable goal, the permittee must describe completed activities for this permit year, and planned activities for the next permit year. As an example, this form includes all the BMPs and measurable goals for the model program.

Section IV – Information Collection

Where information, studies, monitoring data, or other relevant information is collected on the stormwater program, briefly describe that information here. This could also include any information collection conducted for Endangered Species Act or Total Maximum Daily Load programs that relate to stormwater.

Section V – Changes in BMPs and Measurable Goals

If any BMPs or measurable goals have been changed during the reporting period, describe those changes and provide a justification for the changes. If any BMPs or measurable goals are proposed to be changed, describe those changes and provide a justification for the changes.

Section VI – Relying on Another Governmental Entity

If relying on another governmental entity to satisfy one or more of the requirements, then list what that requirement is and list the governmental entity who is implementing this requirement.

Appendices

Appendix 8A - Eastern Washington Stormwater Phase II Annual Report Form

DRAFT

Appendix 8A – Eastern Washington Stormwater Phase II Annual Report Form

Annual Report covering the period from _____ to _____

(a) I. Contact Person

(b) II. MS4 Location

Contact Name Phone No.	Jurisdiction
Jurisdiction	Entity type: State ☐ County ☐ City ☐
Mailing Address	Major receiving water:
City State Zip + 4	
Email address:	

(c) III. BMP and Measurable Goal Status

Public Education BMPs		
BMP 2A: Stormwater Education and Outreach Strategy		**Goal**: Develop strategy by end of permit year 3.
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2B: Stormwater brochure for general public		**Goal**: Distribute to 90% of residents and businesses
	(b) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2C: Targeted Brochure		**Goal**: Distribute to targeted audience as specified in outreach strategy
	(c) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2D: Storm Drain Stenciling		**Goal**: Stencil 20% of inlets
	(d) Completed activities for this permit year	*Planned activities for the next permit year*

DRAFT

BMP 2E – Classroom Education		**Goal**: Contact all school districts by the end of permit year 5
	(e) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2F: Work with Volunteers		**Goal**: Contact 5 volunteer groups by the end of permit year 5
	(f) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2G: Speakers Bureau		**Goal**: Develop bureau by year 4
	(g) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2H: Stormwater PSAs		**Goal**: Run PSAs so the population receive the info an average of 3 times per year
	(h) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2I: Stormwater Display		**Goal**: Use an average of 4 times/year
	(i) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 2J: Stormwater Web Site		**Goal**: Create by year 5, and update monthly
	(j) Completed activities for this permit year	*Planned activities for the next permit year*
Public Involvement BMPs		
BMP 3A: Public review/public meetings		**Goal**: Hold 2 public meetings and public 2 public notices
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
Illicit Discharge BMPs		
BMP 4A: Create Map		**Goal**: Map 33% of outfalls
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4B: Ordinance		**Goal**: Develop ordinance by year 2.
	(b) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4C: Illicit Discharge Plan		**Goal**: Develop plan by year 5

DRAFT

	(c) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4D: Spill Response Plan		**Goal**: Develop plan by year 5
	(d) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4E: Enforcement Plan		**Goal**: Develop plan by year 5
	(e) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4F: Screen Outfalls		**Goal**: Screen 33% of outfalls
	(f) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 4G: Training		**Goal**: Train staff by year 5
	(g) Completed activities for this permit year	*Planned activities for the next permit year*
Construction BMPs		
BMP 5A: Ordinance		**Goal**: Adopt ordinance by year 2
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 5B: Training for MS4 staff		**Goal**: Train staff by year 5
	(b) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 5C: Review site plans		**Goal**: Review plans by year 5
	(c) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 5D: Receive info from the public		**Goal**: Set up by year 5
	(d) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 5E: Inspect construction sites		**Goal**: Inspect all sites.
	(e) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 5F: Training for construction operators		**Goal**: Provide training info by year 5
	(f) Completed activities for this permit year	*Planned activities for the next permit year*

DRAFT

Post-Construction BMPs		
BMP 6A: Ordinance		**Goal**: Adopt ordinance by year 2
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 6B: Post-construction plan		**Goal**: Adopt plan by year 5
	(b) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 6C: Training		**Goal**: Train by year 5
	(c) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 6D: Plan review		**Goal**: Review all plans
	(d) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 6E: Inspect post-construction BMPs		**Goal**: Inspect all BMPs as required
	(e) Completed activities for this permit year	*Planned activities for the next permit year*
Good Housekeeping BMPs		
BMP 7A: Develop O&M Plan		**Goal**: Develop plan by year 3
	(a) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7B: Park/Open Space BMPs		**Goal**: Implement BMPs by year 5
	(b) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7C: Vehicle washing BMPs		**Goal**: Implement BMPs by year 5
	(c) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7D: Storm system maintenance		**Goal**: Implement BMPs by year 5
	(d) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7E: Open Channel/Structural		**Goal**: Implement BMPs by year 5
	(e) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7F: Deicing BMPs		**Goal**: Implement BMPs by year 5

DRAFT

	(f) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7G: Flood Management BMPs		**Goal**: Implement BMPs by year 5
	(g) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7H: Dust Control BMPs		**Goal**: Implement BMPs by year 5
	(h) Completed activities for this permit year	*Planned activities for the next permit year*
BMP 7I: Employee Training		**Goal**: Train by year 5
	(i) Completed activities for this permit year	*Planned activities for the next permit year*

IV. Information Collection

List below either the results of information collected and analyzed during the reporting period, including monitoring data (if any) and how to contact for additional information OR summarize the results of information collected and indicate how more complete information can be obtained.

V. Changes in BMPs or Measurable Goals

If any of the BMPs or Measurable Goals are being changed, list the old BMP and measurable goal, the new BMP and measurable goal, and a justification for the change below.	
Old BMP:	**Old Goal**:
New BMP:	**New Goal**:
Justification for change:	
Old BMP:	
New BMP:	
Justification for change:	

DRAFT

VI. Relying on Another Governmental Entity

If relying on another governmental entity to satisfy one or more of the permit obligations, list the entity and the permit obligation they are implementing on your behalf below.

DRAFT

Table of Contents

Chapter 9 - Cost Estimates 9-1
9.1 Cost Assumptions 9-1
9.1.1 Overall Assumptions 9-1
9.2 How to Use the Costing Spreadsheets 9-2
9.3 NPDES Program Development Costs 9-3
9.4 Public Education Costs 9-3
9.4.1 Public Education BMPs 9-3
9.4.2 Public Education BMP Cost Assumptions 9-4
9.4.3 Public Education Cost Summary 9-6
9.4.4 Existing Practices in Eastern Washington 9-7
9.5 Public Involvement Costs 9-8
9.5.1 Public Involvement BMPs 9-8
9.5.2 Public Involvement BMP Cost Assumptions 9-8
9.5.3 Public Involvement Cost Summary 9-9
9.5.4 Existing Practices in Eastern Washington 9-9
9.6 Illicit Discharge Costs 9-10
9.6.1 Illicit Discharge BMPs 9-10
9.6.2 Illicit Discharge BMP Cost Assumptions 9-10
9.6.3 Illicit Discharge Cost Summary 9-12
9.6.4 Existing Practices in Eastern Washington 9-13
9.7 Construction Program Costs 9-14
9.7.1 Construction BMPs 9-14
9.7.2 Construction BMP Cost Assumptions 9-14
9.7.3 Construction Cost Summary 9-16
9.7.4 Existing Practices in Eastern Washington 9-17
9.8 Post-Construction Program Costs 9-18
9.8.1 Post-Construction BMPs 9-18
9.8.2 Post-Construction BMP Cost Assumptions 9-18
9.8.3 Post-Construction Cost Summary 9-20
9.8.4 Existing Practices in Eastern Washington 9-20
9.9 Good Housekeeping Program Costs 9-21
9.9.1 Good Housekeeping BMPs 9-21
9.9.2 Good Housekeeping BMP Cost Assumptions 9-21
9.9.3 Good Housekeeping Cost Summary 9-24
9.9.4 Existing Practices in Eastern Washington 9-25
9.10 Annual Report Costs 9-25
Appendices 9-26
Appendix 9A – Small Hypothetical Phase II Communities 9-27
Appendix 9B – Large Hypothetical Phase II Communities 9-36

DRAFT

Chapter 9 - Cost Estimates

9.1 Cost Assumptions

The cost estimates provided in this chapter are intended to give cities and counties in eastern Washington additional information and guidance on the range of costs associated with implementing a Phase II NPDES stormwater management program. The costs estimates are based on two hypothetical cities – a small city with a population of 10,000 people and a large city with a population of 50,000 people. Implementing a Phase II NPDES stormwater management program could result in little additional expenditures to the municipal government, or could result in significant additional expenses. Costs will vary primarily on what activities the municipality is already implementing and the specific issues (such as number of construction sites, number of catch basins, etc.) the municipality must address.

9.1.1 Overall Assumptions

Cost estimates were developed for two hypothetical Phase II cities – a small city with a population of 10,000 people, and a large city with a population of 50,000 people.

The following assumptions are common to both scenarios:

- The hourly costs include salary plus 40% for benefits and an additional 100% added for overhead and administrative costs. These overhead and administrative costs typically include costs for:
- Clerical and support staff
- Office rent and utilities
- Computers, basic equipment and supplies
- Incidental use of a vehicle

These scenarios are based on the assumption that the municipality performs the work. If a consultant is used for planning, engineering, inspections or other aspects, the costs may be different.

- Each city is starting with no funding, staff or existing programs before developing a Phase II program.
- The population is consistent over the permit term (the costs are generally not overly sensitive to population).
- These costs do not include any capital costs (capital improvement projects) to correct existing flooding, drainage or stormwater quality problems.

Table 9.1 presents hourly rates for various employee categories.

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Table 9.1 Hourly Rates for Employee Categories			
Title/ Category	Direct hourly rate	Hourly rate including 40% for benefits	Loaded hourly rate inc. 40% for benefits and 100% for overhead
Technician 1	$21	$30	$60
Professional 1	$25	$35	$70
Professional 2	$29	$40	$80
Professional 3	$36	$50	$100

Examples of the types of personnel in each category include:

Technician 1 – Maintenance Staff, Construction Inspector

Professional 1 – Planner, Plan Reviewer, Public Outreach Specialist, Computer Specialist, Maintenance Supervisor

Professional 2 – Engineer

Professional 3 – Manager, Staff Attorney

Differences between the small and large Phase II City cost estimate, primarily in the public education program, are described later in this chapter.

9.2 How to Use the Costing Spreadsheets

This model program includes costing spreadsheets for both the small and large hypothetical Phase II communities. Printouts of these spreadsheets are included in Appendix 9A (small communities) and Appendix 9B (large communities). These spreadsheets are intended as a tool to give communities a rough estimate of Phase II compliance costs and help communities estimate their own compliance costs.

To use the spreadsheet to estimate Phase II costs more specifically for your community, you can change the following data fields:

- The hourly staff rates for the four different professional levels (cells D7, D8, D9, and D10)
- The estimated number of hours spent on NPDES start-up costs
- The number of hours spent by each staff for each BMP, per year
- The number of hours spent to complete the annual report

For example, for BMP 2A, stormwater outreach strategy, 16 hours of public outreach specialist time is currently estimated for the small city to identify target audiences. These hours can be changed to reflect a more accurate estimate for your community.

Also, where individual BMPs are already in place and being implemented, additional funding is not required. Therefore, this spreadsheet could be

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used to identify new activities that will represent new costs to the community by deleting costs for BMPs it has already developed.

9.3 NPDES Program Development Costs

Both the small and large city will incur costs in planning and organizing an NPDES Phase II program. These costs include planning time to identify lead department and staff, time to identify existing programs that could meet one of the minimum measures, and time to estimate resources needed. These costs also include time to budget resources for NPDES. Time will be required for city/county staff to learn about and prepare to implement NPDES Phase II permit administration and compliance requirements. Time will be required to educate elected officials and management staff about NPDES requirements and to obtain initial approvals to proceed with additional work required to implement the BMPs. Obtaining initial approvals via resolutions or other elected official actions requires time for completion of local public notice and involvement requirements. If no existing funding mechanisms are available, time will be required to develop one (or more), such as a utility. Development of a utility requires a plan that estimates program needs and costs and normally requires completion of public processes and adoption of a funding ordinance. Even changing rates in existing utilities involves similar activities. Ideally this work is done before year one of the permit term but in many cases this work will be done during years 1 – 2.

For the small City, it is assumed that a manager will spend 52 days (full time) and an engineer will spend 100 days on NPDES program development costs (over one to two years).

For the large City, it is assumed that a manager will spend 80 days and an engineer will spend 150 days on NPDES program development costs (over one to two years).

9.4 Public Education Costs

9.4.1 Public Education BMPs

The model program for public education and outreach is described in Chapter 2. The public education model program requires the development of a stormwater outreach strategy (BMP 2A), with some combination of additional BMPs required depending on what specific activities the City includes in the outreach strategy. For the small city, the following BMPs are assumed to be implemented:

- BMP 2A (stormwater outreach strategy)
- BMP 2B (stormwater brochure)
- BMP 2D (storm drain stenciling), and
- BMP 2J (stormwater web site)

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The large city is assumed to implement the following BMPs:

- BMP 2A (stormwater outreach strategy)
- BMP 2B (stormwater brochure)
- BMP 2C (targeted brochures)
- BMP 2D (storm drain stenciling)
- BMP 2E (classroom education), and
- BMP 2J (stormwater web site)

The assumptions and costs for BMPs not selected by the two model cities are still listed below. These BMPs could be chosen by other Eastern Washington cities as part of a public education program.

9.4.2 Public Education BMP Cost Assumptions

The assumptions below were used to estimate costs for the hypothetical small and large Phase II cities. The number of hours assumed per employee per year for each BMP can be found in the cost tables.

BMP 2A – Stormwater Outreach Strategy

- Will be developed over the first 3 years
- Annual reviews and updates will occur after year 3
- Both the small and large City implement this BMP

BMP 2B – Stormwater Brochure

- Assume that an existing brochure format is used and slightly modified to meet local needs (requires some time for manager and public involvement specialist).
- Assume $0.20/brochure for black and white printing (two-color, double-sided 8 1/2 x 11 brochure printing cost would be $0.50)
- Distribution is through utility mailers, libraries, government offices, etc. (i.e., no additional mailing costs)
- Brochures are printed for 1/3 of total population
- Public response to mailed brochures will result in about a 1-2 weeklong flurry of work by manager, public information specialist, engineer, and maintenance staff. Assume that any MS4 problems uncovered may result in CIPs that are funded outside this model program. Assume maintenance supervisor spends 10 hours investigating and 30 hours supervision of a two person crew (30 hours times 2) to rectify non-CIP problems per mailing. Assume equipment costs of $5000 per mailing for heavy equip used by crew.
- Both the small and large City implement this BMP

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BMP 2C – Targeted Brochure

- Assume targeted brochures will go out to 10% of addresses within City (number of addresses is 1/3 of total population).
- Assume $0.20/brochure for black and white printing and $0.30/brochure for mailing (two-color, double-sided 8 1/2 x 11 brochure printing cost would be $0.50).
- Targeted audience response to mailed brochures will result in about a 1-2 weeklong flurry of work by manager, public information specialist, engineer, maintenance supervisor & crew. Assume that any MS4 problems uncovered may result in CIPs that are funded outside this model program. Assume maintenance supervisor spends 6 hours investigating and 16 hours supervision of a two-person crew (16 hours * 2) to rectify non-CIP problems per mailing. Assume equipment costs of $2000 per mailing for heavy equip used by crew.
- The large City implements this BMP

BMP 2D – Storm Drain Stenciling

- Assume volunteer groups are used to place stencils
- City provides safety and stenciling materials ($5/stencil), transportation, and oversight/planning
- Assume 2 volunteers can complete 4 stencils/hour. City oversees 2 teams of volunteers at a time. 4 Hours spent each outing on stencils
- City spends 12 hours each outing planning, managing, overseeing, and recording the stenciling
- Small City – assume City organizes volunteers to stencil the equivalent of six times each year (192 catch basins stenciled per year)
- Large City – assume City organizes volunteers to stencil the equivalent of 15 times each year (480 catch basins stenciled per year)

BMP 2E – Classroom Education

- Year 3 – obtain contact info for all school districts
- Year 4 – determine classroom educational opportunities
- Year 5 – Contact schools on list
- The large City implements this BMP

BMP 2F – Work with Volunteers

- Assumes that follow-up will be necessary in Years 4 & 5 to provide groups with information

BMP 2G – Speakers Bureau

- Year 3 – Begin planning for speakers bureau

DRAFT

- Year 4 – Contact potential speakers, develop list
- Year 5 – Promote, distribute speakers bureau list

BMP 2H – Stormwater PSAs

- Costs will vary depending on newspaper, television, or radio. Costs are for development; placement of PSAs are usually free, but there is no guarantee that they will be run. Advertisements are paid and provide control over frequency of distribution.

BMP 2I – Stormwater Display

- Cost for developing a table-top display is approximately $500. For a 10" x 10" display, approximately $2,000
- Time is for scheduling event, transport and set up; does not include cost of display
- Assume 4 hours time per display; 4 displays per year

BMP 2J – Stormwater Web site

- Assume 100 hours for computer specialist (Professional Level 1) to develop web pages; 40 hours for engineer or public information specialist and 20 hours for manager.
- Quarterly maintenance and updates will consist of approx. 16 hours each quarter for computer specialist, and 4 hours each quarter for Engineer or public information specialist.

9.4.3 Public Education Cost Summary

For the small City, the total five-year public education costs were estimated to be approximately $87,000. This included the following five-year costs for each of the BMPs:

- BMP 2A (stormwater outreach strategy) $7,500
- BMP 2B (stormwater brochure) $41,400
- BMP 2D (storm drain stenciling) $20,900
- BMP 2J (stormwater web site) $17,600

For the large City, the total five-year public education costs were estimated to be approximately $184,800.

- BMP 2A (stormwater outreach strategy) $7,500
- BMP 2B (stormwater brochure) $49,400
- BMP 2D (storm drain stenciling) $46,900
- BMP 2J (stormwater web site) $51,500

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9.4.4 Existing Practices in Eastern Washington

The costs in Section 9.4.3 assume that the small and large Phase II cities are not currently implementing any stormwater public education activities. A survey of Eastern Washington Cities and Counties found that this is true in many, but not all, jurisdictions.

For example, a medium-sized City currently has a stormwater display that is set up during public works week and mails out stormwater inserts with local utility bills. A large City with a stormwater utility has conducted outreach about the utility, provides information on stormwater during the construction/development review process, and participates in public education activities to support other programs such as the wellhead protection program and solid waste/recycling program. Also, a large County has developed brochures for the pubic on groundwater quality and aquifer issues. This County also conducts watershed tours and has put on workshops for the public and specific stakeholder groups.

Figure 9.1 graphically represents the current level of activity, on a high, medium, and low scale, for public education from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for public education. A low level of activity indicates jurisdictions that will probably have more work to develop a public education program. A total of 21 cities and counties in Eastern Washington replied to this survey.

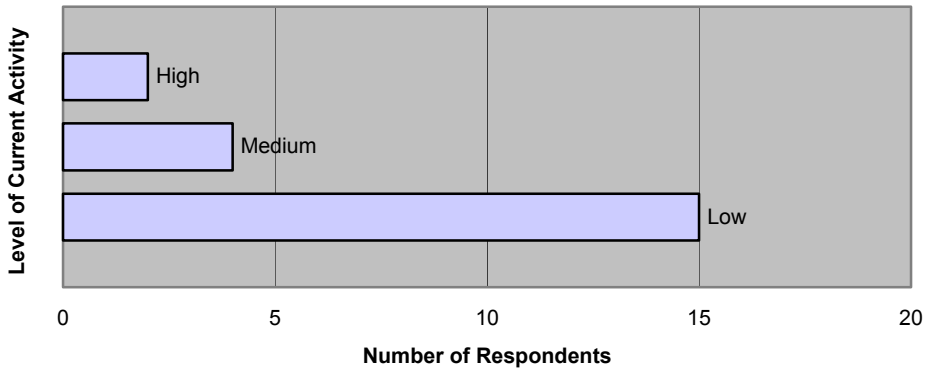

Figure 9.1 Level of Current Activity for Public Education Programs in Eastern Washington

9.5 Public Involvement Costs

9.5.1 Public Involvement BMPs

The model program for public involvement/participation is described in Chapter 3. The public involvement model program requires the jurisdiction to hold public meetings and seek public review. Option BMPs describe distributing new releases or organizing a stormwater advisory panel. For both the small and large cities, it is assumed that public meetings/public review is conducted and new releases are produced. In addition, additional costs were assumed to respond to public calls generated by the public meetings.

9.5.2 Public Involvement BMP Cost Assumptions

BMP 3A – Public review/public meetings

- Assume time for public outreach specialist (8 hours), Engineer (4 hours) and Manager (4 hours) to develop public notice, publish in local newspaper each time
- Assume time for public outreach specialist (16 hours), Engineer (8 hours) and Manager (4 hours) to develop public meeting presentation materials each time
- Includes time for public outreach specialist (16 hours), engineer (16 hours), and manager (4 hours) to attend and respond to public comments. Some comments will require field investigations and may result in CIPs or other corrective actions (CIPs are funded outside this program). Assume maintenance supervisor spends 4 hours investigating and 6 hours supervision of a two person crew (6 hours times 2) to rectify non-CIP problems per public meeting. Assume equipment costs of $1000 per maintenance activity to address comments.
- Assume 2 public meetings, 2 hours each
- For Large City, assume double the number of public meetings (4 meetings) and double the meeting and follow-up labor time and equipment costs

BMP 3B – News releases

- Assume time to draft and distribute new release

Additional Activity – Respond to Public Calls

This is not a BMP but is work that will reasonably be expected by a Phase II jurisdiction – Public response: Time to respond to other public calls. Time to respond to complaints about utility fees, stormwater standards, BMP O&M requirements, or other public or business concerns. Manager (small - 30 hrs/yr, large – 60 hrs/yr), pi-specialist (small - 60 hrs/yr, large – 120 hrs/yr), Engineer (small - 60 hrs/yr, large – 120 hrs/yr), inspector

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(small - 30 hrs/yr, large – 60 hrs/yr), assume work by maintenance supervisor and maintenance crew is covered in other costs (good housekeeping).

9.5.3 Public Involvement Cost Summary

For the small City, the total five-year public involvement costs were estimated to be approximately $90,000. This included the following five-year costs for each of the BMPs:

- BMP 3A (public review/meetings) $15,320
- BMP 3B (news release) $5,700
- Additional activity – respond to public calls $69,000

For the large City, the total five-year public involvement costs were estimated to be $174,300.

- BMP 3A (public review/meetings) $30,600
- BMP 3B (news release) $5,700
- Additional activity – respond to public calls $138,000

9.5.4 Existing Practices in Eastern Washington

The costs in Section 9.5.3 assume that the small and large Phase II cities are not currently implementing any stormwater public involvement activities. A survey of Eastern Washington Cities and Counties found that many jurisdictions currently conduct public meetings or council meetings where stormwater issues could be discussed.

Some cities and counties are going well beyond the Phase II regulations. For example, Liberty Lake meets monthly with a Watershed Advisory Committee. The City of Union Gap uses a Citizen's Advisory Committee to help develop their regional stormwater plan, and the City of Walla Walla Wastewater Advisory Board, which is composed of citizens, works closely with City staff on stormwater issues.

Figure 9.2 graphically represents the current level of activity, on a high, medium, and low scale, for public involvement from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for public involvement. A low level of activity indicates jurisdictions that will probably have more work to develop a public involvement program.

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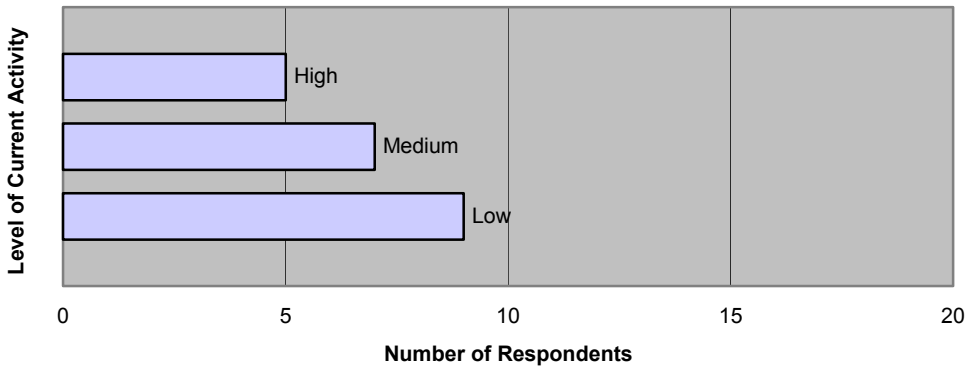

Figure 9.2 Level of Current Activity for Public Involvement Programs in Eastern Washington

9.6 Illicit Discharge Costs

9.6.1 Illicit Discharge BMPs

The model program for illicit discharge detection and elimination is described in Chapter 4. The illicit discharge model program requires the jurisdiction to map and screen outfalls, develop an illicit discharge ordinance, develop an illicit discharge, spill response, and enforcement plan, and provide training for municipal staff. For both the small and large cities, it is assumed that all of these BMPs are implemented.

9.6.2 Illicit Discharge BMP Cost Assumptions

BMP 4A – Create Map

- Assume some information exists (old paper maps, files)
- Time spent to collect existing information, acquire and review record drawings (Small City: 30 hours, Large City: 80 Hours)
- Mapping outfalls will be included as part of mapping the full municipal separate storm sewer system and local receiving waters. A full storm system map is needed to trace illicit discharges and for other NPDES minimum control measures (good house keeping).
- Field Mapping outfalls will take 2 hours/outfall, and will occur in year one or two as part of the Preliminary Planning work
- 80 hours (small) or 160 hours (large) by Engineer to complete a full storm system map in year 2, 16 hours (small) or 32 hours (large) for manager

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- Small City: 40 outfalls
- Large City: 100 outfalls

BMP 4B – Ordinance

- Cost to develop an ordinance (Small City: $45,000, Large City: $60,000)
- This includes time spent by all municipal technical and legal staff, and completion of the local public review/involvement process
- This ordinance covers the ordinances required in Chapters 4, 5 and 6
- Costs spread over first two years

BMP 4C – Illicit Discharge Plan

- Plan developed in year 3
- Small City: 120 hours total by Engineer, 20 hours by manager, 20 hours by Maintenance crew supervisor to develop plan
- Small City: 160 hours total by Engineer, 24 hours by manager, 40 hours by Maintenance crew supervisor to develop plan

BMP 4D – Spill Response Plan

- Plan developed in year 3 (as an appendix to Illicit Discharge Plan)
- Plan will integrate with existing spill responder programs (Ecology, Fire Dept., Health, Police, etc.)
- Time to develop plan (Small City: 100 hours Engineer, 16 hours Manager, Large City: 150 hours Engineer, 24 hours Manager)

BMP 4E – Enforcement Plan

- 80 hours by Engineer, 16 hours by Manager to develop plan in year 3 (as an appendix to Illicit Discharge Plan)
- Investigation/enforcement will take 24 hours per event (3 by engineer)
- Assume 4 hours of record keeping by Engineer (plus 1 hr by Manager) per enforcement event (written record of events, map, resolution)
- Small City: Assume one event every other month for 6 events per year
- Large City: Assume 2 events per month for 24 events per year

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BMP 4F – Screen Outfalls

- Assume 2 hours per outfall for visual screening. Assume that 25% of outfalls appear suspicious and need 2 rounds of additional chemical testing during each permit term (min of $300 per testing ($600 for both rounds) depending on chemicals analyzed for). Assume that additional testing and data analysis requires 20 engineer hours and 4 manager hours per testing event (40 hrs & 8 hrs for both rounds per outfall tested).

BMP 4G – Training

- Assume an 8 hour training course on Illicit Discharge Detection & Elimination is developed and held in 3rd permit year, instructed by an Engineer
- Assume a four hour refresher training course on Illicit Discharge Detection & Elimination is developed and held in 4th permit year, along with the full 8 hour course (for new people) both instructed by an Engineer
- After the initial training, assume 50% of staff have been through the initial training and will attend a refresher course of 4 hours
- After the initial training, assume that turnover results in the need to train 50% of the staff that attended the initial training (hours will be cut in half)
- Assume 8 hours (Engineer) and 2 hours (Manager) to prepare training materials and record training activities per event
- Assume 4 hours by Engineer to schedule and organize training per event
- Small City: Attendance will include 1 inspector, 2 field staff, and an engineer
- Large City: Attendance will include 3 inspectors, 5 field staff, and 2 engineers

9.6.3 Illicit Discharge Cost Summary

For the small City, the total five-year illicit discharge costs were estimated to be approximately $120,000. This included the following five-year costs for each of the BMPs:

- BMP 4A (Develop map) $16,000
- BMP 4B (Ordinance) $45,000
- BMP 4C (Illicit Discharge Plan) $11,600
- BMP 4D (Spill Response Plan) $9,600
- BMP 4E (Enforcement Plan) $31,900

DRAFT

- BMP 4F (Screen Outfalls) $54,100
- BMP 4G (Training) $5,800

For the large City, the total five-year illicit discharge costs were estimated to be $242,300.

- BMP 4A (Develop map) $30,000
- BMP 4B (Ordinance) $60,000
- BMP 4C (Illicit Discharge Plan) $15,200
- BMP 4D (Spill Response Plan) $14,400
- BMP 4E (Enforcement Plan) $110,000
- BMP 4F (Screen Outfalls) $135,600
- BMP 4G (Training) $12,800

9.6.4 Existing Practices in Eastern Washington

The costs in Section 9.6.3 assume that the small and large Phase II cities are not currently implementing any illicit discharge activities, and do not have a stormwater map. A survey of Eastern Washington Cities and Counties found that this is true for about half of the jurisdictions.

For example, about half of the respondents to the survey have some type of stormwater map showing pipes and outfalls. A smaller number of jurisdictions have a program in place to address illicit discharges. In most cases, illicit discharge and spill response is a reactive program responding to citizen complaints.

Figure 9.3 graphically represents the current level of activity, on a high, medium, and low scale, for illicit discharge programs from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for illicit discharge control. A low level of activity indicates jurisdictions that will probably have more work to develop an illicit discharge program.

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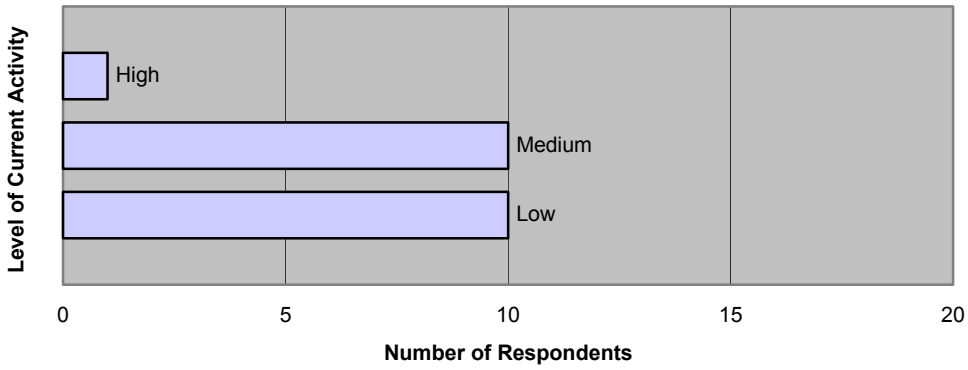

Figure 9.3 Level of Current Activity for Illicit Discharge Programs in Eastern Washington

9.7 Construction Program Costs

9.7.1 Construction BMPs

The model program for construction is described in Chapter 5. The construction model program requires the jurisdiction to develop an erosion and sediment control ordinance, review site plans, develop a program to receive information from the public, inspect construction sites, provide training for municipal staff and information construction operators of training opportunities. Jurisdictions will implement this program primarily by following the Eastern Washington Stormwater Manual, or an equivalent manual. For both the small and large cities, it is assumed that all of these BMPs are implemented.

9.7.2 Construction BMP Cost Assumptions

BMP 5A - Ordinance

- Costs for ordinance are included in BMP 4A

BMP 5B – Training for MS4 Staff

- To develop the training materials, assume 16 hours for a supervisor, 20 hours for engineer, and 8 hours for manager in 3rd permit year
- A 4 hour Plan Review and Construction Inspection training and record keeping course is taught by the Engineer and Supervisor in 4th permit year and every subsequent year
- Small City: Attendees include a plan reviewer, inspector and engineer
- Large City: Attendees include 2 plan reviewers, 2 inspectors, and an engineer

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- Assume that 50% of the staff attends an annual 2 hour refresher course for the plan reviewers, inspectors, and engineer in 5th permit year. Assume that turnover results in the need to provide ongoing full training to 50% of the staff lineup starting in year 5.

BMP 5C – Review site plans

- Small City: 30 construction sites per year are greater than one acre
- Large City: 80 construction sites per year are greater than one acre
- Plan reviews start in permit year 4
- Assume that each "normal" plan review, record keeping, and project correspondence takes 3 plan reviewer hours, 1 engineer hour, and 0.5 Manager hour for E&S control review. Assume that 20% of the projects deserve special consideration because of complexity, size, type, location, phasing, or other factors and plan review time for all staff is quadrupled.
- Assume that each site is subject to two plan reviews (initial & final)

BMP 5D – Receive info from the public

- Assume that it takes 8 hours to set up a system to receive info from the public in the 3rd permit year
- Small: Assume that 1 hour per week is spent by a Public Outreach Specialist taking calls and referring them to Engineer, Inspectors, or Maintenance Supervisor. Assume that 1 hour per week is spent by the Public Outreach Specialist tracking and recording the disposition of prior calls.
- Large: Assume that 3 hours per week is spent by a Public Outreach Specialist taking calls and referring them to Engineer, Inspectors, or Maintenance Supervisor. Assume that 3 hours per week is spent by the Public Outreach Specialist tracking and recording the disposition of prior calls.
- Small: Assume 3 hours by an inspector, 2 hours by a Supervisor, 1 hour by a Manager every week to follow up on complaints, make notes, correspond with property owners, keep records, and resolve problems (either owner fixes, or enforcement staff take over)
- Large: Assume 12 hours by inspectors, 6 hours by a Supervisor, 3 hours by a Manager every week to follow up on complaints, make notes, correspond with property owners, keep records, and resolve problems (either owner fixes, or enforcement staff take over)
- Large: Assume that public information origin enforcement actions consume 60 Inspector hours, 30 Supervisor hours, 60 Maintenance Technician Hours, and 24 Manager hours per year

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- Small: Assume that public information origin enforcement actions consume 20 Inspector hours, 10 Supervisor hours, 20 Maintenance Technician Hours, and 8 Manager hours per year

BMP 5E – Inspect Sites

- Small City: 30 construction sites per year are greater than one acre
- Large City: 80 construction sites per year are greater than one acre
- Every site inspected at least twice (site set-up, interim check after a storm event to assure ESC BMPs are operated, maintained, and repaired properly)
- Each inspection takes 4 hours (travel, notes, correspondence, recording) inspector time and 2 hours engineer time
- Assume that 20% of sites will require some level of follow-up enforcement actions requiring 8 hours of inspector time; 4 hours engineer time and 2 hour of manager time each

BMP 5F – Training for Operators

- Assume one training event per year starting in year 4
- Small: Assume 20 Engineer hours and 4 Manager hours locating information about existing ECS training opportunities and distributing this information to local contractors and engineers
- Large: Assume 60 Engineer hours and 12 Manager hours spent in Year 4 collecting existing training info, modifying as needed for local conditions, organizing training events, conducting training, and keeping records of training activities
- Small: Assume 8 Engineer hours spent each subsequent year updating training info and distributing to local engineers and contractors
- Large: assume 30 Engineer hours and 4 Manager hours spent each subsequent year modify prior training materials, organizing training events, conducting training, and keeping records of training activities

9.7.3 Construction Cost Summary

For the small City, the total five-year construction program costs were estimated to be approximately $157,000. This included the following five-year costs for each of the BMPs:

- BMP 5A (Ordinance) $0 (cost included in BMP 4B)
- BMP 5B (Training for Staff) $7,800
- BMP 5C (Review site plans) $66,000
- BMP 5D (Receive info from public) $90,500
- BMP 5E (Inspect sites) $55,200

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- BMP 5F (Training for operators) $2,600

For the large City, the total five-year construction program costs were estimated to be $457,400.

- BMP 5A (Ordinance) $0 (cost included in BMP4B)
- BMP 5B (Training for Staff) $13,000
- BMP 5C (Review site plans) $174,000
- BMP 5D (Receive info from public) $193,800
- BMP 5E (Inspect sites) $139,500
- BMP 5F (Training for operators) $8,800

9.7.4 Existing Practices in Eastern Washington

The costs in Section 9.7.3 assume that the small and large Phase II cities are not currently implementing any construction program activities. A survey of Eastern Washington Cities and Counties found that this is true in some, but not all, jurisdictions.

For example, over half of the respondents required some type of erosion and sediment control. Several cited that staff had completed WSDOT erosion control training and certification. Several cities and counties replied that erosion control was not an issued due to limited rainfall and high infiltration rate.

Figure 9.4 graphically represents the current level of activity, on a high, medium, and low scale, for construction programs from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for construction. A low level of activity indicates jurisdictions that will probably have more work to develop a construction program.

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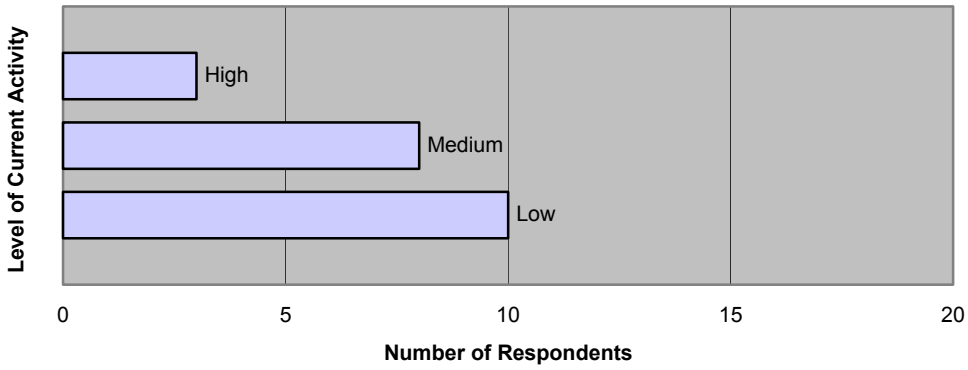

Figure 9.4 Level of Current Activity for Construction Stormwater Programs in Eastern Washington

9.8 Post-Construction Program Costs

9.8.1 Post-Construction BMPs

The model program for post-construction runoff control is described in Chapter 6. The post-construction model program requires the jurisdiction to develop an ordinance to address post-construction runoff, review post-construction site plans, train staff, and inspect structural BMPs. Jurisdictions will implement this program primarily by following the Eastern Washington Stormwater Manual, or an equivalent manual. For both the small and large cities, it is assumed that all of these BMPs are implemented.

9.8.2 Post-Construction BMP Cost Assumptions

BMP 6A - Ordinance

- Assume that ordinance developed for BMP 4A also covers BMP 6A

BMP 6B – Post-Construction Plan

- Post Construction plan is developed in year 3 and will describe in detail the municipal processes of: adoption of standards, stormwater plan review procedures, stormwater BMP inspection during construction, enforcement of BMP design standards, adoption of BMP O&M requirements, methods of assuring perpetual proper O&M of public and private BMPs, BMP inspection to assure proper O&M is occurring, enforcement of BMP maintenance requirements on private developments, plan review and enforcement fees, variance procedures, and so on.
- Small City: Engineer 120 hours, Manager 20 hours to develop post-construction plan

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- Large City: Engineer 200 hours, Manager 40 hours to develop post-construction plan

BMP 6C - Training

- To develop the training materials, assume 16 hours for a supervisor, 20 hours for engineer, and 8 hours for manager in 3rd permit year
- A 4 hour Plan Review and Maintenance Inspection training and record keeping course is taught by the Engineer and Supervisor in 4th permit year and every subsequent year
- Small City: Attendees include a plan reviewer, inspector and engineer
- Large City: Attendees include 2 plan reviewers, 2 inspectors, and an engineer
- Assume that 50% of the staff attend an annual 2 hour refresher course for the plan reviewers, inspectors, and engineer in 5th permit year. Assume that turnover results in the need to provide ongoing full training to 50% of the staff lineup starting in year 5.

BMP 6D – Plan review

- Small City: 30 construction sites per year are greater than one acre
- Large City: 80 construction sites per year are greater than one acre
- Plan reviews start in permit year 4
- Assume that each "normal" plan review, record keeping, and project correspondence takes 3 plan reviewer hours, 1 engineer hour, and 0.5 Manager hour for E&S control review. Assume that 20% of the projects deserve special consideration because of complexity, size, type, location, phasing, or other factors and plan review time for all staff is quadrupled.
- Assume that each site is subject to two plan reviews (initial & final)

BMP 6E – Inspect Post-construction BMPs

- Assume that 80% of construction sites will have structural post-construction controls
- Assume 3 hours per inspection
- Not all sites need to be inspected every year; post-construction plan will prioritize using adaptive management approach
- In permit years 4 and 5, all new post-construction BMPs will be inspected
- Small City: 8 post-construction controls to be inspected in year 4, 16 post-construction controls to be inspected in year 5

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- Large City: 40 post-construction controls to be inspected in year 4, 80 post-construction controls to be inspected in year 5
- Number of sites that need to be inspected will escalate every year

9.8.3 Post-Construction Cost Summary

For the small City, the total five-year post-construction program costs were estimated to be approximately $67,100. This included the following five-year costs for each of the BMPs:

- BMP 6A (Ordinance) $0 (Cost included in BMP 4B)
- BMP 6B (Post-construction plan) $11,600
- BMP 6C (Training for staff) $7,500
- BMP 6D (Review site plans) $28,600
- BMP 6E (Inspect BMPs) $19,500

For the large City, the total five-year post-construction program costs were estimated to be $199,900.

- BMP 6A (Ordinance) $0 (cost included in BMP 4B)
- BMP 6B (Post-construction plan) $20,000
- BMP 6C (Training for staff) $8,500
- BMP 6D (Review site plans) $140,800
- BMP 6E (Inspect BMPs) $30,600

9.8.4 Existing Practices in Eastern Washington

The costs in Section 9.8.3 assume that the small and large Phase II cities are not currently implementing any post-construction program activities. A survey of Eastern Washington Cities and Counties found that this is true in most jurisdictions.

For example, most communities do not have any post-construction requirements. One county requires maintenance plans for any planned on-site stormwater facilities such as ponds. Another City has a stormwater ordinance that provides authority to assure maintenance of private and commercial stormwater systems within the City.

Figure 9.5 graphically represents the current level of activity, on a high, medium, and low scale, for post-construction programs from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for post-construction. A low level of activity indicates jurisdictions that will probably have more work to develop a post-construction stormwater program.

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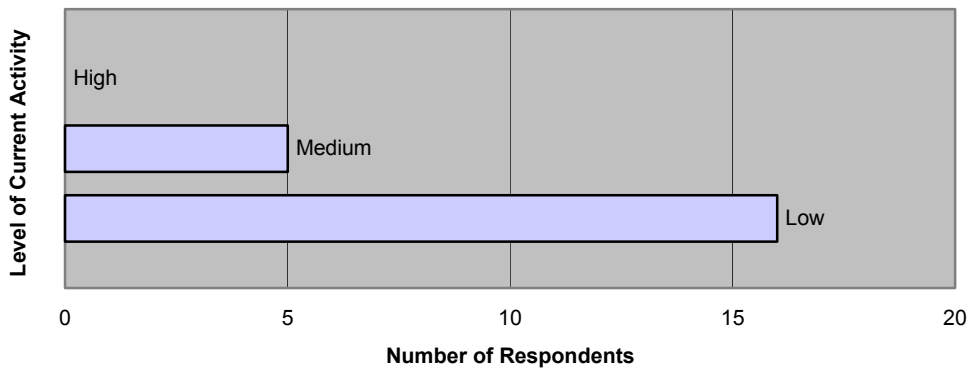

Figure 9.5 Level of Current Activity for Post-Construction Stormwater Programs in Eastern Washington

9.9 Good Housekeeping Program Costs

9.9.1 Good Housekeeping BMPs

The model program for good housekeeping is described in Chapter 7. The good housekeeping model program requires the jurisdiction to develop an operation and maintenance plan. This plan will address all the municipal activities within the jurisdiction that could significantly impact stormwater. These activities could include practices for parks or open spaces, vehicle washing BMPs, catch basin cleaning, open channel/structural controls, deicing BMPs, and other municipal activities. For both the small and large cities, it is assumed that all of these BMPs are implemented.

9.9.2 Good Housekeeping BMP Cost Assumptions

BMP 7A – Develop O&M Plan

- Small City: To develop plan, assume 40 hours for field staff, 80 hours for maintenance supervisor, 120 hours for engineer, and 24 hours for Manager
- Large City: To develop plan, assume 60 hours for filed staff, 100 hours for maintenance supervisor, 160 hours for engineer, and 40 hours for Manager

BMP 7B – Park/Open Space BMPs

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

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BMP 7C – Vehicle Washing BMPs

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

BMP 7D – Dust Control

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

BMP 7E – Storm System Maintenance

- Assume 40 hours (small) and 60 hours (large) by an Engineer to oversee annual maintenance and keep records, Manager time at 8 (small) and 16 (large)
- Assume one week spent cleaning catch basins for every 10 outfalls in City
- Small: Assume 4 weeks spent maintaining the rest of the storm drain system
- Large: assume 12 weeks spent maintaining the rest of the storm drain system
- Small City: 2 person crew (one supervisor, one maintenance worker) hours
- Large City: 3 person crew, one supervisor, two maintenance workers) hours
- Catch basin cleaning is above and beyond what is already occurring to respond to complaints and for flood control (assume virtually none since no funding is dedicated for this)
- Small City: 50% of a vacuum truck (contracted for), Large City: 2 vacuum trucks financed over 10 years with annual payment to include the cost of the financing plus the cost of a new one in ten years without financing
- Assume $500 per year (small) and $2000 per year (Large) for analytical testing of maintenance residuals (assume no hazardous loads or costs will increase). Assume that Engineer spends 16 hours (small) and 30 hours (large) to analyze chemical testing data and arrange for proper disposal

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9-1 Feedback Requested:

The above costs do not include the cost to dispose of waste from catch basin cleanouts. Also, these costs do not include the capital costs to purchase or rent a vacuum truck. The NPDES subcommittee requests comments on how to best estimate these costs.

BMP 7F – Open Channel/Structural

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

***9-2 Feedback Requested**:*

The above costs do not include the cost to analyze or dispose of waste from open channels or structural BMPs. The NPDES subcommittee requests comments on how to best estimate these costs.

BMP 7G – Deicing BMPs

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

BMP 7H – Flood Mgmt. BMPs

- Activity starts in year 5
- Small City: 120 hours for field staff, 60 hours for maintenance supervisor, 24 hours for engineer, and 16 hours for Manager
- Large City: 200 hours for field staff, 120 hours for maintenance supervisor, 40 hours for engineer, and 24 hours for Manager

BMP 7I – Employee Training

- 8 Hour training course covers O&M Plan and BMPs
- Small City: 1 inspector, 2 field staff, 1 engineer
- Large City: 2 inspectors, 5 field staff, 2 engineers
- Annual refresher training is 2 hours

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Optional BMP – Street Sweeping

9-3 Feedback Requested:

The above costs do not include the capital costs for purchasing or operating street sweepers. The NPDES subcommittee requests comments on how to best estimate these costs.

9.9.3 Good Housekeeping Cost Summary

For the small City, the total five-year good housekeeping program costs were estimated to be approximately $145,600. This included the following five-year costs for each of the BMPs:

- BMP 7A (O&M Plan) $35,000
- BMP 7B (Park and Open Space BMPs) $15,000
- BMP 7C (Vehicle & Equipment Washing) $15,000
- BMP 7D (Dust Control Practices) $15,000
- BMP 7E (Storm System Maintenance) $15,000
- BMP 7F (Open Channels and Structural BMPs) $15,000
- BMP 7G (Deicing BMPs) $15,000
- BMP 7H (Flood Management) $17,300
- BMP 7I (Employee Training) $3,800

For the large City, the total five-year good housekeeping program costs were estimated to be $230,600

- BMP 7A (O&M Plan) $42,400
- BMP 7B (Park and Open Space BMPs) $26,000
- BMP 7C (Vehicle & Equipment Washing) $26,000
- BMP 7D (Dust Control Practices) $26,000
- BMP 7E (Storm System Maintenance) $26,000
- BMP 7F (Open Channels and Structural BMPs) $26,000
- BMP 7G (Deicing BMPs) $26,000
- BMP 7H (Flood Management) $25,500
- BMP 7I (Employee Training) $6,700

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9.9.4 Existing Practices in Eastern Washington

The costs in Section 9.9.3 assume that the small and large Phase II cities are not currently implementing any good housekeeping program activities. A survey of Eastern Washington Cities and Counties found that this is not true in many of the jurisdictions.

For example, over half of the survey respondents indicated that they clean catch basins and dry wells at least once a year. Several cities also have street sweepers. Information on additional good housekeeping practices, such as deicing and vehicle washing practices were not specifically asked for on the survey.

Figure 9.6 graphically represents the current level of activity, on a high, medium, and low scale, for good housekeeping programs from the jurisdictions that responded to the survey. This graph is subjective, with a high level of activity representing jurisdictions that are probably meeting or even going beyond the Phase II model program for good housekeeping. A low level of activity indicates jurisdictions that will probably have more work to develop a good housekeeping program.

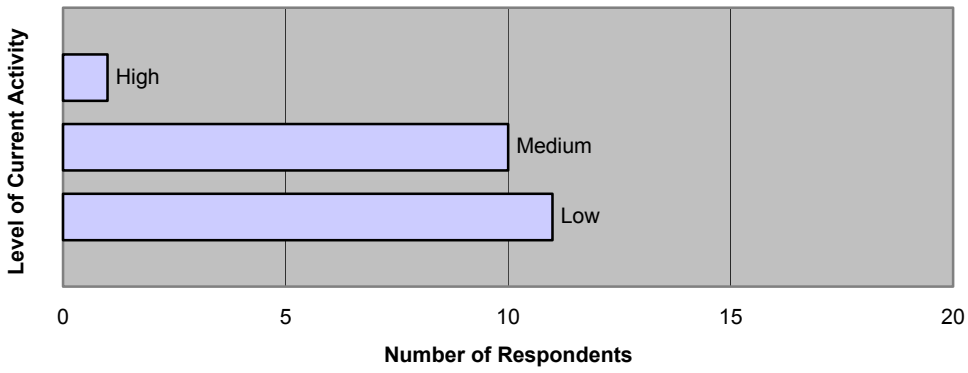

Figure 9.6 Level of Current Activity for Pollution Prevention/Good Housekeeping Programs in Eastern Washington

9.10 Annual Report Costs

Each Phase II community will need to submit an annual report to Ecology detailing compliance with the NPDES permit (see Chapter 8 for more information). The costs to collect and write the annual report for Phase II are assumed to be, for the small city, 40 hours for the Engineer, 8 hours for the Manager, and 16 hours for the Public Involvement Specialist. For the large city, annual reporting costs are assumed to be 80 hours for the Engineer, 16 hours for the Manager, and 40 hours for the Public Information Specialist.

The annual report costs for the small municipality are estimated to be approximately $5,100. The annual report costs for the large municipality are estimated to be approximately 54,000.

Appendices

Appendix 9A – Small Hypothetical Phase II Communities
Appendix 9B – Large Hypothetical Phase II Communities

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