

# **INTEGRATED STORMWATER MANAGEMENT PLAN 2022**

***Stormwater Management Plan:  
NPDES MS4 Phase II Permit  
Underground Injection System Management Plan:  
UIC WPCF Permit  
FY2012-13 through FY2022-23***

**FOR THE  
CITY OF BEND, OREGON  
November 30, 2012 FINAL DRAFT**

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***INTEGRATED  
STORMWATER MANAGEMENT PLAN  
2012-2022***

Incorporating the:

***NPDES MS4 Phase II Permit No. 102901 Stormwater Management Plan***

and the

***UIC WPCF Permit Underground Injection Control System Management Plan***

***FY2012-13 through FY2022-23***

**FOR THE  
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November 30, 2012 DRAFT**

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## **ACRONYMS AND ABBREVIATIONS**

ACWA	Oregon Association of Clean Water Agencies
BMP	Best Management Practice
CDD	Community Development Department Director
CFS	Cubic Feet per Second
CIP	Capital Improvement Plan
CM	City Manager
COM	Communications Manager
COIC	Central Oregon Intergovernmental Council
CWA	Clean Water Act
DEQ	Oregon Department of Environmental Quality
DO	Dissolved Oxygen
DWPA	Drinking Water Protection Area
EPA	U.S. Environmental Protection Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
ISWMP	Integrated Storm Water Management Plan
MS4	Municipal Separate Storm Sewer System
ODOT	Oregon Department of Transportation
PAG	Public Advisory Group
PW	Public Works
PWD	Public Works Director
PWMA	Stormwater Program Manager
SC	Stormwater Coordinators
SDWA	Safe Drinking Water Act
SWMP	Storm Water Management Plan
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TWMP	Total Water Management Plan
UDWC	Upper Deschutes Watershed Council
UIC	Underground Injection Control
UICMP	Underground Injection Control Management Plan
UGB	Urban Growth Boundary
USGS	United States Geological Survey

WPCF

Water Pollution Control Facilities

## **SECTION ES: EXECUTIVE SUMMARY**

The purpose of this Integrated Stormwater Management Plan is to meet federal and state clean water and safe drinking water requirements for both surface water and groundwater, respectively, within Bend and to protect the quality of Bend's water resources. Improperly managed stormwater may cause problems to physical property, result in localized flooding, destabilize stream flows and stream banks, or result in increased pollution or storm drain maintenance costs. The Integrated Stormwater Management Plan addresses water quality issues, and should not be confused with the separate Stormwater Master Plan. Once finalized, the Stormwater Master Plan will serve as the overarching document for the City's Stormwater Utility taking into account high-level strategies for addressing both stormwater quantity and quality needs, whereas the more detailed Integrated Stormwater Management Plan focuses on specific activities to protect water quality and meet regulatory requirements.

Federal regulations required the City to submit, by July 31, 2011, a reissuance application for its Phase II Municipal Separate Storm Sewer (MS4) National Pollutant Discharge Elimination System (NPDES) permit. In addition to its NPDES permit for discharges to the Deschutes River, the City is required by the DEQ to obtain an Underground Injection Control (UIC) Water Pollution Control Facility stormwater permit for its underground discharges. This permit, too, requires a SWMP. Many of the activities designed to protect surface water from stormwater impacts are identical to those that would protect groundwater from such impacts and the funding source must be shared. Therefore, the plan that is being updated here is termed an Integrated Storm Water Management Plan (ISWMP), because it applies both to the river discharges and underground discharges. As part of this effort to address both the impending UIC WPCF permit issuance and the NPDES permit reissuance, the City has developed a revised *ISWMP 2022* covering fiscal years 2012-13 through 2022-23, covering both the 10 year permit period for the UIC WPCF permit and the 5 year permit period for the NPDES permit reissuance. The City's Public Works Department is moving towards a Total Water Management approach to addressing water-related issues within the watershed, managing water as a resource as it moves through drinking water, wastewater, stormwater and natural cycles to maximize sustainability for both society and the environment through integrated stewardship. The ISWMPs are a key piece of that.

The existing Integrated Stormwater Management Plan (adopted December 2006), which was incorporated by reference into the City's first NPDES permit (No. 102901) on February 26, 2007 from the Oregon Department of Environmental Quality (DEQ) and covers fiscal years 2007-2008 through FY2011-2012, serves as a basis for the updated *ISWMP 2022*. The *ISWMP 2022* consists of several components required by various federal laws including the Clean Water Act and the Safe Drinking Water Act. These include actions to keep the public informed and involved, to reduce the amounts of pollutants from homes and businesses to the storm drain system, to improve municipal operations, to monitor stormwater, and to lessen the impacts of development on water quality. There are specific controls related specifically to UICs, however, and those are incorporated into their own chapter, Chapter 10.

The focus of this *ISWMP 2022* is to improve the program in the following areas:

- Underground Injection Control pollution prevention
- Cost-effective coordination efforts;
- Information and tracking tools;
- Documentation of enforcement response and other procedures;
- Educational and outreach programs targeting specific local issues of concern
- Illicit discharge detection and elimination program refinements,
- Post-construction stormwater requirements that incorporate flow–reduction;
- Retrofit strategy development;
- Pollution prevention strategies for municipal operations; and,
- Increasing system understanding and local BMP effectiveness.

The pollutants that the City will focus most on reducing to the degree possible through stormwater inputs include related 303-D listed pollutants of concern for the Deschutes River within Bend, and pollutants that must be monitored in area UICs or that monitoring has shown may be a concern. These specific pollutants are described more fully in Section I. The tasks and best management practices described throughout the ISWMP 2022 will focus on these pollutants and others that become known during the permit cycles.

The City announced and opened a public review period to the July 27, 2011 draft of this document from October 2011 through January 2012. This revised draft incorporates comments received during the public review period, along with modifications as a result of permit requirement clarifications.

## SECTION I: INTRODUCTION AND BACKGROUND

### INTRODUCTION

This *Integrated Stormwater Management Plan 2022* outlines activities the City will take to minimize pollutants from contacting precipitation runoff and from reaching both surface waterbodies such as the Deschutes River, and groundwater aquifers. The plan covers the required element for two different permits from the Oregon Department of Environmental Quality (DEQ)—a National Pollutant Discharge Elimination System (NPDES) permit for surface discharges, and a Water Pollution Control Facility Permit for stormwater underground injection controls (WPCF-UIC Permit). A summary of the tasks and implementation schedule is included in Appendix A.

### REGULATORY BACKGROUND

Current regulatory requirements related to stormwater discharges include the National Pollution Discharge Elimination System permitting program and Total Maximum Daily Load (TMDL) requirements originating under the federal Clean Water Act, and the state's Underground Injection Control program incorporating Water Pollution Control Facility permits designed to meet state and federal Safe Drinking Water Act requirements.

#### NPDES Permit

The City of Bend is a National Pollutant Discharge Elimination System (NPDES) designated Small Municipal Separate Storm Sewer (MS4) owner and operator and, as such, was required by state and federal regulations to originally submit its first Stormwater Management Plan (SWMP) by March 10, 2004. The City met this deadline as well as submitted a revised version of its stormwater management plan, entitled the "Integrated Stormwater Management Plan (ISWMP)", adopted by the City Council in December 2006. The City was issued its first Phase II MS4 NPDES Permit (No. 102901) on February 26, 2007. The permit incorporated by reference the City's ISWMP (2006) as a required element. The SWMP must include rationale, best management practices, schedule and responsible persons. National Pollutant Discharge Elimination System Stormwater Discharge Permit, DEQ, Permit Number 102901:

**Schedule A Discharge Limitations and Stormwater Management Program:**

**2. Stormwater Management Program Requirements.**

**a. The permittee must develop, implement, enforce, and measure the effectiveness of a Stormwater Management Program (SWMP) designed to implement the requirements of the federal Clean Water Act and Oregon administrative rules and protect water quality by requiring controls to reduce the discharge of pollutants to the maximum extent practicable. The SWMP must include management practices, control techniques, and provisions for the control of pollutants.**

**b. The SWMP must include the following information for each of the six minimum control measures described in condition A(4) of this permit:**

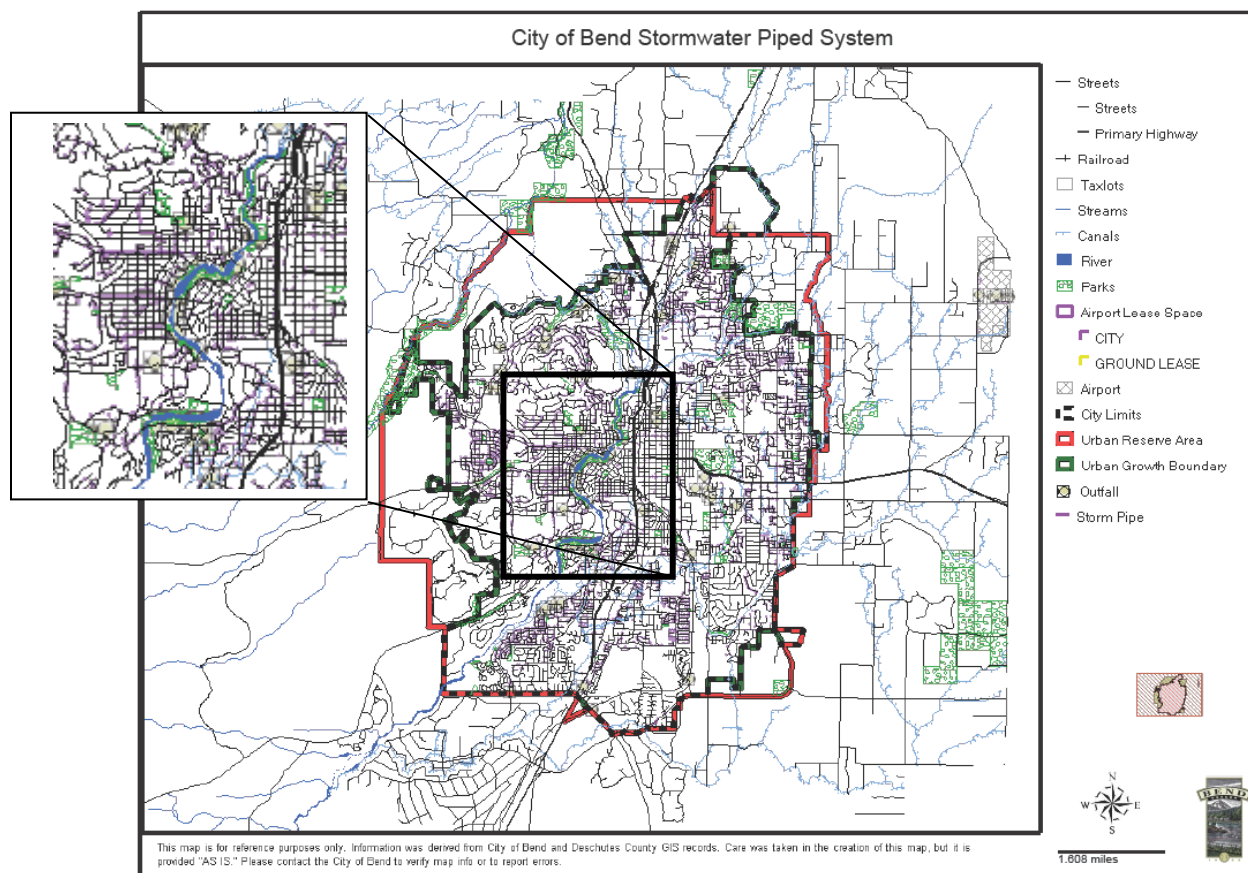
- i. The structural and non-structural best management practices (BMPs) that the permittee or another entity will implement for each of the stormwater minimum control measures;**
- ii. The measurable goals for each of the BMPs including, as appropriate, the months and years in which the permittee will undertake required actions, including interim milestones and the frequency of the action;**
- iii. The person or persons responsible for implementing or coordinating the BMPs for the permittee's SWMP; and**
- iv. The rationale for how and why the permittee selected each of the BMPs and measurable goals for the permittee's SWMP.**

The City has 28 outfalls to the Deschutes River that serve a portion of the City along the river and the west hills (See Figures 1 and 2). Privately owned and maintained entities, such as the Old Mill District, and specific subdivisions in town have private storm sewer systems and are outside of the City's jurisdiction with respect to the NPDES permit. Additionally the Bend Park and Recreation District, which oversees 2,000 acres of developed and undeveloped park land and open space and is the largest landowner adjacent to the river, is a separate special District from the City.

Figure 2 shows the City's piped system (including cross pipes to UICs). The City has 14 miles of storm pipe that drains to the river, and 47 miles of storm pipe overall. The major drainage basins in the area of the City's MS4 system are depicted in Figure 3.



**Figure 1. Stormwater Outfall. This stormwater outfall to the Deschutes River is covered by the City's NPDES Permit.**



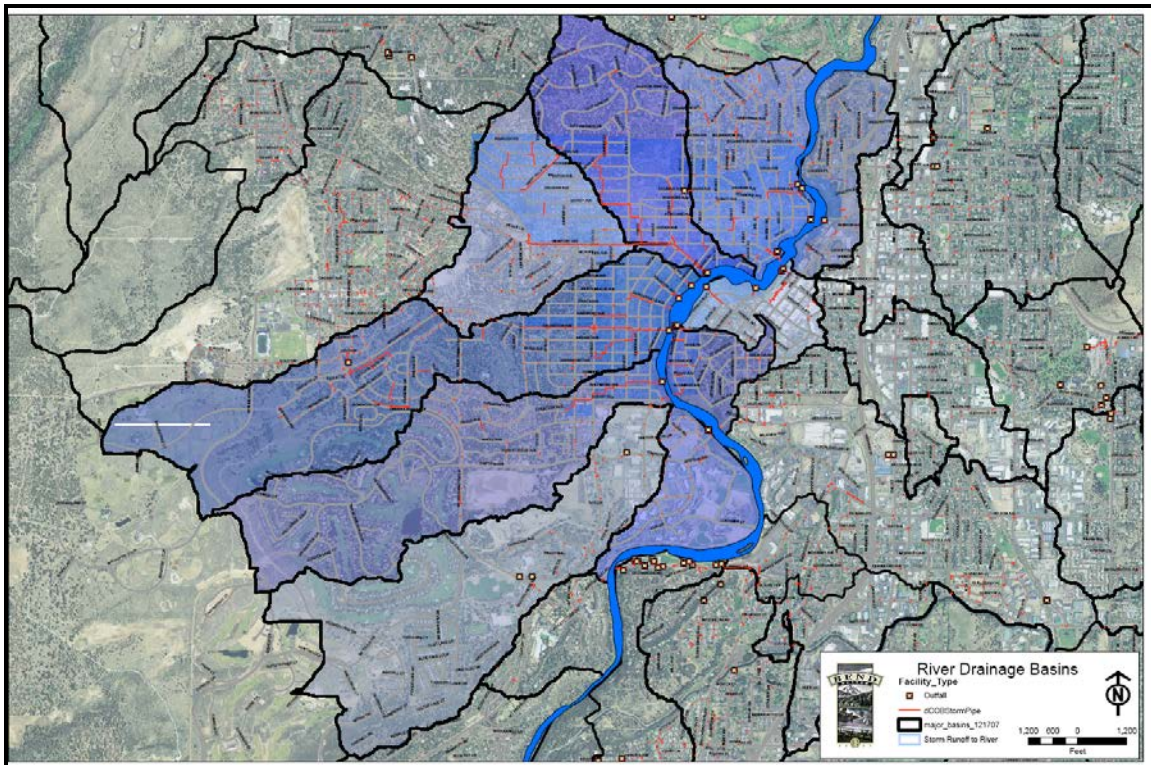
**Figure 2: Vicinity of City of Bend's MS4 System**

### **WPCF-UIC Permit**

As with all private owners of dry wells and drill holes in Oregon, the City is also subject to Oregon's Underground Injection Control (UIC) program. This Program requires the City to prepare an Underground Injection Control Management Plan (UICMP) for City-owned drill holes and dry wells and other facilities it owns that inject stormwater below ground. This includes 988 known drill holes and 4,599 known dry wells for a total of 5,587 City-owned UICs (see Figures 4 and 5).

### **Integration of Bend's Stormwater Systems**

The main difference between the MS4 and the UIC systems is that each MS4 system discharges stormwater to the river whereas the UIC systems discharge to a dry well or drill hole that injects water underground. The purpose of the MS4 program is to prevent pollution of surface water and the purpose of the UIC program is to prevent pollution of ground water. The UIC system actually significantly helps meet the goals of the MS4 NPDES permit. For example, UICs help minimize hydrograph modification. By reducing the volume of stormwater flows, UICs also help reduce the pollutant load from reaching surface waterbodies, such as the Deschutes River to which the City's MS4 system flows.

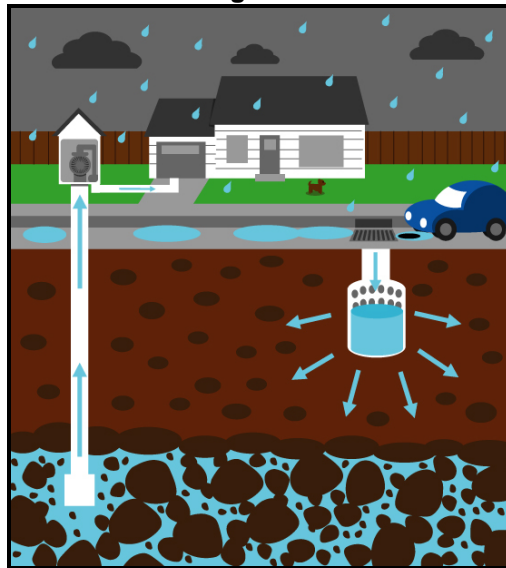


**Figure 3: Major Drainage Basins in Areas of City's MS4 System**

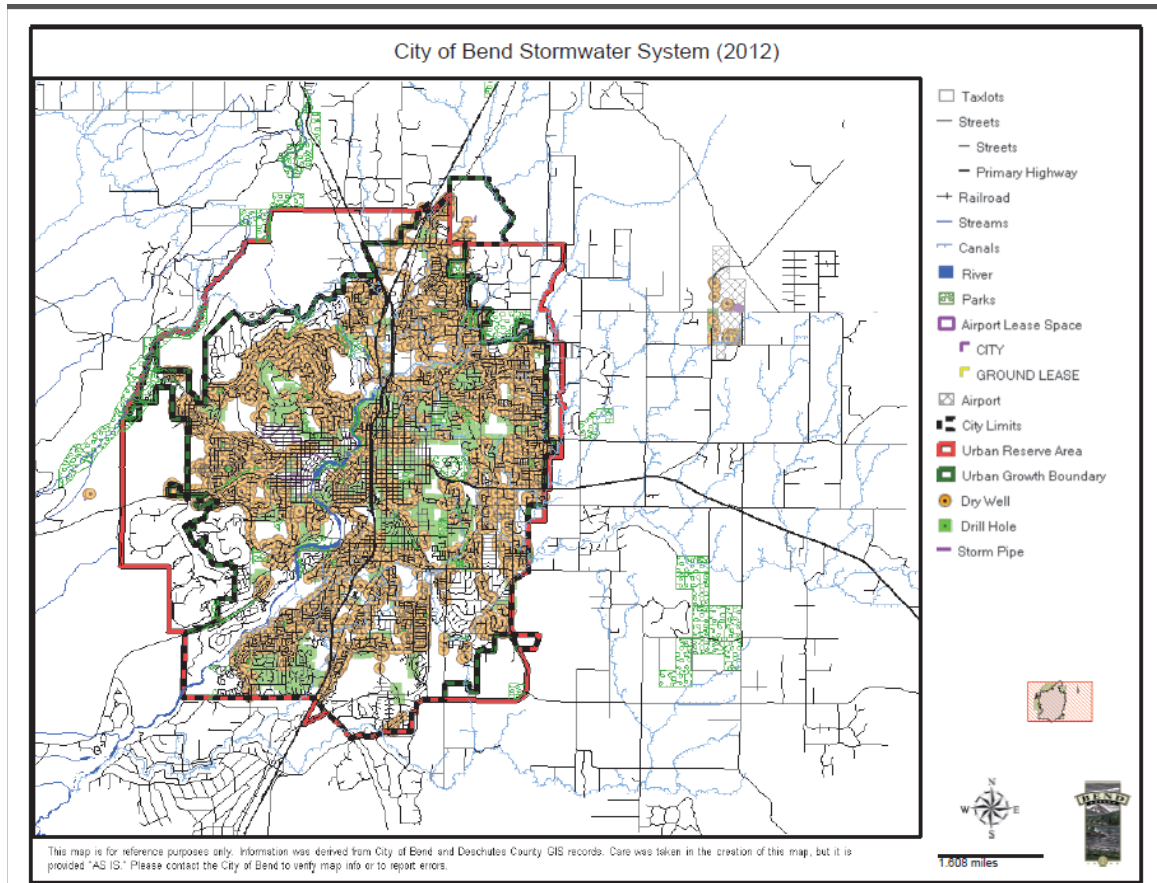
The regulations for MS4 NPDES permits require stormwater pollution prevention to the “maximum extent practicable” (MEP). In Oregon, stormwater regulations for UICs are based on meeting numerical effluent discharge limits. However, because the regulations that specify management plan content are similar for the MS4 and UIC programs, because the MS4 and UIC drainage areas overlap within Bend, and because having an integrated plan also supports the City's Total Water Management coordination goals, the City has decided to update its first Integrated Stormwater Management Plan (ISWMP) to address the permit period for the reissuance of its NPDES permit and the issuance of its WPCF-UIC permit. Both sets of regulations require the City to employ Best Management Practices (BMPs) to keep contaminants out of stormwater or, if necessary, remove the contaminants before the water is discharged underground or to the river. BMPs are defined as:

*“...schedules of activities, prohibitions of practices, maintenance procedures or other management practices to prevent or reduce the pollution of waters of the state. BMPs for stormwater may include operational and structural source controls that minimize and prevent contaminants from entering stormwater as well as treatment BMPs that remove contaminants contained in stormwater runoff before disposal or discharge.”*

--United States Environmental Protection Agency

**Figure 4.a Drill hole.****Figure 4.b. Interior of a Dry Well****Figure 4.c. Illustration of a storm drain near the car draining to a dry well.****Figure 4. Examples of Underground Injection Controls****SETTING**

The City of Bend, located within Deschutes County, was incorporated in 1905. The City is a chartered home-rule city, operated by a City Council/City Manager structure. Elected officials include seven at-large City Council members, who appoint one of their own to serve as Mayor. Bend covers 32 square miles (the extraterritorial jurisdiction covers 72.3 square miles), is located at Latitude 44° 03' 30" and Longitude 121° 18' 51", and is 3,628-feet above sea level. Average high temperatures are 40-50 degrees F in the winter and 80 to 90 degrees F in the summer. Average low temperatures are typically 22-51 degrees F in the winter and 40 to 50 degrees F in the summer. The average annual precipitation is 11.6 inches; the average snowfall is 34 inches. The regional topography is hilly to mountainous although Bend itself is relatively flat to gently sloping with some buttes located throughout town.



**Figure 5. City of Bend Stormwater System including pipe drainage and UICs.**

### Demographics

Understanding the makeup of a community is important to implementing a successful stormwater management program. Per the 2010 Census, the City of Bend has a population of 76,639, up from a population of approximately 70,328 as of 2005, and 52,029 as of the 2000 Census. The growth rate between the 2000 and 2010 Census was 47.3%. With the high growth rate, implementing development-related BMPs and educating the public about general stormwater considerations in Bend has been a priority.

Per the 2000 Census, the most recent for which data is currently available, over 90% of the population 25 years and over have a high school degree or better, and English is the primary language. Only 2.3% of the population aged five years and over speak English less than "very well" per the 2000 census. Spanish is the second most common language. Given the high percentage of residents who speak English, the focus of public outreach efforts in this permit period will be on materials for English speakers with targeted outreach to overcome language barriers provided if needed on a case-by-case basis.

### Stormwater System Operation and Maintenance

Operation and maintenance of City storm drainage facilities is currently handled by the City's Department of Public Works, Street Division and is anticipated to move to the Utilities Division within the permit period. However, the following highways through the

City are the responsibility of Oregon Department of Transportation (ODOT) to maintain: Highway 20, Highway 97, and Business Highway 97 north of Highway 20. Private streets, such as the Old Mill District, are maintained by private entities.

### **Hydrogeology and Hydrograph Modification Management**

The hydrogeology of the Upper Deschutes Basin has been studied extensively. It is a complex and unique system where groundwater and surface water are interconnected. The many canals that crisscross the basin add to the complexity. The two major rivers in the basin—Deschutes and Crooked—are gaining streams, receiving most of their water from their interconnection with the basin's principal aquifer. An understanding of the complexity and uniqueness of the basin's hydrogeology along with its semi-arid climate and cold winters is necessary to tailor a stormwater management program that is most effective and workable for this area. Figure 6 provides an overview of the Deschutes River basin hydrograph, breaking out winter, summer and natural flows.

**The Deschutes River and Tumalo Creek.** Bend has one main natural waterbody running through the City, the Deschutes River. In addition, Tumalo Creek runs along the western border of the City limits through Shevlin Park (see Figure 5), which is kept mainly in a natural state. The City's stormwater discharges are typically not treated and can contribute contaminants to the Deschutes River. This can occur when there is rainfall or snow melt at which time there are also many natural contaminant discharges to the river. However it can also occur in times of dry weather flows.

From early in 2004 until June 2010 when a final report was completed, the City and the Upper Deschutes Watershed Council conducted a multi-year monitoring program to provide data on the presence or absence of stormwater pollutants in the Deschutes River within the Bend Urban Boundary (Deschutes River Miles 172 and 159) and Tumalo Creek. The result of this work is summarized in the technical report "City of Bend Ambient Water Quality Monitoring: Deschutes River and Tumalo Creek 2005-2008 (Bend, Oregon)," (UDWC, June 30, 2010). The monitoring results provide a baseline for future comparison, and found that ammonia, chloride, fluoride and sulfate levels are within established guidelines. The temperature data through Bend was consistent with the 303(d) listing for year-round salmon and trout rearing and migration (18 degrees Celsius). Data for dissolved oxygen showed that the state standard was being met in a portion of town for Non-spawning year-round levels (8.0 mg/L @ 95% saturation) and for Chlorophyll -a (multiple uses, Summer, 0.015 mg/L), but that in the same reach (river mile 168.2 to 189.4) the state standards was not being met for pH for fall/winter, and spring seasons (6.5 – 8.5 SU). For the other stretch of river that runs partially through town (river mile 162.6 to 168.2), the study confirmed that temperature and pH (Multiple use summer, 6.5-8.5 SU) were not being met, but that state standards are being met for dissolved oxygen (non -spawning), pH (multiple uses, fall/winter/spring), and for Chlorophyll-a (multiple uses, summer).

The Oregon Department of Environmental Quality (DEQ) submitted Oregon's 2010 Integrated Report to the federal Environmental Protection Agency (EPA) on May 23, 2011 that includes a listing for the Upper Deschutes River on the DEQ's 2010 303(d) list.

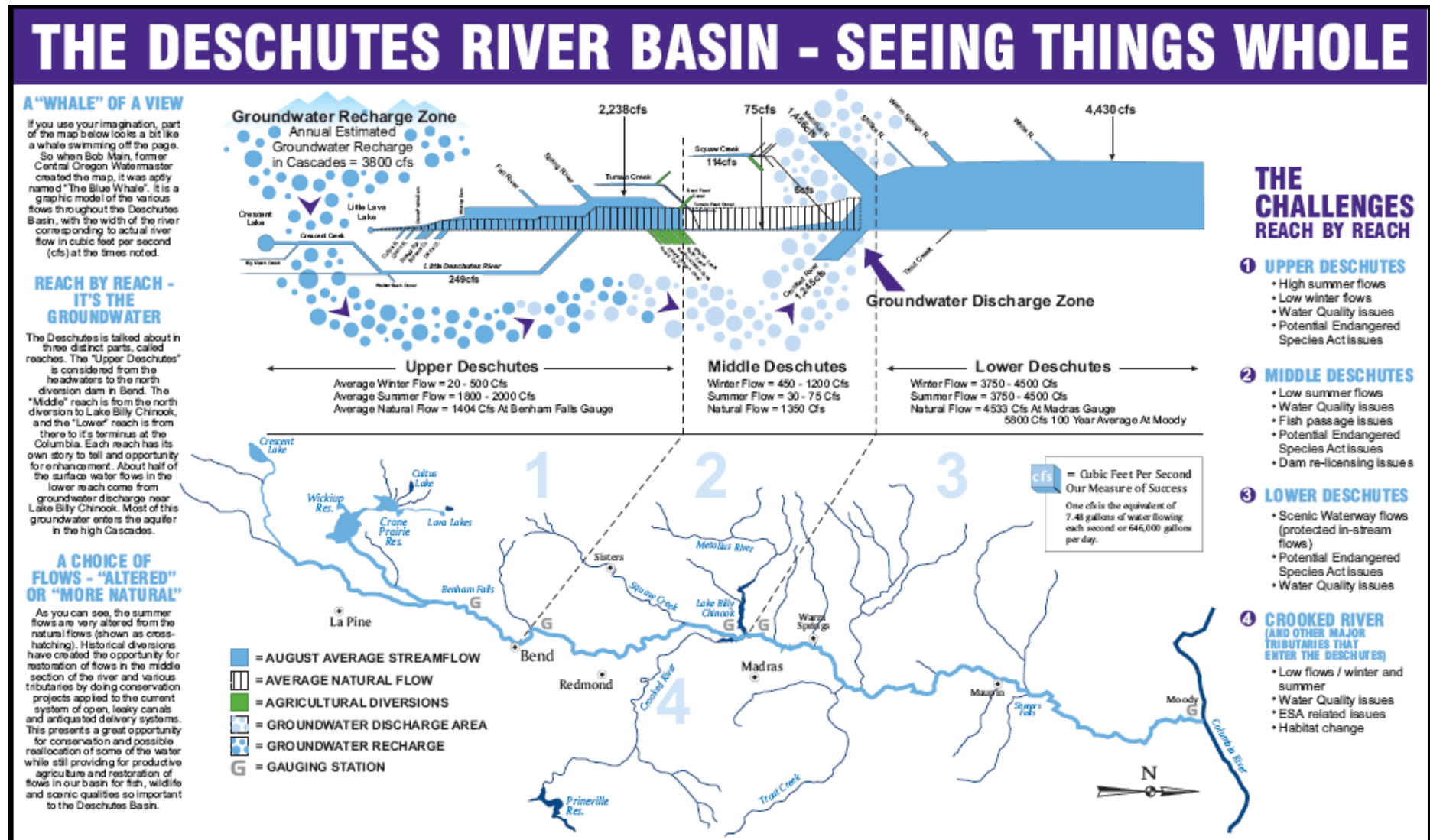


Figure 6. Deschutes River Basin Hydrograph

EPA took action on Oregon's 2010 303(d) list in March 2012, and the parts its accepted became effective for Oregon. DEQ has placed the Deschutes River through Bend on the list of impaired waterbodies for the following pollutants or potential pollutant indicators (for informational purposes; these are not necessarily stormwater pollutants):<sup>1,2,3,4</sup>

- *Chlorophyll a* (Deschutes River Mile 168.2 to 189.4, Columbia Street to Harper Bridge, Multiple Uses, Summer, 0.015 mg/L): *Chlorophyll a* is an indicator of algae and other water plants that form the basis of the aquatic food chain. If production is extremely high, then eutrophication can occur, resulting in high daily fluctuations in pH and DO that can negatively affect the numbers and types of organisms available to survive in the reach. The growth rate of these primary producers can be elevated by phosphorous and other artificial nutrients introduced to the waterway.
- *Dissolved Oxygen (DO)* (Deschutes River Mile 162.6 to 189.4, Upstream end of Tumalo State Park to Harper Bridge, Spawning, January 1, to May 15, 11.0 mg/L @ 90% Saturation; 171.7 to 223.32 (City of Bend City Limits to Downstream of Wickiup, All Year, 8.0 mg/L @95% Saturation): a measure of the concentration of oxygen in the water, DO is needed by fish and aquatic life to survive; elevated levels of algae and aquatic plants can lead to the reduction of the availability of this DO, resulting in harm to fish and aquatic habitat.
- *pH* (Deschutes River Mile 162.6 to 168.2, Upstream end of Tumalo State Park to Columbia Street, multiple uses, summer, 6.5 – 8.5 SU): A logarithmic measure of the hydrogen ion concentration of the water, pH levels outside the generally preferred range of 6.5 to 8.5 can affect the toxicity of and availability of pollutants (e.g., ammonia and metals) to aquatic organisms. The pH fluctuates depending on the activity of primary producers, and may change because of failing septic or sewer systems and urban or agricultural runoff.
- *Temperature* (Deschutes River Mile 126.4 to 189.4, Steelhead Falls to Harper Bridge, All Year, 18 degrees C): Outside of preferred ranges, temperature can directly or indirectly result in mortality for aquatic organisms. Additionally broad, shallow zones in rivers cause warming, leading to increased algae production and the resulting harm to habitat (see *Chlorophyll a* and DO).
- *Turbidity* (Deschutes River Mile 168.2 to 189.4, Columbia Street to Harper Bridge, Spring/Summer, 10% NTU increase): Turbidity measures the clarity of the water column. Long exposure to high turbidity levels can reduce a fish's ability to see and obtain food and can clog fish gills affecting the ability to breathe. Turbidity can also reduce the penetration of sunlight into the water column, leading to algal die off.
- *Sedimentation* (Deschutes River Mile 168.2 to 189.4, Columbia Street, to Harper Bridge, Spring/Summer, >10% NTU increase): Sediment loading can occur both naturally and as a result of human activities, such as land management,

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1 Oregon Department of Environmental Quality, 2004/2006 303(d) List

2 UDWC, 2005.

3 Oregon Department of Environmental Quality, 2010 303(d) List

4 UDWC, 2010.

stormwater, construction, logging, roadway, flow regulations and agricultural activities. Sediment can smother fish eggs and benthic organisms.

The State is currently developing a Total Maximum Daily Load (TMDL) for the Upper and Little Deschutes Subbasin, involving calculating the maximum amount of each of these pollutants that the Deschutes River and Tumalo Creek can receive and still meet water quality standards, as well as an allocation of that amount to pollutant sources. It is important to note that this is a comprehensive list of pollutants as required by Section 303(d) of the federal Clean Water Act (known as 303(d)-listed pollutants of concern) and urban runoff may not be the source, or the sole source. These calculations are known as Total Maximum Daily Loads, or TMDLs.<sup>5</sup> Once developed, not meeting the load allocations could result in violations of the Federal Clean Water Act. The *ISWMP 2022* is designed to help minimize the contribution of these pollutants from City urban runoff through its MS4 system.

In addition to water quality impacts, stormwater discharges can result in adverse affects for the aesthetic characteristics of the Deschutes River throughout the City, including within Mirror Pond. Stormwater sediment, trash and debris may all contribute to visual impairment.

**Groundwater.** Currently, approximately half of the City's potable water is obtained from water wells, several of which are located within the UGB; and other water franchises that operate within the City (e.g., Roats and Avion) depend solely on groundwater. Groundwater quality is extremely good. The City is committed to protecting the quality and quantity of this water source.

Sewage, industrial and commercial waste water, and stormwater have been discharged underground for decades in Central Oregon. Public water system operators have been required to regularly test their water for over 25 years. In the late 1990s, the United States Geological Survey and others performed extensive sampling and analysis of water wells in the Bend area. Groundwater monitoring well networks have been in operation for many years at the City's wastewater treatment plant evaporation ponds and the Deschutes County landfill. None of the monitoring data reveal any pattern of drinking water standards violations or significant groundwater quality degradation. Levels remain at background. See Table I-1.<sup>6</sup>

Public drinking water in and around Bend generally is obtained from wells that are over 300 feet deep. The principal (deep) aquifer is overlain with shallower aquifers that generally are not tapped for public drinking water but may include private wells (see UIC Systemwide Assessment). Oregon's groundwater protection rules require that all aquifers be protected.

Even though the geology in the area is generally porous, there is an opportunity for underground discharges to disperse before they reach the groundwater. In addition, the annual estimated groundwater recharge in the Cascades is 3,800 cfs (see Figure 6). Theoretically, this would quickly dilute any stormwater-related contamination to levels that would not be detected by the methods normally used to analyze drinking water

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<sup>5</sup> U.S. Environmental Protection Agency, February 2005.

<sup>6</sup> As compiled by GSI, Inc.

Table I-1. Available Municipal Groundwater Well Analytical Data in Bend

Analyte	Period of Record	No. Samples	No. Detections	MCL	Range	Comments
<i>City of Bend Outback Well #2</i>						
PCP	1997	1	0	0.001	--	--
Toluene	1997	1	0	1	--	--
2,4-D	1997	1	0	0.07	--	--
Lead	1997	1	1	0.015	0.001	Detected sample from 4/1/1997
Naphthalene	--	--	--	--	--	--
Copper	1997	1	1	1.3	0.0057	Detected sample from 4/1/1997
DEHP	1997	1	0	0.006	--	--
Benzo(a)pyrene	1997	1	0	0.0002	--	--
<i>City of Bend Rock Bluff Well #2</i>						
PCP	--	--	--	--	--	--
Toluene	--	--	--	--	--	--
2,4-D	1992	1	0	0.07	--	--
Lead	1992	1	1	0.015	0.008	Detected sample from 8/4/1992
Naphthalene	--	--	--	--	--	--
Copper	1992	1	1	1.3	0.034	Detected sample from 8/4/1992
DEHP	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--
<i>City of Bend Cooperstone Well</i>						
PCP	2003-2008	5	0	0.001	--	--
Toluene	2003-2008	4	0	1	--	--
2,4-D	2003-2008	5	0	0.07	--	--
Lead	2003-2005	2	1	0.015	ND - 0.00301	Detected sample from 11/18/2003
Naphthalene	--	--	--	--	--	--
Copper	--	--	--	--	--	--
DEHP	2003-2008	5	0	0.006	--	--
Benzo(a)pyrene	2003-2008	5	0	0.0002	--	--
<i>City of Bend Westwood Well</i>						
PCP	1993-2008	9	0	0.001	--	--
Toluene	1993-2008	8	0	1	--	--
2,4-D	1993-2008	9	0	0.07	--	--
Lead	1988-2002	6	1	0.015	ND - 0.005	Detected sample from 2/26/1988
Naphthalene	--	--	--	--	--	--
Copper	1983-1999	2	0	1.3	--	--
DEHP	1993-2008	10	0	0.006	--	--
Benzo(a)pyrene	1993-2008	10	0	0.0002	--	--
<i>City of Bend Hole Ten Wells (Hole Ten N &amp; Hole Ten S)</i>						
PCP	2005-2008	3	0	0.001	--	--
Toluene	2005-2008	2	0	1	--	--
2,4-D	2005-2008	3	0	0.07	--	--
Lead	2006-2009	2	1	0.015	ND - 0.004	Detected sample from 9/9/2009
Naphthalene	--	--	--	--	--	--
Copper	--	--	--	--	--	--
DEHP	2005-2008	3	0	0.006	--	--
Benzo(a)pyrene	2005-2008	3	0	0.0002	--	--
<i>Avion Dyer Well</i>						
PCP	2008	2	0	0.001	--	--
Toluene	2008	1	0	1	--	--

Analyte	Period of Record	No. Samples	No. Detections	MCL	Range	Comments
2,4-D	2008	2	0	0.07	--	--
Lead	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--
Copper	--	--	--	--	--	--
DEHP	2008	2	0	0.006	--	--
Benzo(a)pyrene	2008	2	0	0.0002	--	--
<b>Roats 2, Roats 4 and Roats 9</b>						
PCP	1993-2010	6	0	0.001	--	--
Toluene	1993-2010	6	0	1	--	--
2,4-D	1993-2010	6	0	0.07	--	--
Lead	1988-2008	5	0	0.015	--	--
Naphthalene	--	--	--	--	--	--
Copper	1988	1	0	1.3	--	--
DEHP	1993-2010	6	0	0.006	--	--
Benzo(a)pyrene	1993-2010	6	0	0.0002	--	--
<b>Roats 9</b>						
PCP	1995	1	0	0.001	--	--
Toluene	1995	1	0	1	--	--
2,4-D	1995	1	0	0.07	--	--
Lead	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--
Copper	--	--	--	--	--	--
DEHP	1995	1	0	0.006	--	--
Benzo(a)pyrene	1995	1	0	0.0002	--	--

## Notes

<sup>1</sup> Data source is Department of Human Services (DHS) SDWIS Data, <http://170.104.63.9/namelook.php>, accessed May 31, 2011. The City of Bend, Avion, and Roats also operate 18, 12 and 5 additional wells, respectively. Analytical data for these wells are not available on the DHS website.

MCL = maximum contaminant level

PCP = pentachlorophenol

DEHP = di(2-ethylhexyl)phthalate

samples. Moreover, conservatively less than one to two percent of the groundwater recharge is from urban area stormwater underground injection (USGS, 2001; GSI, 2011). The City has developed a groundwater protectiveness model that has been approved by DEQ to determine a suitable separation distance that is appropriate to ensure that UICs are protective of groundwater in Bend (Ibid). The City has also worked to better understand the number and location of private wells within the vicinity (see UIC Systemwide Assessment).

## GOALS AND STRATEGY

The overall goal of this Plan is to create a program that maintains the high level of water quality historical to the area and meets the regulatory requirements of both the Phase II NPDES MS4 stormwater program and the UIC program by minimizing stormwater pollution to the maximum extent practicable and to meet the numerical limits set for UIC discharges. Based on the specific characteristics of Bend, the City feels it would be most effective to focus its efforts in this permit period on meeting the following seven strategic objectives:<sup>7</sup>

<sup>7</sup> Goals expressed by DEQ staff for the permit period, as understood by the City as regulatory priorities, are provided in italics.

- *Stormwater System Retrofit Strategy and Development, and Underground Injection Control Pollution Prevention.* Conduct effective retrofits of the UIC and piped system to the degree necessary and that staffing and budgets allow based on the highest risk facilities first. The UIC system has a direct benefit to the surface water (NPDES) system by reducing the flow volumes (and therefore pollutant volumes) to the river, while helping to maintain a more natural hydrograph and aquifer recharge rate. Public and private UICs in Bend recharge approximately 9,687 ac-ft per year to the underlying groundwater aquifers. This provides approximately 1.8% of the total groundwater recharge through Bend (Brown and Caldwell, Annual Stormwater Runoff Recharge to UICs, GSI, April 20, 2011). UICs also play a role in protecting the surface waters like the Deschutes River from associated pollutant loads that, without UICs or surface controls, may otherwise be directly piped to the River. The UICs help maintain a more natural hydrograph by injecting stormwater near the source, and reducing the excess flows that come off of impervious surfaces that could otherwise be sent directly to the River. The injected stormwater has an opportunity to filter through the soil gaining some degree of attenuation prior to reaching the groundwater aquifers. Some of the groundwater may daylight again through springs downstream such as depicted in Figure 6. Because the Deschutes is a gaining stream, the flows that reach the Deschutes River from stormwater discharges through UICs have gained some attenuation. The amount was recently modeled through a groundwater protectiveness demonstration analysis that will help target future management of UICs, bringing benefit to both groundwater aquifers and surface water bodies (GSI, 2011). Additionally, as part of existing redevelopment projects or needed system repairs, the City will also seek to conduct retrofits of affected surface water outfalls based on staffing and financial availability.
- *Information and Tracking Tools; Documentation of Enforcement Response and Other Procedures; Refinements for Municipal Operations Pollution Prevention Strategies and Illicit Discharge Detection and Elimination.* Meet the performance standards outlined in this plan (see Appendix B).
- *Documentation of Enforcement Response and Other Procedures.* Continue to ensure proper legal authority and funding sufficient to allow for effective implementation of the plan components designed to protect valuable water resources. Meet the regulatory requirements related to stormwater quality through implementation of the City's revised standards and specifications, Bend Code Title 16, and related code while taking into account the City's limited resources as a result of challenging economic realities.
- *Post-construction stormwater requirements that incorporate flow-reduction.* Continue to address stormwater controls related to development—both construction and post-construction—through continued education and enforcement of development rules to the maximum extent practicable given staffing and funding levels, and while taking into account the economic realities of the City to pursue the most cost-effective approaches considering the lifespan of the facilities.

- *Educational and outreach programs targeting specific local issues of concern.* Throughout all of the elements, public education will continue to be a key factor since many of the changes being implemented within this time frame still involve relatively new concepts for the area and potential paradigm shifts needed from municipal staff, the business and industry community, and the public. For cost-effectiveness, existing educational materials will be used to the extent possible, modified to the specific situation in Bend. Educational materials will focus on targeted pollutant reduction (see Table I-2).
- *Increasing system understanding and local BMP effectiveness.* Focus on adhering to best management practices within the City and to install demonstration projects, so that the City's municipal operations will serve as a model for the rest of the community, and will allow the City to use its experiences to help others.
- *Cost-effective coordination efforts.* In addition, the City will continue to seek to work with regional groups in areas that are cost-effective to partner, such as public education and monitoring.

The pollutants or potential pollutant indicators that the City will be aware of and/or focus most on reducing to the degree possible through stormwater inputs (as stormwater may not be the main or a major contributor to pollutant loads) include cadmium, chromium, dissolved oxygen, lead, nitrogen, pH, sediment, temperature, and turbidity (Table I-2). The City will also monitor and adjust focus as prudent based on the monitoring results on addressing: antimony, arsenic, benzo(a)pyrene, cadmium, copper, Di(2-ethylhexyl)phthalate (DEHP), Pentachlorophenol (PCP), Toluene, Zinc, and Chlorophyll a. The tasks and best management practices task described throughout will focus on these pollutants and any others that become known during the permit cycles.

**Table I-2. Pollutants of Focus During Permit Periods<sup>8</sup>**

<b>Pollutant or Potential Pollutant Indicator</b>	<b>Priority Level</b>	<b>Reason</b>	<b>Potential Source Examples<sup>9</sup></b>
Dissolved Oxygen (via targeting nutrients such as phosphates and nitrates)	1	State 303(d)-listed pollutant of concern for Deschutes River through Bend.	Increases in primary productivity
Lead	1	WPCF Permit monitoring pollutant with 9 (7.7%) exceedances in Central Oregon of UIC screening levels (and highest statewide at 12.7%). Instances of background levels of lead have	Car batteries; wheel balances ceramic glazes; coating of electrical cords; fishing sinkers; shielding; organ pipes; electrodes

<sup>8</sup> In alphabetical order by priority level. Highest priority targeted pollutant for permit period is lead.

<sup>9</sup> Source: Kennedy/Jenks Consultants: Effects of Structural Best Management Practices on Stormwater Quality in Oregon, Oregon ACWA, February 4, 2011.

Pollutant or Potential Pollutant Indicator	Priority Level	Reason	Potential Source Examples <sup>9</sup>
		been measured in drinking water wells (see Table 1-2). Early evidence suggests sedimentation manholes may not be effective in reducing this pollutant.	solder for electronics; high voltage power cables; oil-based paints; roofing material, cladding, flashings, gutters, statues; semiconductors; photovoltaic cells.
Nitrogen (Total)	1	City of Bend Ambient Water Quality Monitoring; stormwater monitoring results in one exceedance of UIC screening levels. Early evidence suggests sedimentation manholes may not be effective in reducing pollutant.	Fertilizer runoff, sediment inputs, contaminated groundwater (septic systems)
pH	1	State 303(d)-listed pollutant of concern for Deschutes River through Bend.	Increases in primary productivity, wet concrete
Sedimentation/Turbidity	1	State 303(d)-listed pollutant of concern for Deschutes River through Bend.	River flow fluctuations, construction site runoff, winter road care practices. natural and anthropocentric sources.
Antimony	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend samples at present (limited monitoring data to date).	Variety of applications e.g. flame retardant; activator in glass industry; flocculent in titanium dioxide production; paints and adhesives; pigments, ceramic frits
Benzo(a)pyrene	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend yet (limited monitoring data to date). Initial modeling suggests it does not move very deep underground prior to dispersion, biodegradation and	Exhaust fumes; incomplete combustion of organic material; charbroiled food; wood burning

<b>Pollutant or Potential Pollutant Indicator</b>	<b>Priority Level</b>	<b>Reason</b>	<b>Potential Source Examples<sup>9</sup></b>
		retardation. Preliminary studies suggest BMPs help with removal in areas with >1,000 vehicle ADT.	
Copper	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend yet (limited monitoring data to date)	Variety of applications including piping, electrical, household products; coinage; biomedical; chemicals; automobile brakes
Di(2-ethylhexyl)phthalate (DEHP)	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend yet (limited monitoring data to date). Solubility allows it to move deeper underground than other pollutants prior to dispersion, biodegradation and retardation. Studies suggest BMPs help with removal.	Plasticizer in manufacturing of PVC. Common laboratory contaminant.
Pentachlorophenol (PCP)	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend yet (limited monitoring data to date) but have been found in Portland. Solubility allows it to move deeper underground than other pollutants prior to dispersion, biodegradation and retardation. Early evidence suggests sedimentation manholes may not be effective in reducing pollutant.	Wood preservative (e.g. restricted to utility poles and RXR ties), pesticide
Zinc (Total)	2	WPCF Permit monitoring pollutant. UIC Screening level exceedances not found in Bend yet (limited monitoring data to date).	Alloys; galvanized metals; dry batteries; roof cladding; coinage; paints; rubber; cosmetics; pharmaceuticals; floor coverings; plastics; inks; soap; textiles; ointments; X-ray and TV screens; fluorescent lights; automobile

<b>Pollutant or Potential Pollutant Indicator</b>	<b>Priority Level</b>	<b>Reason</b>	<b>Potential Source Examples<sup>9</sup></b>
			brakes
Cadmium (Total)	3	One exceedance of UIC screening levels out of 117 samples in Central Oregon.	Batteries; coatings; plating; stabilizers
Chlorophyll a	3	State 303(d)-listed pollutant of concern for Deschutes River through Bend. City of Bend 5 year ambient monitoring indicated state standard is being met.	Elevated nutrient levels (e.g., septic systems, fertilizers).
Chromium	3	One exceedance of UIC screening levels out of 115 samples in Central Oregon.	Metallurgy; dye; pigments; tanning; refractory materials
Temperature	3	State 303(d)-listed pollutant of concern for Deschutes River through Bend and Tumalo Creek.	Shallow, slow moving water; lack of vegetative cover. Not commonly known as a stormwater pollutant.
Toluene	3	UIC Screening level exceedances not found in Bend (limited monitoring data to date). Solubility allows it to move deeper underground than other pollutants prior to dispersion, biodegradation and retardation.	Solvent

**ORGANIZATION OF THE ISWMP**

The nine elements of this ISWMP are:

- Program Administration, Planning, and Financing (Section II)
- Public Education and Outreach on Stormwater Impacts (Section III)
- Public Involvement and Participation (Section IV)
- Illicit Discharge Detection and Elimination (Section V)
- Construction Site Stormwater Runoff Control (Section VI)
- Post-Construction Stormwater Management in New and Redevelopment (Section VII)
- Municipal Operations (Section VIII)
- Monitoring (Section IX)
- Underground Injection Controls (Section X).

Within each element are:

- a. BMPs to be implemented. The BMPs are numbered by their section followed by a hyphen and an identifying number within that section.
- b. Rationale used to determine the selected BMP(s)
- c. Measurable goals and interim milestones for each BMP
- d. Designation of person(s) responsible for the implementation of each BMP.

## **SECTION II: PROGRAM ADMINISTRATION, PLANNING AND FINANCING**

### **REGULATORY REQUIREMENT**

National Pollutant Discharge Elimination System Stormwater Discharge Permit, DEQ, Permit Number 102901:

**Schedule A Discharge Limitations and Stormwater Management Program:**

**2. Stormwater Management Program Requirements.**

a. The permittee must develop, implement, enforce, and measure the effectiveness of a Stormwater Management Program (SWMP) designed to implement the requirements of the federal Clean Water Act and Oregon administrative rules and protect water quality by requiring controls to reduce the discharge of pollutants to the maximum extent practicable. The SWMP must include management practices, control techniques, and provisions for the control of pollutants.

**Schedule D Special Conditions**

1. **Legal Authority.** The permittee must maintain, through ordinance, interagency agreement or other means, adequate legal authority to implement and enforce the provisions of this permit.

Water Pollution Control Facility Permit – Underground Injection Control, DEQ, Municipal Permit:

**Schedule D Special Conditions**

1. **Legal Authority.** You must adopt and maintain, through ordinance or other means, adequate legal authority to implement and enforce the provisions of this permit....
2. **Permittee Personnel Responsible for Permit.** You must identify the key personnel positions and contact information responsible for establishing and maintaining compliance with all conditions of the permit. Contact information includes the employee's name, phone number, business section where the employee works, and the employee's area of responsibility for the permit.
5. **Underground Injection Control System Management Plan (UICMP).** ... ....you must submit an underground injection control system management plan to us for approval....

**EXISTING CONDITIONS/ CURRENT PROGRAMS EFFECTIVENESS ANALYSIS**

During the initial permit period the City was effective in:

- a) Setting up a distinct stormwater utility designed mainly to meet operation and maintenance and regulatory services (through Council Resolution, April 2007)
- b) Passing a stormwater utility service charge to provide enterprise funding of the stormwater utility (through Council Resolution, June 2007 and yearly thereafter per the Fees Resolution to initially take effect July 1, 2007).
- c) Meet measurable goals for internal and external coordination meetings;
- d) Conduct a review of the City's development rules from a watershed protection perspective and thoroughly update the City's Standards and Specifications to improve stormwater management practices and facilities; and
- e) Meet all annual reporting and planning review regulatory deadlines.

The City continues work by holding management and staff level meetings to coordinate stormwater activities and planning, to improve implementation of the Integrated Stormwater Management Plans, and to coordinate special projects such as implementation of the Stormwater Ordinance (Bend Code Title 16). City staff have found that both the internal Stormwater Action Team and the Stormwater Quality Public Advisory Group generally have been very useful in helping to shape the program. One lesson-learned through the initial permit period, however, is that these need to be supplemented with continual periodic education and buy-in from top level City managers to ensure that interdepartmental stormwater coordinators (SC) staff involved have appropriate authority and support to garner appropriate approval decisions. Without the attention and ongoing support of top-level managers or adequate communication within and across departments with those managers, costly delays can occur that have the ability to jeopardize permit compliance.

City staff are also actively participating in permit negotiations for the WPCF-UIC permit and this *ISWMP 2022* is designed to be both the guiding Underground Injection Control System Management Plan for that permit as well as the Stormwater Management Plan for the NPDES MS4 permit for surface water discharges.

Continuing from the first NPDES permit period, the City has continued to place priority on reducing erosion and sediment impacts because:

- Sedimentation and turbidity are listed as pollutants of concern in the Deschutes River through Bend and are influenced by stormwater flows;
- Even though we do not get as much overall rain here as other areas, the intensity of storms here can result in significant erosion and sedimentation if not properly managed; and
- Sedimentation can result in costly impacts such as localized flooding, and clogging of dry wells and pretreatment systems.

Improving the planning for and installation of post construction controls to adequately address both the quantity and quality of stormwater runoff has also been a high priority during this first permit period. The creation of a region-wide stormwater site design manual, the *Central Oregon Stormwater Manual* (2010), to provide guidance in these areas, and the completion of a major overhaul to the City's standards and specifications (effective July 1, 2011) are major success stories resulting from this focus. Additionally, the City has recently adopted its comprehensive stormwater ordinance (Bend Code Title

16) to further improve its legal authority. These areas of added emphasis will continue into the new permit cycles until compliance with Bend Code Title 16 has become rote standard operating procedure.

Since a stormwater quality program is still relatively new to the Bend area, educating the public, businesses, and city staff about the importance of watershed protection, total water management, stormwater quality, and simple actions that can be taken to improve their water quality has been and will also continue to be a focus.

The City administers the stormwater quality program through dedicated staffing in the Public Works Department with input and guidance from two main advisory groups, a Stormwater Quality Public Advisory Group (PAG) that serves to provide technical and programmatic guidance to City staff and an internal committee, historically called the Stormwater Action Team (SWAT) and now called Stormwater Coordinators (SC) comprised of interdepartmental stormwater coordinators. These groups are designed to be composed of individuals with the knowledge, skills and experience needed to deal with the full range of stormwater issues. These have been key working groups in the development and implementation of the City's stormwater management program. The PAG and SC may call on other individuals with specific knowledge, skills and expertise as needed.

More recently, the City has convened a Utility Infrastructure Advisory Committee, designed to provide recommendations to the City Council on utility infrastructure related considerations, including water, wastewater, and stormwater. Additionally, within the past two years the City Manager has convened other interdepartmental coordination meetings comprised of department heads and upper level managers that collaborate on a myriad of issues affecting the City.

## **GENERAL APPROACH**

Education, training and exchange of information will continue to be emphasized throughout the development and implementation of the *ISWMP 2022*. The City believes that continually raising the level of stormwater awareness among City employees and the public is a necessary and important step for understanding.

Because stormwater is an issue that goes across departmental boundaries—requiring the work and knowledge of planners, engineers, code enforcement, building department, inspectors, public works streets, public works wastewater, public works stormwater, and public works water division, water quality laboratory staff, and communication managers—a successful program can only occur with useful pathways to conduct both intradepartmental and interdepartmental communication and coordination. Therefore this section seeks to refine those pathways, along with adequate funding, legal authority to implement, and tasks to meet the required review and reporting tasks.

## **RESPONSIBLE PERSONNEL**

Table II-1 identifies the key personnel positions and contact information for those responsible for establishing and maintaining compliance with the conditions of the NPDES and WPCF-UIC permits. Per the WPCF-UIC permit requirements, contact information includes the employee's name, phone number, business section, and the

employee's areas-of-responsibility for the permit. The City shall include notifications of any changes to key personnel position or areas of responsibility for the permit within the annual reports.

Currently, Paul Rheault (Public Works Director) is assisted by Tom Hickmann (Assistant Public Works Director/City Engineer) on conducting CIP retrofit projects and stormwater program coordination; by Hardy Hanson (Streets/Stormwater Field Operations Manager) for municipal operations assistance; by Steve Prazak (Water Quality Manager) for monitoring assistance; and by Wendy Edde (Stormwater Program Manager) for general permit compliance assistance. The main phone number given for Paul Rheault can be used to reach all the above-named staff as well. Mel Oberst (Community Development Director) is assisted by Colin Stephens (Current Planning Manager), and Joseph McClay (Building Division Manager).

## **SELECTED BEST MANAGEMENT PRACTICES**

The following six best management practices have been chosen to meet the administration, planning, and reporting needs as outlined in this section, Section II, of this integrated plan.

### **BMP II-1. Administration and Coordination (MS4 and UIC)**

Description and Rationale: With the start of the first NPDES permit, the City has historically depended on a Stormwater Action Team (SWAT) for interdepartmental administration and coordination of the stormwater program. In the intervening years, other interdepartmental meeting groups have also been formed. The City is committed to efficient coordination among departments and the City Manager has recently instituted an interdepartmental coordination meeting--currently called "Economic Development & Infrastructure Strategic Management Meeting"-- comprised of City Management, and upper level managers that meets on a myriad of issues that may include stormwater issues when necessary. The City staff have also found that a singular meeting of all responsible parties may not be always the most efficient way to coordinate, as some staff may have a specific role wherein a lot of the other meeting items do not relate.

To be efficient and effective in times of limited staffing, the City seeks to refine its coordination processes. In that vein, the City will have meetings as appropriate with responsible parties or their designees. Some meetings will be of the entire oversight group of Stormwater Coordinators (SC), formerly called the SWAT; and many will be targeted subgroups working on specific tasks, as is the most efficient and effective to

Table II-1. Responsible Personnel

Permit Area of Responsibility	Specific BMPs	Lead Name <sup>10</sup>	Title (bold designates lead)	Department/ Division	Phone
Overall Interdepartmental Communication	All	<b>Eric King</b>	<b>City Manager</b>	City Administration	541-388-5505
Program Administration, Planning, and Finance	II-1, II-2, II-3, II-4, II-5	Eric King	City Manager	City Administration	541-388-5505
	II-1, II-2, II-3, II-4, II-5	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	II-1, II-2, II-3, II-4, II-5	<b>Mel Oberst</b>	<b>Community Development Director</b>	Community Development Department	541-388-5580
	II-3	Sonia Andrews	Finance Director	Finance Department	541-388-5509
	II-1, II-2, II-3	<b>Tom Hickmann</b>	<b>City Engineer</b>	Public Works	541-317-3000
	II-1, II-2, II-3, II-4, II-5	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Public Education and Outreach	III-1, , III-3, III-4, III-5	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	III-1, III-3, III-5,	Justin Finestone	Communications Manager	City Administration	541-388-5516
	III-1	Mel Oberst	Community Development Department Director	Community Development Department	541-388-5580
	III-1, III-2, III-3, III-4, III-5	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Public Involvement and Participation	IV-1, IV-2, IV-3, IV-4	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	IV-2	Mel Oberst	Community Development Department—Code Enforcement	Community Development Department—Code Enforcement	541-388-5580
	IV-2, IV-3, IV-4	Justin Finestone	Communications Manager	City Administration	541-388-5516
	IV-1, IV-2, IV-3,	Wendy Edde	Stormwater Program	Public Works	541-317-3000

10 Lead Responsible Person in **Bold** with assistance from personnel in regular-type text.

<b>Permit Area of Responsibility</b>	<b>Specific BMPs</b>	<b>Lead Name<sup>10</sup></b>	<b>Title (bold designates lead)</b>	<b>Department/ Division</b>	<b>Phone</b>
	IV-4		Manager		
	IV-3	Cheryl Howard	Volunteer Coordinator	City Administration	541-815-5559
Illicit Discharge Detection and Elimination	V-1, V-2, V-3, V-5, V-6	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	V-5, V-6	Mel Oberst	Community Development Department Director	Community Development Department—Code Enforcement	541-388-5580
	V-3	Tom Hickmann	City Engineer	Public Works	541-317-3000
	V-3	Hardy Hanson	Street/Stormwater Operations Manager	Public Works	541-317-3000
	V-2, V-4	Justin Finestone	Communications Manager	City Administration	541-388-5516
	V-3	Cheryl Howard	Volunteer Coordinator	City Administration	541-815-5559
	V-1, V-2, V-3	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Construction Site Stormwater Activities	VI-1, VI-2	<b>Mel Oberst</b>	<b>Community Development Director</b>	Community Development Department	541-388-5580
	VI-1, VI-2	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	VI-1, VI-2	<b>Tom Hickmann</b>	<b>City Engineer</b>	Public Works	541-317-3000
	VI-2	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Post Construction Stormwater Management In New and Redevelopment	VII-1, VII-2	<b>Mel Oberst</b>	<b>Community Development Director</b>	Community Development Department	541-388-5580
	VII-1, VII-2	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	VII-1, VII-2	<b>Tom Hickmann</b>	<b>City Engineer</b>	Public Works	541-317-3000
	VII-2	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Pollution Prevention/Good Housekeeping for Municipal Operations	VIII-1, VIII-2, VIII-3, VIII-4	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	VIII-5	<b>Mel Oberst</b>	<b>Community Development Director</b>	Community Development Department	541-388-5580
	VIII-1, VIII-2,	Hardy Hanson	Street/Stormwater	Public Works	541-317-3000

<b>Permit Area of Responsibility</b>	<b>Specific BMPs</b>	<b>Lead Name<sup>10</sup></b>	<b>Title (bold designates lead)</b>	<b>Department/ Division</b>	<b>Phone</b>
	VIII-3, VIII-4		Operations Manager		
	VIII-1	Terry Burks	Utilities Manager	Public Works	541-317-3000
	VIII-3	Tom Hickmann	City Engineer	Public Works	541-317-3000
	VIII-2, VIII-3, VIII-4	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Monitoring	IX-1, IX-2, IX-3	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	IX-1, IX-2, IX-3	Steve Prazak	Water Quality Manager	Public Works	541-317-3000
	IX-1, IX-2, IX-3	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
Underground Injection Controls (City-owned)	X-1, X-2, X-3	<b>Paul Rheault</b>	<b>Public Works Director</b>	Public Works Department	541-317-3000
	X-3	<b>Tom Hickmann</b>	<b>City Engineer</b>	Public Works	541-317-3000
	X-2	Hardy Hanson	Street/Stormwater Operations Manager	Public Works	541-317-3000
	X-1, X-2, X-3	Wendy Edde	Stormwater Program Manager	Public Works	541-317-3000
	X-2, X-3	Spencer Sanvitale	Utility Data Systems Program Manager	Public Works	541-317-3000

coordinate; a few issues may rise to the department-head and policy level of the currently-named Economic Development and Infrastructure Strategic Management meetings. The City will have at least quarterly coordination meetings with responsible parties or their designees either as subgroups, full SC meetings, or the occasional highest-level department-head meeting. The full group of responsible parties will also be kept apprised of stormwater activities and information through email. The goal of these meetings and communications is to cost-effectively create success within the stormwater program and the City by keeping one another apprised of activities, and determining pathways to improve staff coordination, efficiencies and resource sharing while meeting regulatory requirements to address stormwater quality and protecting valuable surface water and groundwater resources.

Staff may also participate on the stormwater-related work groups hosted by other agencies such as the Central Oregon Intergovernmental Council (COIC) and Oregon Association of Clean Water Agencies (ACWA).

In addition, a Stormwater Quality Public Advisory Group (PAG) will also continue to meet to provide public oversight, ideas, and advice (see BMP IV-1 for more details).

**Measurable Goals:** Stormwater coordination staff across divisions and departments will meet as needed and at least four times per year. A list of responsible party staff or their designees participating in meetings will be noted in the annual report along with meeting summaries. Participation in other as-needed work groups will be tracked and noted.

**Schedule:** At least quarterly, on average, meetings for stormwater coordination will continue starting in FY12-13 and continuing through the permit period.

The task deadlines assume permits are in place by June 30, 2012. Deadlines may slide accordingly as the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2012) to ensure the plan is acceptable prior to resources are spent on implementation.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Administer and coordinate implementation of the ISWMP	Public Works Director; Community Development Director with assistance from City Engineer, Stormwater Program Manager	Ongoing	Ongoing
2	Communicate level of priority importance to department heads	City Manager	Periodic as Needed	Periodic as Needed
3	Hold stormwater coordination meetings	Public Works Director; Community Development Director with assistance from Stormwater	Ongoing	Ongoing

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
		Program Manager		
4	Optionally participate in external stormwater workgroups (e.g., COIC, ACWA) as appropriate	Stormwater Program Manager	Ongoing (as appropriate; optional)	Ongoing (as appropriate; optional)
5	Convene other ad hoc workgroups as necessary	Public Works Director or Community Development Director, with assistance from Stormwater Program Manager	As needed	As needed

**Responsible Persons:** The Public Works Director, City Engineer, and the Community Development Director are responsible for implementation of this BMP, to be supported by other staff as needed. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

#### **BMP II-2. Legal Authority (MS4 and UIC)**

**Description:** The City of Bend has reviewed its development rules and, between 2008 and present, drafted and refined the City's Standards and Specifications to improve stormwater management, to take effect on July 1, 2011; and has drafted and refined a stormwater ordinance (see Bend Code Title 16) that was approved by the City Council on January 4, 2012). For the *ISWMP 2022* planning period, Bend will manage runoff issues through the enactment and enforcement of these updated regulations.

**Rationale:** An implementable stormwater ordinance and development standards are necessary to provide adequate authority for the City to implement the stormwater management plan and meet the requirements of Oregon Administrative Rules and the Clean Water Act (with respect to stormwater flowing to surface water) and the Safe Drinking Water Act (with respect to stormwater flowing underground). Ordinances and standards provide the ability to impose citations or fines, which can serve as strong motivation for compliance.

**Measurable Goals:** The City will track Bend Code Title 16 implementation and compliance, through quantifiable measures such as number of erosion and sediment control plans provided per number of projects disturbing greater than 5,000 square feet; and number and sizing of post-construction controls installed; and number of enforcement actions. After a ramp-up period, City will seek as a general goal to reach 60% or above permit compliance by start of FY14-15.

#### **Schedule:**

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin Implementation	Public Works	February 2012	June 30, 2014

Task #	Description	Responsible Person	Task Deadline Start	Finish
	of Bend Code Title 16 Ramp-up Period	Director (PWD), Community Development Director (CDD), City Engineer, City Manager, Stormwater Program Manager		
2	Continue Full Implementation of Bend Code Title 16	Public Works Director (PWD), Community Development Director (CDD), City Engineer, City Manager, Stormwater Program Manager	FY14-15	Ongoing
3	Conduct Necessary Recordkeeping to Meet Measurable Goals, for inclusion in annual reports	Public Works Director (PWD), Community Development Director (CDD) , City Engineer, Stormwater Program Manager	February 2012	Ongoing

**Responsible Persons:** The Public Works Director, Community Development Director, and City Engineer with assistance from public works staff are responsible for implementation of this BMP. Public Works staff will work to coordinate with Fire and Police for record-keeping to the degree the latter two Departments have separate resources and availability to assist. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

### **BMP II-3. Financing (MS4 and UIC)**

**Description:** The City intends to continue to ensure the utility is funded with an appropriate service charge level taking into account impacts of other utility rate levels and will continue to seek out other sources of funding such as grants to help pay for stormwater quality and drainage management programs.

**Rationale:** The City's stormwater utility was created in 2007 to provide operation and maintenance and water quality protection services via regulatory compliance to users, along with some capital improvement projects to address flooding problems. The service charge was set at \$4.00 per equivalent residential unit, and was enacted to begin July 1, 2007.

**Measurable Goals and Schedule:** The City will ensure adequate funding to implement this integrated stormwater management plan and continue to meet operation and maintenance needs.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Ensure adequate funding to continue to implement the ISWMP.	Finance Director, Community Development Director, Public Works Director; City Engineer; Stormwater Program Manager	Ongoing	Ongoing

**Responsible Persons:** The City Manager, with assistance from Public Works Director and Community Development Director, is ultimately responsible for ensuring that the stormwater program is adequately funded.

#### **BMP II-4. Planning (MS4 and UIC)**

**Description and Rationale:** City staff will annually review the *ISWMP 2022* to the degree allowed by permitting requirements, plan specific activities for the coming year, and revise the *ISWMP 2022* as needed. The City expects to update this Plan as often as necessary based on new information, but intensively at the midpoint to address the reissuance of the NPDES Permit, which is a 5 year permit, and per the requirements of the UIC WPCF permit to review and update the plan during the 5<sup>th</sup> year after permit issuance. This is especially true with respect to the deadlines. The schedules may be updated as the advisory groups identify priorities and tasks.

**Measurable Goals and Schedule:** The results of the review and any changes to the ISWMP will be reported on as part of the annual report, due by November 1 of each year.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Annually review ISWMP, plan activities for coming year.	Public Works Director; Community Development Director, Stormwater Program Manager	Ongoing	Ongoing, yearly
2	Update ISWMP as allowed/appropriate	Public Works Director; Stormwater Program Manager	Ongoing	Ongoing

**Responsible Persons:** The Public Works Director and Community Development Director are responsible for implementing this BMP, with assistance from the Stormwater Program Manager and SC team. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

**BMP II-5. Annual Reporting (MS4 and UIC)**

Description and Rationale: The City will provide an annual report to be submitted to DEQ by November 1 each year of the activities taken and achievements made in the previous fiscal year. The report will include measurements of and discussions of the effectiveness of the program and its individual components. In addition to verifying compliance with NPDES permit and UIC WPCF permit requirements, the City may use the following or other tools to measure the effectiveness of various components, as appropriate:

- Surveys (meetings, workshops, website)
- Attendance lists
- Number of stormwater drainage calls by age of development
- Stormwater discharge monitoring results
- Number and type of enforcement actions.
- Tracking changes in the number of BMPs implemented between site visits/inspections.
- Amount of materials collected (e.g., street sweeping activities; public participation trash collection events).

For UICs, the annual report shall include the following information:

1. Address and summarize the activities taken to comply with each element including but not limited to maintenance and corrective actions taken.
2. Summarize in tables the monitoring results for the monitoring period and include the analytical laboratory reports and describe actions taken when an effluent discharge limit was exceeded.
3. Discuss any effluent discharge limit exceedances of Common Pollutants and actions taken to address the exceedances.
4. Discuss any detections of Screening Level Pollutants and actions taken to address.
5. Identify any known decommissioning, retrofitting, or new installation of underground injection systems the City will undertake during the next annual reporting period;
6. Provide a summary of the quarterly underground injection system registration updates.
7. Provide at least 1 hard copy of the annual report with original signature to the local DEQ office, and provide at least one electronic copy to appropriate DEQ staff.

Measurable Goals: A report of accomplishments achieved in the previous fiscal year (July 1 through June 30) and any continual improvement changes made, as allowed by permitting requirements, will be provided to the DEQ by November 1.

Schedule: Yearly submittal.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Prepare and submit annual report	Public Works Director; Community Development	Ongoing each	Ongoing each Nov. 1

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
		Director, with assistance from Stormwater Program Manager	Nov. 1	

Responsible Persons: The Public Works Director and Community Development Director, with assistance from Stormwater Program Manager and SC are responsible for implementing this BMP. Public Works staff will work to coordinate with Fire and Police for record-keeping to the degree the latter two Departments have separate resources and availability to assist. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

### **SECTION III: PUBLIC EDUCATION AND OUTREACH ON STORMWATER IMPACTS**

#### **REGULATORY REQUIREMENT**

**40 CFR 122.34 (b) (1) – *Public education and outreach on storm water 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 storm water discharges on water bodies and the steps that the public can take to reduce pollutants in storm water runoff.**

**DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection Control System Management Plan. ... The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: ...c. Employee education and public outreach.**

#### **EXISTING CONDITIONS/CURRENT PROGRAMS**

Bend provides general public education to residents by several means of communication. The City has a Communications Manager who provides assistance with posting materials, and ensuring a consistent look and feel for outreach. The City has a website and a municipal television broadcast “City Edition” for disseminating information. It also produces a periodic newsletter/paper called “Our City” as well as subject-specific brochures. Bend also works with public education partners, such as the Upper Deschutes Watershed Council that sponsor various volunteer river clean-up and stream education activities during the year. In the first permit period misconceptions that were addressed include (a) people unclear on where stormwater goes once it enters the storm drain system, and (b) those involving feelings that stormwater quality improvements are not important here because we do not get that much precipitation in comparison to other areas of the state. The City has focused campaigns on not dumping in general, not overspraying fertilizers and pesticides, not blowing grass or leaf litter into the street, the need to properly repair vehicles and clean up spills, and the importance of not placing greasy wash water, or other illicit discharges into storm drains or the sewer.

#### **GENERAL APPROACH**

Public outreach will continue to be targeted first at providing the public a basic understanding of what stormwater is, and why using best management practices matter. In addition to general information, targeted action-oriented BMP information will be

created and distributed. These will focus on activities designed to help lessen pollutants of concern using demographic data indicated in Section 1 to be most efficient.

The City will employ the following BMPs to help educate and reach out to the general public on the impacts of stormwater on surface and ground water.

### **SELECTED BMPS FOR PUBLIC EDUCATION AND OUTREACH**

The City commits to implementing the following five BMPs to meet the above-stated goals for public education and outreach. The task deadlines under each BMP task assume permits are in place by June 30, 2012. Deadlines may slide in accordance with the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2012) to ensure proper public review and DEQ approval.

#### **BMP III-1. Develop and Implement Strategic Outreach Plan Targeting Pollutants of Focus for the Public and City Employees (MS4 and UIC)**

Description: Bend will focus on developing a coordinated an educational outreach plan and develop information pieces targeting key priority pollutants (as described in Section I) and that describe stormwater quality and drainage issues that affect area residents and what they can do to help address these issues. Outreach materials may include utility bill inserts, magazine, pamphlet, and/or newspaper advertising and may be posted to the City's website and social account pages (e.g., Facebook). Brochures and/or posters will continue to be made available at City facilities, and could be used in outreach events. Materials are also included in employee-specific newsletters.

Internal understanding across departments and divisions is crucial for obtaining cooperation, and support. This BMP therefore also focuses on providing effective employee education given the level and responsibilities of targeted employees. The City will focus on developing a coordinated strategic outreach plan and develop information pieces targeting key needs and priorities of the stormwater program and that describe stormwater quality and drainage issues that affect the employee's responsibility areas and what they can do to help address these issues. Outreach materials may include written materials and visuals and could incorporated meetings.

As part of the strategic plan development, the City will examine coordinating efforts with other similar divisions within the City. Blanket education (e.g., via City intranet) and promotional giveaways will be explored and pursued if appropriate. As part of the strategic plan development, the City will examine coordinating efforts within the City, with other interested agencies, and/or with interested local partners. Public service announcements and promotional giveaways will be explored and pursued if appropriate. The information may cover the following topics:

- a. Why contaminants need to be kept out of stormwater.
- b. Opportunities for public involvement.
- c. Automotive maintenance and repair; including car washing
- d. Preventing and reporting illicit discharges.
- e. Proper application of yard fertilizers and pesticides.

- f. Proper disposal of carpet cleaning waste water.
- g. Reducing dry weather flows (e.g. landscaping stormwater management opportunities, proper disposal of pool and spa water, cross connections).
- h. Managing sediments from landscape and construction activities.
- i. Proper disposal of household wastes.
- j. Proper disposal of RV grey water and black water
- k. General understanding of frequently used terms.
- l. Other topics as proposed by the SC or PAG.

Rationale: Creating a coordinated strategic plan using EPA guidance such as “Getting in Step” will help increased the effectiveness of the City’s outreach. Identifying the driving forces, goals, and objectives upfront; identifying and analyzing the target audience; and choosing appropriate messages and formats for reaching the target audience and conducting effective distribution and evaluation components will help improve the City’s existing offerings.

The City maintains several means to cost-effectively provide information. Utility bill newsletter articles are a cost-effective way to distribute information to the community. Online social media (e.g. Facebook, Twitter) messages and outreach in the BPRD recreation guides that are kept over time have also proven to be convenient and effective for targeting certain audiences.

Measurable Goals and Schedule: The measurable goal for implementation of BMP III-1 for public outreach is to develop and distribute at least one stormwater information piece to area residents per permit year. Existing outreach pieces will be made available as well. Another measurable goal is to provide Council and at least one to two targeted employee groups per year information on the stormwater program typically in areas needing coordination improvement. Progress will be deemed satisfactory if all task deadlines are met.

#	Task Description	Responsible Person	Task Start	Deadline Finish
1	Develop Coordinated Strategic Campaigns (planning and create materials)	Public Works Director, Stormwater Program Manager, SC, PAG	FY12-13	FY14-15
2	Implement Campaigns (Distribute materials; encourage employee participation)	Stormwater Program Manager, Communication Manager	FY14-15	Yearly through FY22-23 (initial or revised)
3	Evaluate Initial Campaigns (baseline and completion surveys)	Stormwater Program Manager	FY12-13 (create baseline survey)	FY15-16
4	Revise strategic campaign planning (planning and create materials)	Stormwater Program Manager, SC, PAG	FY15-16	FY16-17

#	Task Description	Responsible Person	Task Start	Deadline Finish
5	Implement Revised Campaign (Distribute materials)	Stormwater Program Manager, Communication Manager	FY16-17	FY22-23
6	Evaluate Campaigns (baseline and completion surveys)	Stormwater Program Manager	FY15-16	FY22-23

Responsible Persons. The Public Works Director or designee with assistance from the Communications Manager has responsibility for development and distribution of the campaign materials.

### **BMP III-2. Stormwater Pollution Prevention Web Site (MS4 and UIC)**

Description: The City will continue to use the municipal website to inform the public about the stormwater management program. It will include general stormwater quality information as well as topics of interest to the general public and that tie to the pollutants of focus such as car washing, dumping/illicit discharge control, and proper management of pesticides, fertilizers, used oil and household hazardous waste, and proper disposal of RV waste. Within the municipal website, the City will develop a public Stormwater Pollution Prevention Web Page that includes the following:

- a. Downloadable and printable versions of outreach materials
- b. Copies of appropriate videos
- c. Links and/or directions for improved mapping access
- d. Copy of the ISWMP
- e. Copy of the annual reports
- f. Other information pertaining to stormwater
- g. Contact information
- h. Links to other stormwater web sites
- i. E-mail links

Rationale: Many people rely on the Internet as their primary source of information on almost any topic. A lot of good stormwater information is already available from a number of web sites. The City will develop a site that is the primary source of stormwater information for the City's citizens and employees. A web site is the most cost-effective way of communicating stormwater information. The site will be accessible through the City's main web site at [www.ci.bend.or.us](http://www.ci.bend.or.us)

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to update the website with revised stormwater messages starting in FY2012-13, and to keep the website updated with new information in future years. Progress will be deemed satisfactory if all task deadlines are met.

#	Task Description	Responsible Person	Task Start	Task Deadline Finish
1	Review and revise site.	Stormwater Program Manager	FY12-13	FY13-143

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
	Examine legal ability to list or link to local suppliers.	with assistance from website coordinator		
2	With City's website update, look into capabilities of tracking hits on individual pages to help determine effectiveness	Stormwater Program Manager with assistance from website coordinator	FY12-13	FY13-14
3	Provide updates as new materials/information become available.	Stormwater Program Manager with assistance from website coordinator	FY12-13	FY22-23

Responsible Persons. The Public Works Director is ultimately responsible for implementation of this BMP. The Stormwater Program Manager, or designee, has responsibility for the design and content of the site. The Communications Manager or designee has responsibility for uploading and implementation of the stormwater information onto the website.

### **BMP III-3. Media Relations: City News Broadcast Stormwater Quality Messages and Press Releases (MS4 and UIC)**

Description and Rationale. In conjunction with BMP III-1, the City of Bend will use the municipal City News Broadcast, other broadcasts such as Good Morning Central Oregon and/or submit news articles or advertising to post messages about the stormwater management program that are of interest to the public. The City News broadcasts are played repeatedly for a month on COTV cable through Bend Broadband at various time throughout the day, are shown on a continual loop at City Hall, and are available for download on the City's website. They are also placed on the City's You Tube page. Messages may include announcements of Bend Beautification or river clean up dates or household hazardous waste collection events; or discussing residential issues such as proper management of pesticides and fertilizer and used oil, or the availability of new resources, or activities within the stormwater program. These newscasts or articles will remind viewers of the importance of stormwater pollution prevention.

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to post on average at least one stormwater quality-related messages per year during each permit year.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Post at least 10 stormwater quality messages; in general one per year.	Stormwater Program Manager, Public Works Director, Communications Manager	FY12-13	FY22-23
2	Periodically (e.g. yearly for annual report) evaluate	Stormwater Program Manager, Public Works	FY12-13	FY22-23

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
	effectiveness by working to measure number of views to degree practicable.	Director, Communications Manager		

Responsible Persons. The Communications Manager, with assistance from the Stormwater Program Manager, has responsibility for implementation of this BMP. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

#### **BMP III-4. School/Enrichment Activity Outreach: Stormwater/Watershed Diorama (MS4 and UIC)**

Description and Rationale. Bend will maintain and continue to make available a stormwater diorama, depicting a watershed complete with storm drains to be used for educational purposes. The City will have the diorama available to lend to local schoolteachers for use in their classrooms, to local environmental groups for outreach events, and will use the diorama at local outreach events. The City also will look to continue to develop and update its supply of lending videos, available to the schools and interested parties. The video selection currently includes the Weather Channel's "After the Storm" and Frontline's "Poisoned Waters."

Measurable Goals and Schedule. The measurable goal for implementation of BMP III-4 is to make available the Stormwater/Watershed diorama and videos for educational opportunities.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue lending program and make diorama and videos available for local schoolteachers to use. (Provide at least 1 reminder/year to teachers or outside educators of availability).	Stormwater Program Manager	FY12-13	FY22-23
2	Use diorama at suitable outreach events (1/year).	Stormwater Program Manager	FY12-13	FY22-23
3	Include evaluation forms when lending and evaluate responses within annual report.	Stormwater Program Manager	FY12-13	FY22-23

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
4	Keep diorama restocked and in good working order.	Stormwater Program Manager; Public Works Director	FY12-13	FY22-23

Responsible Person. The Public Works Director with support from the Stormwater Program Manager is responsible for implementation of the Stormwater/Watershed Diorama and video lending program.

### **BMP III-6. Implement Performance Standards (MS4 and UIC)**

Description and Rationale. The City will meet the public education and outreach performance standards included in Appendix B per the implementation schedule therein for public information activities.

Measurable Goals and Schedule. This task will be deemed complied with if the City has substantially met the performance standards per the ramp-up schedule included in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin implementation of performance standards	Public Works Director, Communications Manager, Stormwater Program Manager, SC and PAG	FY11-12	FY22-23
2	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director, Stormwater Program Manager, SC and PAG committees,	FY17-18	FY18-19

Responsible Parties. The internal stormwater coordination and PAG committees will review and draft updates to the performance standards and city stormwater coordinators will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards in the permit package rests with the Public Works Department. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

## SECTION IV: PUBLIC INVOLVEMENT AND PARTICIPATION

### REGULATORY REQUIREMENT

**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.

(ii) **Guidance:** EPA recommends that the public be included in developing, implementing, and reviewing your storm water 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 storm water 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.)

### EXISTING CONDITIONS/CURRENT PROGRAMS

Currently, the City has several public involvement opportunities with a part time volunteer coordinator arranging activities through the Bend Beautification Program that range from weed pulls, to debris cleanup, storm drain marking to streamside restoration and erosion control. The City also has an ongoing Stormwater Quality Public Advisory Group (PAG) that has been very helpful to staff in tailoring the stormwater programs to be more effective. Within the past year, a Council-appointed committee, the Infrastructure Advisory Committee, has been formed to review capital projects prior to being presented to the City Council. The IAC reviews the merits of the infrastructure projects and assists in presenting the project(s) to the public and/or Council.

### GENERAL APPROACH

The City will use existing advisory committees when implementing a public involvement and participation program.

### SELECTED BMPS FOR PUBLIC INVOLVEMENT

The public should be included in developing, implementing, and reviewing the stormwater management program. The City will continue to encourage and facilitate public involvement and participation in the development and implementation of its ISWMP. The task deadlines under each BMP task assume permits are in place by June 30, 2012. Deadlines may slide in accordance with the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2012) to ensure proper public review and DEQ approval.

**BMP IV-1. Public Advisory Group (MS4)**

Description. Bend will maintain its public advisory committee of community leaders and stakeholders to advise staff, to be known as the Stormwater Quality Public Advisory Group as part of this Stormwater Management Program. The PAG represents different segments of the community that are affected by the ISWMP implementation. The PAG will play a major role in the implementation of this *ISWMP 2022* and the development of future plans. They will be updated periodically regarding the ongoing program implementation.

The PAG includes community leaders in the following groups:

- a. Neighborhood associations
- b. Developers
- c. Consulting and engineering firms
- d. Environmental organizations
- e. Private water systems
- f. Small businesses
- g. Large businesses
- h. Government and Special Districts
- i. Citizen at Large
- j. Others as identified (Government and non-government).

Rationale: The City believes that continued involvement and participation of community leaders and stakeholders in the development, implementation and modification of the ISWMP is crucial to the success of the stormwater management program. When vacancies arise, the leaders are identified and become active early on in order to provide guidance on all ISWMP implementation activities. The PAG helps guide the development, implementation and modification of the stormwater quality program. The City believes this is necessary in order for the voluntary stormwater pollution prevention program to succeed.

Measurable Goals and Schedule: The measurable goal for implementation of this BMP is to conduct at least semiannual meetings of the Public Advisory Group. Progress will be deemed satisfactory if all task deadlines are met.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to convene PAG	Stormwater Program Manager; Public Works Director	Ongoing	Ongoing
2	Hold at least semi-annual meetings	Stormwater Program Manager; Public Works Director	Ongoing	Ongoing

Responsible Persons. The Public Works Director is ultimately responsible for implementation of this BMP, with direct assistance from the Stormwater Program Manager.

**BMP IV-2. Public Meetings (MS4)**

Description: Public meetings are a useful way to obtain comment from the citizens of Bend affected by the stormwater program. The City will seek to continue hold public meetings as appropriate throughout the permit term, to obtain public input and to relay information. During a period of public review and comment on major plans or submittals (e.g. Master Plan, ISWMP, etc.), the City of Bend will hold a Public Open House meeting to present the plans to the public and gather their input. Results of the meeting and of comments received will be responded to and posted on the City's website.

As schedules allow, the draft plan will be updated accordingly before being provided to Council and to DEQ for approval or the comments will be made known prior to approval.

Rationale: Providing the public plenty of opportunity to understand and comment on the proposed plans is expected to result in improved plans and increased public acceptance over the implementation period. The City will work to achieve this prior to submittal dates when given adequate time between DEQ guidance on a submittal and the submittal due date.

Measurable Goals and Schedule: The measurable goal for implementation of BMP IV-2 is to hold a Public Meeting by Permit Year 4 or 5 for the mid-period revision, and again in FY20-21 or FY22-23 in time for the next permit period submittal.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Provide open review period for draft review of mid-term proposed modifications to <i>ISWMP 2022</i> ; post draft on website. Identify schedule for meeting.	Public Works Director; Community Development Director; Communications Manager; Stormwater Program Manager	FY16-17	FY17-18
2	Hold Public Meeting. Incorporate results.	Public Works Director; Community Development Director; Communications Manager; Stormwater Program Manager	FY16-17	FY17-18
3	Provide open review period for draft of revised ISWMP for second UIC and fourth NPDES MS4 permit application package; post draft on website. Identify schedule for meeting.	Public Works Director; Community Development Director; Communications Manager; Stormwater Program Manager	FY20-21	FY22-23
4	Hold Public Meeting. Incorporate results into submittal package.	Public Works Director; Community Development Director; Communications Manager; Stormwater Program Manager	FY20-21	FY22-23

Responsible Persons. The Bend Public Works Director, Community Development Director, and Communications Manager, with assistance from Public Works staff, has responsibility for implementation of this BMP to meet the Measurable Goals. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

#### **BMP IV-3. Stormwater Quality Volunteer Opportunities (MS4)**

Description: Bend will continue to identify suitable opportunities for area volunteers to participate in stormwater quality activities and will develop support materials and provide them to interested parties. These volunteer opportunities may include such things as storm drain marking, volunteer monitoring, planting campaigns and Stream Stewardship programs. The City may work in conjunction with other partner organizations to achieve this goal.

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to provide support materials to interested volunteers for the identified opportunities.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Identify volunteer opportunities.	Stormwater Program Manager; Communications Manager, Volunteer Coordinator	Ongoing	Ongoing
2	Develop support materials and provide them to interested volunteers.	Stormwater Program Manager; Communications Manager, Volunteer Coordinator	Ongoing	Ongoing

Responsible Persons. The Public Works Director, with assistance from the Stormwater Program Manager, Communications Manager, and Volunteer Coordinator, is responsible for implementation of this BMP.

#### **BMP IV-4. Performance Standards (MS4)**

Description and Rationale. The City will implement performance standards described in Appendix B for public involvement and participation activities.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin implementation of performance standards	Public Works Director, Communications Manager, Stormwater Program Manager, SC and PAG	FY11-12	FY22-23
2	Review and update the	Public Works Director, SC and	FY17-18	FY18-19

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
	performance standards as appropriate during the five year review of the ISWMP.	PAG committees, Stormwater Program Manager		

Responsible Parties. The SC and PAG will provide comment on revisions to the performance standards and SC members will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards in the permit package rests with the Public Works Director or his/her designee.

Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

## **SECTION V: ILLICIT DISCHARGE DETECTION AND ELIMINATION**

### **REGULATORY REQUIREMENT**

**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 § 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-storm water discharges into your storm sewer system and implement appropriate enforcement procedures and actions; (C) Develop and implement a plan to detect and address non-storm water 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.

(iii) You need address the following categories of non-storm water discharges or flows (i.e., illicit discharges) only if you identify them as significant contributors of pollutants to your small MS4: water line flushing, landscape irrigation, diverted stream flows, rising ground waters, uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20)), 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, and street wash water (discharges or flows from fire fighting activities are excluded from the effective prohibition against non-storm water and need only be addressed where they are identified as significant sources of pollutants to waters of the United States).

(iv) Guidance:... .

**DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection Control System Management Plan.** ...you must submit an underground injection control system management plan to us for approval. After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: ...e. Protecting injection systems from accidental spills or illicit disposal of wastes or contaminants; f. Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern.

## **EXISTING CONDITIONS/CURRENT PROGRAMS**

Illicit discharges are measureable flows during dry weather containing pollutants and or pathogens. Examples of dry weather flows that may contain pollutants include sewage and septage; wash water (e.g., grey water, commercial carwash wastewater, fleet washing, commercial laundry wastewater, surface cleaning), liquid wastes (e.g., oil, paint, radiator flushing water, plating bath wastewater or other process waters); and landscape irrigation. They can include spills. Understanding the main industries in the City allows City staff to focus public outreach campaign for preventing and reducing illicit discharges from area businesses and industries that may serve as generating sites. According to the U.S. Census, the five largest industries in the City in 2000 (the latest data currently compiled) were:

- (1) Educational, health and social services;
- (2) Retail trade;
- (3) Arts, entertainment, recreation, accommodation and food services;
- (4) Construction and
- (5) Manufacturing.

Bend has completed the process of mapping the City's infrastructure in its GIS system and has completed the first ever television survey of its MS4 storm pipe system to the river, both of which are helpful in addressing illicit discharges.

The City Fire Department currently conducts fire inspections of local businesses. The Fire Department also responds to reported spills, and coordinates with other agencies and/or private regional hazardous materials response specialists, when needed. Bend Fire and Rescue personnel are trained to the State of Oregon Department of Public Safety Standards and Training (DPSST) Awareness and Operations Level. The regional Hazardous Materials Team from Salem is dispatched whenever significant quantities or unknown materials are spilled or released and the incident extends beyond our training or resource capabilities. Travel time for the Salem team is approximately 2 hours depending on weather and road conditions. The Salem team is one of 13 state teams that are state funded and fully trained to supplement our operations and fire agencies across the state. If the Salem team is not available or delayed, we can request the next closest teams from Gresham, Klamath Falls, Eugene, Albany or Ontario.

When the Fire Department receives an illegal dumping report, they respond to mitigate the emergency, identify the hazardous materials present, if any, and set up a command structure that includes interested departments and regulatory parties, develop and implement an action plan, and transfer authority for the incident to the appropriate agency for cleanup after the emergency is over. They also work to identify the responsible party, if possible, and complete paperwork and documentation of their actions, and for incident cost recovery.

The Code Enforcement division of the Community Development Department assures compliance with the city's land use, environmental and building codes. The City assures code compliance both by encouraging voluntary compliance and by punishing code violators who do not comply.

The City Police Department investigates criminal dumping and discharge activities that extend beyond the authority of the Code Enforcement division.

City Departments are understaffed from desired levels given the economic situation in Bend, and therefore must address responsibilities using triage concepts accounting for priorities given present resource levels. The City does have a business license program that the City uses to help conduct illicit discharge outreach to specific businesses in an efficient manner.

## **GENERAL APPROACH**

In general, illicit discharges to storm sewers are a problem throughout the United States. In Bend, storm sewers discharge underground or to the Deschutes River. Leaks or cross-connections from sanitary sewers or septic systems and other types of drains into storm sewers are hard to discover because they often occur underground. Homeowners and landscapers contribute to the problem when they dump grass clippings or leaves into gutters or spread fertilizers or pesticides that runoff onto sidewalks and streets. Automobiles not properly maintained may result in leaks that make their way to the storm drain outfalls. Inappropriate disposal of grey water or black water from RVs or grey water systems could result in pollutants in the storm drain facilities. Dumpsters are often left with the tops open, which allows precipitation to filter through and contaminate stormwater. Carpet cleaners may dump their waste water into the most convenient storm drain. The purpose of this element is to educate the community about these and other problems, help people identify and report illicit discharges, and minimize spills and leaks or cross-connections.

## **SELECTED BEST MANAGEMENT PRACTICES**

The following tasks will be performed to meet the Illicit Discharge Detection and Elimination requirements. The task deadlines under each BMP task assume permits are in place by June 30, 2012. Deadlines may slide in accordance with the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2012) to ensure proper public review and DEQ approval.

### **BMP V-1. Public Education on Illegal Discharges and Improper Disposal (MS4 and UIC)**

Description and Rationale: Bend will continue to develop and implement a public education effort to inform public employees, businesses, and the public of hazards associated with illegal discharges and improper disposal of waste. City staff may try to coordinate this effort with other like-minded agencies. (Note: This BMP is designed to work in conjunction with those under the Section III: Public Education and Outreach on Stormwater Impacts.)

The public often does not realize that storm drains do not go to the municipal sanitary sewer system. Storm drains are convenient places for people to inadvertently or intentionally dump their wastes not thinking about how this might affect their environment. The purpose of this BMP is to educate the public about this and related issues.

Measurable Goals and Schedule: Bend will continue to develop or acquire public education materials and determine an effective means of distribution (with prioritization). As part of this effort, the City will target business categories representing the greatest risk from a stormwater perspective and seek to use effective means of distribution. The City will work to coordinate with other programs (e.g., Industrial Pretreatment Program and the Water Conservation Program related to landscape irrigation). Progress will be deemed satisfactory if all task deadlines are met.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Develop or acquire public education materials.	Stormwater Program Manager, Public Works Director	Ongoing	Ongoing
2	Determine an effective means of distribution.	Stormwater Program Manager, Public Works Director	Ongoing	Ongoing
3	Distribute materials to public employees.	Stormwater Program Manager, Public Works Director	Ongoing	Ongoing
4	Distribute materials to at least 50% of targeted businesses in each year.	Stormwater Program Manager, Public Works Director	Ongoing	Ongoing

Responsible Persons: The Public Works Director is ultimately responsible for implementation of this BMP, with assistance from the Stormwater Program Manager. The Communications Manager is responsible for distribution of public education materials on Illegal Discharges and Improper Disposal. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

#### **BMP V-2. Illicit Discharge Reporting Mechanism (MS4 and UIC)**

Description and Rationale: Citizens and City employees are the best look-outs for illicit discharges if they know what to look for and it is easy for them to report the discharges to someone who can take the appropriate action.

Measurable Goals and Schedule: Under the guidance of the SC, the following tasks will be completed:

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to provide and advertise an illicit discharge reporting e-mail and/or phone link	Public Works Director, Stormwater Program Manager, Communications Manager	Ongoing	Ongoing

Task #	Description	Responsible Person	Task Deadline Start	Finish
	on the stormwater pollution prevention web site and outreach.			

Progress will be deemed satisfactory if task deadlines are met.

Responsible Persons: The Public Works Director is ultimately responsible for implementation of this BMP, with assistance from those noted in the table above. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

### **BMP V-3. Post Warnings About Illicit and Illegal Discharges (MS4 and UIC)**

Description: Bend will continue to require developers to label right-of-way storm drain with a message that says “Don't Dump – Discharges to (Name of Water Resource) ” or a similar message. The City will also provide kits for storm drain stenciling of existing systems by volunteer organizations.

Rationale: Municipalities across the country have found that appropriate curb marking or signage can help minimize illicit and illegal discharges to storm sewers. These signs are commercially available.

Measurable Goals and Schedule. The following tasks will be taken.

Task #	Description	Responsible Person	Task Deadline Start	Finish
1	City will include storm drain message permanent marking requirements in standards and specifications.	Public Works Director, Stormwater Program Manager, City Engineer, Streets/Stormwater Operations Supervisor	Ongoing	Ongoing
2	City to organize volunteers to paint or post markers, as appropriate	Volunteer Coordinator, Stormwater Program Manager	Ongoing	Ongoing
3	City to purchase markers and materials, as needed.	Stormwater Program Manager	Ongoing	Ongoing
5	Markers to be posted (at least 50 per year on average)	Stormwater Program Manager, Volunteer Coordinator	Ongoing	Ongoing

Progress will be deemed satisfactory if all task deadlines are met.

Responsible Persons. The Director of Public Works is responsible for implementing storm drain labeling, with assistance from the PAG and Public Works staff. Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

**BMP V-4. Post Illicit Discharge Prevention Information on Web Site (MS4 and UIC)**

Description and Rationale: Informing citizens about how to prevent, detect and report illicit discharges can be a very effective and inexpensive way to reduce illicit discharges.

Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	PAG, public or staff to provide input on what to post on web site; SC to approve.	PAG, SC, Stormwater Program Manager, Communication Manager	Ongoing	Ongoing
2	City to post information.	Stormwater Program Manager, Communication Manager	Ongoing	Ongoing

Progress will be deemed satisfactory if all task deadlines are met.

Responsible Parties: The Communications Manager is responsible for placing the materials provided by the Stormwater Program Manager onto the website. SC members are responsible for providing and ensuring the material posted is appropriate.

**BMP V-5. Implement Illicit Discharge Regulations (MS4 and UIC)**

Description and Rationale. To help prevent illicit discharges, Bend has developed and approved an ordinance adopting Bend Code Title 16 to effectively prohibit non-stormwater illicit discharges into the storm drainage system and implement appropriate enforcement procedures and actions prior to the start of the *ISWMP 2022* implementation period. This BMP is designed to be implemented in concert with BMP II-2, which is designed to ensure appropriate legal authority for implementation of the stormwater components within this ISWMP.

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to continue to implement the illicit discharge sections of Bend Code Title 16 per the schedule in the Code.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to Implement Bend Code Title 16	Public Works Director, Community Development Director	Ongoing	Ongoing

Responsible Persons. The Director of Public Works and the Community Development Director (overseeing Code Enforcement) are responsible for implementation of the illicit discharge provisions of City Code Title 16. Public Works staff will work to coordinate with Fire and Police for efficiency, as appropriate, to the degree the latter two Departments have separate resources and availability to assist.

**BMP V-6. Implement Performance Standards Related to Illicit Discharge Controls (MS4 and UIC)**

Description and Rationale. The City will implement performance standards described in Appendix B for Illicit Discharge Control activities.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin and continue implementation of performance standards	Public Works Director, Community Development Director, Stormwater Program Manager, SC and PAG	FY11-12	FY22-23
2	Acquire needed resources, training	Public Works Director, Community Development Director, Stormwater Program Manager	Ongoing	Ongoing
3	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director, SC and PAG committees, Stormwater Program Manager	FY17-18	FY18-19

Responsible Parties. The SC team and PAG will provide comment on revisions to the performance standards and SC members will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards, as revised, in the permit package rests with the Public Works Director.

Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively. Public Works staff will work to coordinate with Fire and Police for efficiency, as appropriate, to the degree the latter two Departments have separate resources and availability to assist.

## **SECTION VI: CONSTRUCTION SITE STORMWATER ACTIVITIES**

### **REGULATORY REQUIREMENTS**

**40 CFR 122.34 (b) (4) – Construction site storm water runoff control.** (i) You must develop, implement, and enforce a program to reduce pollutants in any storm water runoff to your small MS4 from construction activities that result in a land disturbance of greater than or equal to one acre. Reduction of storm water 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 storm water discharges associated with small construction activity in accordance with § 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; (E) Procedures for receipt and consideration of information submitted by the public, and (F) Procedures for site inspection and enforcement of control measures.

(iii) Guidance:...

**DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection Control System Management Plan (UICMP).** ...After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: f. Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, material storage or handling areas, or other discharges that may contain pollutants above levels of concern; ...g. Housekeeping practices to protect groundwater quality; h. Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.

### **EXISTING CONDITIONS/CURRENT PROGRAMS**

Currently, Bend requires construction sites to comply with the federal NPDES 1200-C Construction Stormwater General Permit as required

(see <http://www.deq.state.or.us/WQ/stormwater/swpconstr.htm> for more information). Stormwater controls are included in city inspections. Noncompliance can be cause for the City to issue stop work orders, thereby halting construction until the situation is remedied. The City has participated in the development of the regional Central Oregon Stormwater Manual (as revised August 2010), that addresses among other things erosion and sediment control and proper housekeeping. The City has updated its Clearing and Grading ordinance through adoption by the City Council via ordinance on January 4, 2012 of the Bend Code Title 16. Grading, Excavation and Stormwater Management. The revisions were made in part to improve erosion and sediment and proper housekeeping goals. In preparing Title 16, the City had completed a review of its development rules including the grading and clearing activities and had drafted and provided several rounds of review for the drafts. .

## **GENERAL APPROACH**

Construction sites are potential sources of stormwater pollutants. Sites that disturb one or more acres and discharge stormwater through a man-made conveyance to a surface water body are already regulated through the state-administered NPDES permit program but only if the runoff may reach surface waters either directly or through storm drainage. The Deschutes River is listed for sediments and turbidity as pollutants of concern (see Section I). Many construction sites within the UGB are either smaller than one acre or the stormwater discharges underground or onto the ground surface where there is little potential for it to reach surface waters. Some of these sites are of concern to the City because they discharge contaminated stormwater to City underground injection systems or onto City or neighboring property.

## **SELECTED BEST MANAGEMENT PRACTICES**

The following BMPs will be implemented to address stormwater impacts at construction sites. Ensuring appropriate legal authority for such activities is addressed under BMP II-2. The task deadlines under each BMP task assume permits are in place by June 30, 2012. Deadlines may slide in accordance with the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2012) to ensure proper public review and DEQ approval.

### **BMP VI-1. Implement the Stormwater Regulations (MS4 and UIC)**

Description and Rationale. To help prevent illicit discharges related to construction site management, Bend has developed and approved through ordinance Bend Code Title 16 to effectively minimize pollutants from construction sites into the storm drainage system and implement appropriate enforcement procedures. Additionally the City adopted the Central Oregon Stormwater Manual as both part of its Standards and Specifications (effective July 2011) and Bend Code Title 16. This BMP is designed to be implemented in concert with BMP II-2, which is designed to ensure appropriate legal authority for implementation of the stormwater components within this ISWMP.

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to continue to implement the illicit discharge, erosion and sediment control and pollution prevention sections of Bend Code Title 16 and the Standards and Specifications.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to Implement Bend Code Title 16 and the Standards and Specifications	Public Works Director, Community Development Director, Police Chief	Ongoing	Ongoing

Responsible Persons. The Director of Public Works and the Community Development Department Director are primarily responsible for implementation of the regulations. Public Works staff will work to coordinate with Police for efficiency, as appropriate, to the degree the latter Department has separate resources and availability to assist.

## **BMP VI-2. Implement Performance Standards Related to Construction Site Controls (MS4 and UIC)**

Description and Rationale. The City will implement performance standards described in Appendix B for New Development, Redevelopment and Construction Site activities.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin and continue implementation of performance standards	Public Works Director, Community Development Director, Stormwater Program Manager, SC and PAG	FY12-13	FY22-23
2	Acquire needed resources, training, support	Public Works Director, Community Development Director, Police Chief, Stormwater Program Manager	Ongoing	Ongoing
2	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director, SC and PAG committees, Stormwater Program Manager	FY17-18	FY18-19

Responsible Parties. The SC team and PAG will provide comment on revisions to the performance standards and SC members will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards, as revised, in the permit package rests with the Public Works Director. Public Works staff will work to coordinate with Police for efficiency, as appropriate, to the degree the latter Department has separate resources and availability to assist.

Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

## **SECTION VII: POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW AND RE-DEVELOPMENT**

### **REGULATORY REQUIREMENT**

**40 CFR 122.34 (b) (5) – *Post-construction storm water management in new development and redevelopment.***

**(i) You must develop, implement, and enforce a program to address storm water 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.**

**(iii) Guidance: ....**

#### **DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions**

**1. Legal Authority. You must adopt and maintaining, through ordinance or other means, adequate legal authority to implement and enforce the provisions of this permit. At a minimum, the legal authority must enable you to:**

**...b. Prohibit discharge to an underground injection system that may cause a violation of the conditions of this permit from publicly or privately owned properties. ....**

**5. Underground Injection Control System Management Plan (UICMP).**

**...After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: f. Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, material storage or handling areas, or other discharges that may contain pollutants above levels of concern; ... h. Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.**

## **EXISTING CONDITIONS/CURRENT PROGRAMS**

The purpose of this Element is to ensure that stormwater management is adequately addressed during and after new and re-development. Post-construction controls typically include site designs, proper long-term erosion and sediment controls, other source controls, and treatment controls.

The Community Development and Public Works Departments regulate development in Bend. The Bend Development Code (Ordinance NS-2016) and the Grading, Excavation and Stormwater Management (Bend Code Title 16) together with the City's Standards and Specifications regulate development in Bend. The Community Development Department along with the Engineering Division conduct pre-development reviews of proposed development projects. Clearing, Grading and Erosion Control permits are issued by the City through the Permit Center.

## **GENERAL APPROACH**

In the first permit period, the City has focused on improving the planning and engineering process with respect to stormwater quality and drainage. The City successfully worked to create manuals and standards of best management practices and preferred controls (i.e., Central Oregon Stormwater Manual, Standards and Specifications (implemented on July 1, 2011). The City has also focused to provide educational opportunities to staff and to inform developers of stormwater requirements and preferences as early in the planning process as possible to ensure that the ideas are incorporated earlier rather than requiring more costly changes if addressed later in the process (i.e. via trainings, webinars, brochures).

In this upcoming permit period, the City will continue to focus on education and now implementation of the revised standards and specifications, and stormwater ordinance (Bend Code Title 16), along with continued stormwater improvement projects on City property. In continuing to develop additional City preferences, all departments affected by development shall be canvassed to determine their concerns and preferences related to drainage and water quality, and preferences or conditions of approval to address these will be compiled.

## **SELECTED BEST MANAGEMENT PRACTICES**

### **BMP VII-1. Implement the Stormwater Regulations (MS4 and UIC)**

Description and Rationale. To help prevent pollutants and illicit discharges related to new and re-development, Bend has developed and approved revisions to the City's Standards and Specifications (effective July 2011) and Bend Code Title 16 (effective February 2012) to effectively minimize pollutants during the post-construction period into the storm drainage system by requiring long-term pollution prevention facilities and practices at sites and implement appropriate enforcement procedures and actions, prior to the start of the *ISWMP 2022* implementation period. This BMP is designed to be implemented in concert with BMP II-2, which is designed to ensure appropriate legal authority for implementation of the stormwater components within this *ISWMP*.

Measurable Goals and Schedule. The measurable goal for implementation of this BMP is to continue to implement the regulations related to post-construction controls of Bend Code Title 16 and the City Standards and Specifications.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to implement Standards and Specifications, and Bend Code Title 16	Public Works Director, Community Development Director	Ongoing	Ongoing

Responsible Persons. The Director of Public Works and the Community Development Department Director are responsible for implementation of the stormwater regulations. Public Works staff will work to coordinate with Police for efficiency, as appropriate, to the degree the latter Department has separate resources and availability to assist.

#### **BMP VII-2. Implement Performance Standards Related to New Development and Redevelopment Controls (MS4 and UIC)**

Description and Rationale. The City will implement performance standards described in Appendix B for New Development, Redevelopment and Construction Site activities.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin and continue implementation of performance standards	Public Works Director, Community Development Director, Stormwater Program Manager, SC and PAG	FY11-12	FY22-23
2	Acquire needed resources, training, support	Public Works Director, Community Development Director, Police Chief, Stormwater Program Manager	Ongoing	Ongoing
3	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director, SC and PAG committees, Stormwater Program Manager	FY17-18	FY18-19

Responsible Parties. The SC team and PAG will provide comment on revisions to the performance standards and SC members will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards, as revised, in the permit package rests with the Public Works Director. Public Works staff will work to coordinate with Police for efficiency, as

appropriate, to the degree the latter Department has separate resources and availability to assist.

Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

## SECTION VIII: MUNICIPAL OPERATIONS AND MAINTENANCE— POLLUTION PREVENTION AND GOOD HOUSEKEEPING

### REGULATORY REQUIREMENT

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 storm water pollution from activities such as park and open space maintenance, fleet and building maintenance, new construction and land disturbances, and storm water system maintenance.

(ii) Guidance: 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 storm water 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 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....

DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection System Management Plan. (UICMP). ...After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: d. Injection system operation and maintenance; ...g. Housekeeping practices to protect groundwater quality; h. Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.

### EXISTING CONDITIONS/CURRENT PROGRAMS

Bend has roughly 14 miles of stormwater main lines that drain to the river, and 47 miles of overall pipe (including connections between UIC systems), as well as stormwater

drainage ditches. The Department of Public Works, Streets/Stormwater Field Division handles runoff management, street drainage system maintenance and street maintenance. The City has mapped the existing drainage system in a GIS (ArcView, ArcInfo) format. The Department of Public Works, Utilities Division maintains the sanitary sewer and drinking water supply systems. The City does not have any Combined Sewer Overflows (CSOs) the city maintains stormwater pollution prevention plans for its corporation yards.

## **GENERAL APPROACH**

The City discharges stormwater to dry wells, drill holes, swales, and the Deschutes River. This section describes BMPs the City will employ for its own operations. The City acts as a model for the entire community, and so operating with good housekeeping practices and proper operational procedures is crucial prior to asking the community to do the same.

## **SELECTED BEST MANAGEMENT PRACTICES**

### **BMP VIII-1. Street Sweeping (MS4 and UIC)**

Description: The City will conduct a street sweeping program per the Sweeping Plan. Periodically the City will conduct a review of and make modifications to street sweeping program to increase efficiency in terms of stormwater quality and reduction of trash, cinders, leaf litter, and sediments to drywells and the Deschutes River to degree staffing and resources are available. During the permit period, the City will construct a pilot program to coordinate better with the Drinking Water utilities personnel to provide street sweeping in an area prior to main water line flushing to determine if it would help reduce the amount of pollutants entering the storm drain system. Progress will be deemed satisfactory if all task deadlines are met.

Currently, City collectors and arterials, downtown streets and those streets with bike lanes are swept multiple times per month and often weekly; while remaining streets are swept about six times per year.

Rationale: Sediments accumulate on streets and roadways between storm events. Street sweeping is an effective way to keep these from being washed into drill holes and dry wells or the Deschutes River. Street sweeping is the main technique used to clean up cinders placed on roadways for winter driving safety.

Measurable Goals and Schedule: The measurable goal for implementation of this BMP is to meet street sweeping performance standards (see Appendix B), track the amount of materials collected via street sweeping activities, and work to implement and evaluate the pilot program. Development and implementation will be according to the schedule below.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to implement a street sweeping program per the	Public Works Director, Street/Stormwater	Ongoing	Ongoing

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
	Sweeping Plan and meeting the performance standards per their schedule.	Operations Manager		
2	Meet the street sweeping performance standards per their schedule.	Public Works Director, Street/Stormwater Operations Manager	FY12-13	Ongoing
3	Implement Street Sweeping/Water Main Flushing Coordination Pilot Program.	Public Works Director, Street/Stormwater Operations Manager; Utilities Manager	FY13-14	FY14-15

Responsible Persons: The Director of Public Works has ultimate responsibility for implementation of this BMP, with assistance from staff as indicated in the table above.

#### **BMP VIII-2. Implement Performance Standards (MS4 and UIC)**

Description and Rationale. Performance Standards describe what the City is responsible for achieving on a day to day basis to protect water quality. Performance standards for municipal maintenance activities are included in Appendix B and focus on street sweeping, winter road care, storm drain facilities, operation and maintenance of stormwater pump stations, litter control, corporation yards, and road repair and maintenance. The City will implement performance standards described in Appendix B for municipal maintenance and operations activities.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin implementation of performance standards	Public Works Director, Streets/Stormwater Operations Supervisor	FY11-12	FY22-23
2	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director, Stormwater/Streets Operations Supervisor, Stormwater Program Manager, SC and PAG committees	FY17-18	FY18-19

Responsible Parties. The SC and PAG will provide comment on revisions to the performance standards and SC members will be responsible for gaining input from their staff on the performance standards and proposed schedule. Responsibility for including the performance standards in the permit package rests with the Public Works Director.

Because stormwater management crosses department boundaries and requires interdepartmental coordination, the City Manager retains ultimate responsibility for ensuring such coordination is conducted effectively.

### **BMP VIII-3. Landscape Maintenance Practices (MS4 and UIC)**

Description: The City provides landscape maintenance to all medians and some parking strips throughout town. The Bend Parks and Recreation District, the Old Mill District, and specific homeowner's associations that drain runoff through private systems are separate entities autonomous from the City.

This BMP involves implementing the standards and specifications to improve landscape maintenance practices to better incorporate stormwater retrofits, reduce overspray, and use appropriate low-water use plant materials.

City will encourage implementation of the Water Management Conservation plan to the degree that it is separately funded.

Rationale: Landscaping activities can contaminate stormwater with sediments and chemicals. Over-watering wastes water and results in dry weather discharges to storm drains. Herbicides, pesticides and fertilizers can run off landscaped areas and impact receiving waters.

#### Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Ensure updated Standards and Specifications are properly implemented.	City Public Works Director, City Engineer, Street/Stormwater Operations Manager	July 1, 2011	Ongoing
2	Incorporate at least 5 stormwater surface controls (bioretention, filter strip, etc.) in right of way areas over ISWMP 2022 planning term. Properly maintain.	City Public Works Director, City Engineer, Street/Stormwater Operations Manager	FY12-13	FY22-23

Progress will be deemed satisfactory if all task deadlines are met.

Responsible Parties. The Public Works Director is ultimately responsible for completion of this BMP with assistance from City Engineer.

### **BMP VIII-4. Improve Storm Drain Facilities Cleaning (MS4 and UICs)**

Description and Rationale: The purpose of this BMP is to track and periodically review the maintenance schedules for specific facilities to improve maintenance procedure efficiency for cleaning storm drainage facilities. If necessary, storm drain line television

inspections and/or recommendations for changes to designs that would help facilitate maintenance may be compiled and addressed as well.

This BMP addresses both operation and maintenance of UICs and MS4 system facilities.

Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Collect data through maintenance management system	Street/Stormwater Operations Manager	Ongoing	Ongoing
2	Review and refine maintenance schedule if appropriate	Street/Stormwater Operations Supervisor, Stormwater Program Manager	FY13-14	Periodically thereafter
3	Develop improved maintenance procedures	Street/Stormwater Operations Supervisor, Stormwater Program Manager	FY13-14	Periodically thereafter
5	Implement improved procedures.	Street/Stormwater Operations Supervisor	FY14-15	Periodically thereafter

Progress will be deemed satisfactory if all task deadlines are met.

Responsible Parties. The Public Works Director is ultimately responsible for completion of this BMP.

**BMP VIII-5. Promote Commute Alternatives for Municipal Employees (MS4 and UIC)**

Description and Rationale: Transportation facilities and choice of transportation mode can impact stormwater quality in terms of impervious surface coverage, atmospheric deposition, tailpipe emissions, heavy metals from brake pad wear, tire weights, hazardous materials spills, etc. As of the 2010 census, the mean travel time to work between 2006 and 2010 was 15.4 minutes (Oregon's average is 22.1 minutes), although an estimated 2,742 citizens (7.5%) worked from home (up from 1,500 citizens (5.7%) in 2000), 1,055 (2.9%) walked to work, and 2,726 (7.5%) (down from 3,323 (12.7%) in 2000) carpooled. The majority (estimated 28,642 or 78.6%) drove alone (U.S. Census Bureau, 2012; U.S. Census Bureau, 2000).

This BMP seeks to reduce the number of single occupancy vehicle trips in the City. Higher numbers of vehicle trips correlate with the needs for additional or wider streets and more parking areas resulting in increased impervious surface coverage, and

increased volume and velocity of runoff. In addition atmospheric deposition of pollutants from vehicle emissions, tire and brake pad wear, and oil leaks can result in heavy metals and other pollutants entering stormwater. The bus system is now run by Central Oregon Intergovernmental Council to better link with other regional purveyors.

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Implement a transportation demand management program as separate funding allows for city staff to encourage alternative modes of transportation and reduce single occupancy vehicle trips.	Community Development Director	Ongoing	Ongoing

Responsible Parties. The Community Development Director is ultimately responsible for trip reduction incentive programs.

## **SECTION IX: MONITORING**

### **REGULATORY REQUIREMENTS**

Under the UIC Rule, Bend must prepare and implement a stormwater management plan with these required elements:

**DEQ WPCF-UIC Municipal Permit Schedule B Monitoring and Reporting Conditions. 2. Stormwater Monitoring Plan. ... you must prepare and submit to us a stormwater monitoring plan that describes how you will monitor stormwater and other fluid discharges. ....**

**DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection System Management Plan. (UICMP). ...After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality: a. Stormwater monitoring plan, described in Schedule B.2., including how you will use stormwater monitoring results to ensure compliance with the action levels in Schedule A, Table 1;....**

### **EXISTING CONDITIONS/CURRENT PROGRAMS**

Early in 2004, the City and the Upper Deschutes Watershed Council began a multi-year monitoring program to provide additional data on the presence or absence of pollutants of concern in the Deschutes River within the Bend Urban Boundary (Deschutes River Miles 172 and 159). This study, providing baseline information of river water quality through Bend, was completed June 2010.

In 2006, the City began to extend its monitoring to include UICs. Analysis of initial results indicate that Central Oregon stormwater is similar to that in the rest of the state. Of 38 analytes studied, the only analytes exceeding either the Oregon Administrative Rule Numerical Groundwater Reference Level (OAR-340-0020), EPA Maximum Contaminant Level, and Underground Injection System Effluent Discharges Limits in Central Oregon were Cadmium (1 exceedance of 117 samples); Chromium (1 of 115 samples), Lead (9 of 117 samples), and NO<sub>3</sub>-N (1 exceedance). Each of the four analytes above only had one exceedance each of screening levels. (Kennedy-Jenks, April 2011).

### **GENERAL APPROACH**

During the first three to five years of the ISWMP, data will be gathered to help direct later stormwater management practices. The BMPs and Tasks in this section describe how this will be done. The City may join with other municipalities in the region to develop and implement regional stormwater monitoring. Given the increased need to ramp up

monitoring of UICs as a permit requirement, the focus of monitoring during this permit period will be on UICs.

### **SELECTED BEST MANAGEMENT PRACTICES**

The task deadlines under each BMP task assume permits are in place by FY2012-13. Deadlines may slide in accordance with the amount of time that permits are issued after that date (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2013) to ensure proper public review and DEQ approval.

#### **BMP IX-1. Monitoring of the Deschutes River (MS4)**

Description: Monitor and characterize stormwater discharged to the Deschutes River and how it affects river water quality.

Rationale: Now that the baseline levels are known, revisiting stormwater monitoring for discharges to the river and/or ambient river water quality will help inform overall effectiveness of the program to river water quality. Within the next few years the DEQ will establish Total Maximum Daily Loads (TMDLs) for several Deschutes River pollutants. These TMDLs may result in restrictions being placed on the City's discharges to the river if it is determined that the discharges have a significant negative effect on river water quality, or result in additional monitoring requirements. The City needs to continue to understand what it is discharging and how the discharges affect the river and how that changes over time. In addition, the City is required by its permits to measure the effectiveness of its control measures.

#### Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Fund and implement a river water monitoring plan update.	Public Works Director, Water Quality Manager, Stormwater Program Manager	FY18-19	FY22-23
2	Analyze and report results.	Stormwater Program Manager	FY19-20	FY22-23

\* A funding request has been approved by City Council and work has begun.

Progress will be deemed satisfactory if all task deadlines are met.

Responsible Parties: The Public Works Director is ultimately responsible for implementation of this BMP.

#### **BMP IX-2. Stormwater Monitoring for UICs (UIC)**

Description: The City is committed to managing its stormwater responsibly. It is also committed to perform monitoring to characterize its stormwater discharges and the effects of these discharges on receiving water and provide an early warning of any groundwater contamination that may occur in the future.

Since the City is so dependent on ground water, it is especially committed to protecting water wells from contamination. The Oregon Health Division has delineated Drinking Water Protection Areas (DWPAs) for each of the City's water wells, and the City has worked to improve understanding of the locations of private wells within and immediately adjacent to the City limits.

Rationale: The WPCF-UIC permit requires stormwater monitoring. Monitoring will be necessary in order for the City to determine BMP effectiveness and to determine compliance with permit conditions.

Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Develop monitoring plan by UIC permit due date that describes how the City will monitor stormwater and other allowed discharges. Submit separately to DEQ for review/approval.	Stormwater Program Manager, Water Quality Manager	In process	Per permit
2	Sample the stormwater discharge to the underground injection systems at the location specified in the monitoring plan approved by DEQ	Stormwater Program Manager, Water Quality Manager	Per permit	Per permit
3	Comply with the sampling frequency established in the stormwater monitoring plan unless circumstances beyond the City's reasonable control prevent such.	Stormwater Program Manager, Water Quality Manager	Per permit requirements	Ongoing
4	Review monitoring results per the action levels in WPCF Permit	Stormwater Program Manager, Water Quality Manager	Per permit requirements	Ongoing

	Schedule A Table 1. In case of exceedance of individual or geometric mean samples, take corrective actions per WPCF Permit Condition A.3., and A.4			
5.	Provide monitoring reports results in annual report. Should any action level exceedance occurs, planned and implemented corrective actions will be reported.	Stormwater Program Manager, Water Quality Manager	Per permit requirements	Ongoing

The monitoring plan will be provided as a stand-alone document. Progress will be deemed satisfactory if all task deadlines are met.

Responsible Party. The Public Works Director is responsible for implementing this BMP with assistance from the Water Quality Manager.

### **BMP IX-3. Implement Performance Standards (MS4 and UIC)**

Description and Rationale. The City will implement the performance standards described in Appendix B for monitoring.

Measurable Goals and Schedule. This task will be deemed complied with when the City has implemented the performance standards per the schedule in Appendix B.

#	Task Description	Responsible Person	Task Deadline	
			Start	Finish
1	Begin and continue implementation of performance standards	Public Works Director, Water Quality Manager, Stormwater Program Manager	FY11-12	FY22-23
2	Review and update the performance standards as appropriate during the five year review of the ISWMP.	Public Works Director , Water Quality Manager, Stormwater Program Manager, SC and PAG committees	FY17-18	FY18-19

## **SECTION X: UNDERGROUND INJECTION CONTROLS**

### **REGULATORY REQUIREMENTS**

**DEQ WPCF-UIC Municipal Permit Schedule D Special Conditions. 5. Underground Injection Control System Management Plan (UICMP). ...After we approve the management plan or any update of the plan, you must implement it. The management plan must include a description of how the elements listed below will be implemented in order to protect groundwater quality:**

- a. Stormwater monitoring plan...including how you will use stormwater monitoring results to ensure compliance with the action levels in Schedule A, Table 1;**
- b. Injection system decommissioning;**
- c. Employee education and public outreach;**
- d. Injection system operation and maintenance;**
- e. Protection injection systems for accidental spills or illicit disposal of wastes or contaminants;**
- f. Preventing injection of stormwater from loading docks, refueling areas, areas of hazardous and toxic material storage or handling, materials storage or handling areas, or other discharges that may contain pollutants above levels of concern;**
- g. Housekeeping practices to protect groundwater quality;**
- h. Facility designs or practices that allow you to block discharge into any underground injection systems in the event of an accident, spill, or emergency fire-fighting activity.**

The focus of this chapter is to address those elements above that have not been addressed elsewhere in the ISWMP 2022. Specifically Section X addresses subitems b and h. Subitem a, Stormwater Monitoring Plan is addressed in Section IX. Subitem c. is addressed in Section III. Subitem d. is addressed in Section VIII, and subitem e is addressed in Section V. Subitem g is addressed in Sections VI and VIII. Subitems f. and h. are also addressed in Sections II, V., VI., and VII, and subitem h is also covered in part in Section VIII..

### **EXISTING CONDITIONS/CURRENT PROGRAMS**

One of the highest priorities for the City is protecting its drinking water wells from contamination. In order to do this, the City needs to know where and how it should focus its protection efforts and to meet UIC requirements that are protective of groundwater.

The purpose of this section is to provide the information the City needs in order to do this.

### **GENERAL APPROACH**

The City will focus this permit period on meeting the requirements of the WPCF-UIC permit to the best of its ability. The stormwater monitoring plan (see BMP IX-2) is a stand-alone document.

### **SELECTED BEST MANAGEMENT PRACTICES**

The following best management practices will be completed to implement this section.

#### **BMP X-1. Complete Systemwide Assessment (UIC)**

Description: The City will complete and submit to the department its full system-wide assessment for all City owned and operated underground injection systems by the WPCF-UIC permit due date. The Systemwide Assessment must include the location and construction details of all injection systems and other stormwater management controls, an evaluation of the land use and activities in all areas draining into the stormwater injections systems and an identification based on available information of areas within the drainage catchment where hazardous substances and toxic materials are used, handled or stored; and any other specific requirements included in the WPCF-UIC permit.

Rationale: The Systemwide Assessment provides a solid understanding of the City's UIC system from which to make educated policy decisions and compliance efforts.

#### Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline Start	Task Deadline Finish
1	Collect necessary data to refine Systemwide Assessment per permit requirements/request. Submit to DEQ	Public Works Director, Stormwater Program Manager	Ongoing	FY2012-13
2	Review, and revise/update Systemwide Assessment if changes have occurred. Submit to DEQ. If no significant changes have occurred, include the assessment in the annual report.	Public Works Director, Stormwater Program Manager	Year 4 of permit	June 30, Year 5 of UIC permit (or November 1, Year 6 of UIC permit if no changes)
3	Review and revise/update Systemwide Assessment if changes have occurred. Submit to DEQ as per UIC	Public Works Director, Stormwater Program Manager	Year 10 of permit	As per UIC WPCF Permit Reissuance

WPCF Permit Reissuance application directions.			application due date
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Progress will be deemed satisfactory if all task deadlines are met.

Responsible Persons: The Public Works Director is ultimately responsible for implementation of this BMP, with assistance from staff noted above.

### **BMP X-2. UIC Registration (UIC)**

Description: The City will complete and keep up-to-date its inventory and GIS of all drill holes, dry wells and other UICs. The City will continue to register its dry wells and drill holes and any other UICs with DEQ, as required. The City has undergone an intensive mapping program and has a solid database of its stormwater facilities.

Using a GPS, continue on an as-needed basis to locate all new or newly known catch basins, drill holes, dry wells and river outfalls and display information in a GIS.

Rationale: In order to manage stormwater properly, the City needs to know where all of its storm drainage structures are located, where they discharge, and the areas and land uses they drain. This can best be done by obtaining accurate geographical coordinates for each structure by means of a GPS, assigning a descriptive identification code to each structure, and recording this information in a database and GIS.

#### Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline	
			Start	Finish
1	Continue to update the stormwater geodatabase as needed.	Public Works Director, Utilities Data Systems Program Manager, Street/Stormwater Operations Manager, Stormwater Program Manager	Ongoing	Ongoing
2	Provide required updates to DEQ of UIC registration database.	Public Works Director, Utilities Data Systems Program Manager, Stormwater Program Manager	Ongoing	Ongoing
3	Maintain accurate database.	Public Works Director, Utilities Data Systems Program Manager, Street/Stormwater Operations Manager, Stormwater Program Manager	Ongoing	Ongoing

Progress will be deemed satisfactory if all task deadlines are met.

**BMP X-3. UIC Retrofits, Upgrades or Decommissioning (UIC)**

Description: Per the permit requirements, the City will determine whether any specific UICs require decommissioning or improvements such as retrofits, based on the results of the Systemwide Assessment and the Groundwater Protectiveness model results or permit requirements (e.g., as a result of monitoring results). Simple decommissioning or retrofits will be accomplished through existing standard practices (e.g., see below) and will have to address the quantity of stormwater diverted in case of a decommissioning or retrofit to avoid negative water quality impacts from localized flooding issues as a result of the absence of the decommissioned facility. Although not currently anticipated as being necessary given the results of the current Systemwide Assessment, the City may develop a UIC decommissioning or improvement plan on an as-needed basis to make improvements in an efficient, risk-based manner as needed (e.g., should several UICs need to be decommissioned)..

Rationale: The rationale is that the potential exists that some existing UICs may need upgrading, retrofitting, or decommissioning to ensure they can be accessed to plug in the case of a spill or as a potential action as a result of future monitoring data. Because widespread retrofits and/or decommissioning are not anticipated at present given the approved groundwater protectiveness model and the findings described within the City's Systemwide Assessment, it appears that a full separate decommissioning plan will likely not be necessary in the near term. But steps for decommissioning are listed below the measurable goals and schedule table, below. .

Measurable Goals and Schedule:

Task #	Description	Responsible Person	Task Deadline Start	Finish
1	Review results of the approved Systemwide Assessment(s) and WPCF-UIC Permit in light of the Groundwater Protectiveness Model results to determine if any UICs need to be retrofitted or decommissioned to protect water quality.	Stormwater Program Manager, City Engineer, Street/Stormwater Operations Manager	FY11-12;  FY16-17;  FY21-22	FY12-13;  FY17-18;  FY22-23
2	If the City deems prudent given the results of subtask 1, the City may engage in upgrades or retrofits to UICs. In cases where decommissioning would be appropriate, the City may decommission a UIC per the steps below and may prepare a	Public Works Director, City Engineer Utilities Data Systems Program Manager, Street/Stormwater Operations Manager, Stormwater Program Manager	Variable, dependent on UIC permit requirements for Systemwide Assessment	Per permit requirements.

Task #	Description	Responsible Person	Task Deadline Start	Finish
	Decommission and/or Improvement Plan if needed, or also follow standard DEQ guidance for decommissioning .			
3	Commence with UIC retrofits/upgrades and/or decommissioning as needed on a prioritized risk-based schedule through standard procedures or implementation of the Decommission and Improvement Plan, if applicable.	Public Works Director, Utilities Data Systems Program Manager, City Engineer, Stormwater Program Manager	Per permit requirements.	Per plan,

Should decommissioning of a UIC be required over the course of the permit, the City will take the following steps to decommission a UIC so that groundwater is protected.

Step 1	Complete the DEQ UIC Pre-Closure Notification Form.
Step 2	Conduct a site inspection of the UIC; note any contaminants of potential concern.
Step 3	Determine Sampling Requirements. Samples will be collected only when the site inspection for the UIC determines: (a) a potential contamination source is identified within the UIC drainage area; (b) the UIC contains free product, or (c) the UIC is located within 500 feet of a known domestic water well or within a 2-year time of travel of a delineated wellhead.
Step 4	Collect water and/or sediment samples as required and submit for laboratory analysis.
Step 5	Review the results of the laboratory analysis. If results are below applicable screening standards skip to Step 8. If results are above screening standards determine if there are likely impacts to the soil or groundwater quality as a result of UIC operation.
Step 6	Prepare follow-up site specific sampling plan if required based on the result of Step 5.
Step 7	Prepare Site-specific contaminated media management plan if required.
Step 8	Develop, prior to UIC decommissioning, develop and implement a plan to manage the stormwater currently discharging to the UIC system.
Step 9	Prepare and Submit DEQ UIC Pre-closure Notification Form to DEQ at least 30 days prior to decommissioning the UIC.
Step 10	Decommission the UIC. This task may include scoping and bidding the work, and field work including performing required sampling, ensuring approved alternative facilities are in place, and rendering the UIC system completely inoperable including backfilling with materials appropriate for the site conditions that meet both DEQ and WRD requirements.

Step 11	Prepare a Submit the Closure and Decommission Report to DEQ and obtain final approvals.
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Progress will be deemed satisfactory if all task deadlines are met.

## **XI. CERTIFICATION**

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.

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Paul Rheault, Director of Public Works

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Date

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Eric King, City Manager

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Date

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## **APPENDICES**

**Appendix A:**  
**ISWMP Task Summary and Permit Implementation Schedule Tracking**

**Appendix B:**  
**City of Bend, Performance Standards for Stormwater Quality, November 2012**

**Appendix A:**  
**ISWMP Task Summary and**  
**Permit Implementation Schedule**  
**Tracking**

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**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Program Administration, Planning and Financing (Section II)	1. Administration and Coordination (MS4 and UIC)	Administer and coordinate implementation of the ISWMP						
		Communicate level of priority importance to department heads						
		Hold stormwater coordination meetings at-least four times per year	★	★	★	★	★	★
		Optionally participate in external stormwater workgroups (e.g., COIC, ACWA) as appropriate						
		Convene other ad hoc workgroups as necessary						
	2. Legal Authority (MS4 and UIC)	Begin Implementation of Bend Code Title 16 Ramp-up Period						
		Continue Full Implementation of Bend Code Title 16						
		Conduct Necessary Recordkeeping to Meet Measurable Goals, for inclusion in annual reports						
	3. Financing (MS4 and UIC)	Ensure adequate funding to implement the ISWMP.						
	4. Planning (MS4 and UIC)	Annually review ISWMP, plan activities for coming year.						
		Update ISWMP as allowed/appropriate.						
	5. Annual Reporting (MS4 and UIC)	Prepare and submit annual report	★	★	★	★	★	★

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Public Education and Outreach (Section III)	1. Develop and Implement Strategic Outreach Plan Targeting Pollutants of Focus for Public and City Employees (MS4 and UIC)	Develop Coordinated Strategic Campaigns (planning and create materials)						
		Implement Campaigns (Distribute materials; encourage employee participation)						
		Evaluate Initial Campaigns (baseline and completion surveys)						
		Revise strategic campaign planning (planning and create materials)						
		Implement Revised Campaign (Distribute materials)						
		Evaluate Campaigns (baseline and completion surveys)						
	2. Stormwater Pollution Prevention Web Site (MS4 and UIC)	Review and revise site. Examine legal ability to list or link to local suppliers.						
		With City's website update, look into capabilities of tracking hits on individual pages to help determine effectiveness						
		Provide updates as new materials/information become available.						
	3. Media Relations: City News Broadcast Stormwater Quality Messages and Press Releases (MS4 and UIC)	Post at least 10 stormwater quality messages; in general one per year.						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
		Periodically (e.g. yearly for annual report) evaluate effectiveness by working to measure number of views to degree practicable.						
	4. School/Enrichment Activity Outreach: Stormwater/Watershed Diorama (MS4 and UIC)	Continue lending program and make diorama and videos available for local schoolteachers to use. (Provide at least 1 reminder/year to teachers or outside educators of availability).						
		Use diorama at suitable outreach events (1/year).						
		Include evaluation forms when lending and evaluate responses within annual report.						
		Keep diorama restocked and in good working order.						
	5. Implement Performance Standards (MS4 and UIC)	Begin implementation of performance standards						
		Review and update the performance standards as appropriate during the five year review of the ISWMP.						
Public Involvement and Participation (Section IV)	1. Public Advisory Group (MS4)	Continue to convene the Stormwater Quality Public Advisory Group (PAG).						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Public Involvement and Participation (Section IV)		Hold at least semi-annual meetings						
	2. Public Meetings (MS4)	Provide open review period for draft review of mid-term proposed modifications to <i>ISWMP 2022</i> ; post draft on website. Identify schedule for meeting.						
		Hold Public Meeting(s). Incorporate results.						
		Provide open review period for draft of revised ISWMP for second UIC and fourth NPDES MS4 permit application package; post draft on website. Identify schedule for meeting. Initial Implementation complete.						
		Hold Public Meeting. Incorporate results into submittal package.						
	3. Stormwater Quality Volunteer Opportunities (MS4)	1. Identify volunteer opportunities.						
		2. Develop support materials and provide them to interested volunteers.						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Public Involvement and Participation (Section IV)	4. Performance Standards (MS4)	Begin implementation of performance standards						
		Review and update the performance standards as appropriate during the five year review of the ISWMP.						
		Develop or acquire public education materials. Review and update the performance standards as appropriate during the five year review of the ISWMP.						
Illicit Discharge Detection and Elimination (Section V.)	1. Public Education on Illegal Discharges and Improper Disposal (MS4 and UIC)	Develop or acquire public education materials						
		Determine an effective means of distribution						
		Distribute materials to public employees.						
		Distribute materials to at least 50% of targeted businesses in each year.						
	2. Illicit Discharge Reporting Mechanism	Continue to provide and advertise an illicit discharge reporting e-mail and/or phone link on the stormwater pollution prevention web site and outreach.						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Illicit Discharge Detection and Elimination (Section V.)	3. Post Warnings About Illicit and Illegal Discharges (MS4 and UIC)	City will include storm drain message permanent marking requirements in standards and specifications.						
		City to organize volunteers to paint or post markers, as appropriate.						
		City to purchase markers and materials, as needed.						
		Markers to be posted (at least 50 per year on average).						
	4. Post Illicit Discharge Prevention Information on Web Site (MS4 and UIC)	PAG, public, or staff to provide input on what to post on web site; SC to approve.						
		City to post information.						
	5. Implement Illicit Discharge Regulations (MS4 and UIC)	Continue to Implement Bend Code Title 16.						
	6. Implement Performance Standards Related to Illicit Discharge Controls (MS4 and UIC)	Begin and continue implementation of performance standards						
		Acquire needed resources, training						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
		Review and update the performance standards as appropriate during the five year review of the ISWMP.						
Construction Site Stormwater (Section VI).	1. Implement the Stormwater Regulations (MS4 and UIC)	Continue to implement Bend Code Title 16 and the Standards and Specifications						
	2. Implement Performance Standards Related to Construction Site Control (MS4 and UIC)	Begin and continue implementation of performance standards						
		Acquire needed resources, training, support						
		Review and update the performance standards as appropriate during the five year review of the ISWMP						
Post-Construction Stormwater Management in New and Redevelopment (Section VII)	Implement the Stormwater Regulations (MS4 and UIC)	Continue to Implement Standards and Specifications, and Bend Code Title 16.						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Municipal Operations and Maintenance— Pollution Prevention and Good Housekeeping (Section VIII)	2. Implement Performance Standards Related to New Development and Redevelopment Controls (MS4 and UIC)	Begin and continue implementation of performance standards						
		Acquire needed resources, training support.						
	1. Street Sweeping (MS4 and UIC)	Review and update the performance stands as appropriate during the five year review of the ISWMP.						
		Continue to implement a street sweeping program per the Sweeping Plan and meeting the performance standards per their schedule.						
		Meet the street sweeping performance standards per their schedule						
	2. Implement Performance Standards (MS4 and UIC)	Implement Street Sweeping/Water Main Flushing Coordination Pilot Program						
		Begin implementation of performance standards						
		Review and update the performance standards as appropriate during the five year review of the ISWMP						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Municipal Operations and Maintenance (Section VIII)		Ensure the updated Standards and Specifications are properly implemented						
		Incorporate at least 5 stormwater surface controls (bioretention, filter strip, etc.) in right of way areas over ISWMP 2022 planning term. Properly maintain. Ensure updated Standards and Specifications are properly implemented.						
	4.Improve Storm Drain Facilities Cleaning (MS4 and UICs)	Collect data through maintenance management system						
		Review and refine maintenance schedule if appropriate						
		Develop improved maintenance procedures						
		Implement improved procedures.						
	5. Promote Commute Alternatives for Municipal Employees (MS4 and UIC)	Implement a transportation demand management program for city staff to encourage alternative modes of transportation and reduce single occupancy vehicle trips.						
Monitoring (Section IX)	1. Monitoring of the Deschutes River (MS4)	Fund and implement a river water monitoring plan update.						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Monitoring (Section IX)	2. Stormwater Monitoring for UICs (UIC)	Analyze and report results.						
		Develop monitoring plan by UIC permit due date that describes how the permittee will monitor stormwater and other allowed discharges. Submit separately to DEQ for review/approval.						
		Sample the stormwater discharge to the underground injection system at the locations specified in the monitoring plan approved by DEQ.						
		Comply with the sampling frequency established in the stormwater monitoring plan unless circumstances between the City's reasonable control prevent such.						
		Review monitoring results per the action levels in WPCF Permit Schedule A Table 1. In case of exceedance of individual or geometric mean of samples, take corrective actions per WPCF Permit Condition A.3., and A.4.						
	3. Implement Performance Standards (MS4 and UIC)	Begin and continue implementation of performance standards						
		Review and update the performance standards as appropriate during the five year review of the ISWMP						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Underground Injection Controls(Section X-1)	1. Complete Systemwide Assessment (UIC)	Collect necessary data to refine Systemwide Assessment per permit requirements/request. Submit to DEQ						
		Review and revise/update Systemwide Assessment. Submit to DEQ. If no significant changes have occurred, include the assessment in the annual report.						
	2. UIC Registration (UIC)	Continue to update the stormwater geodatabase as needed.						
		Provide required updates to DEQ of UIC registration database.						
		Maintain accurate database.						
	3. UIC Retrofits, Upgrades or Decommissioning(UIC)	Review results of the Systemwide Assessment(s) in light of the Groundwater Protectiveness Model results to determine if any UICs need to be retrofitted or decommissioned to protect water quality.						
		If the City deems prudent ... City may engage in upgrades or retrofits to UICs....						

**APPENDIX A--TABLE 1: ISWMP TASK SUMMARY AND PERMIT IMPLEMENTATION TRACKING**

Program	BMP	Activity	Date Due					
			FY 12-13	FY 13-14	FY 14-15	FY 15-16	FY 16-17	FY 17-18 to FY 22-23
Underground Injection Controls		Commence with UIC retrofits and/or decommissioning as needed on a prioritized risk-based schedule through standard procedures or implementation of the Decommission and Improvement Plan, if applicable.						

Notes: Timelines assume permit issuance by June 30, 2013, and may slide accordingly should permit issuance be delayed.



Deliverable Due (e.g. meeting date, report)

**Appendix B:**  
**City of Bend**  
**Performance Standards for**  
**Stormwater Quality**

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# ***FINAL DRAFT***

## ***City of Bend***

# ***Performance Standards for Stormwater Quality***

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### **What are Performance Standards?**

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Performance standards describe *what* the City is responsible for achieving. The development of these performance standards is required by the *Integrated Stormwater Management Plan (ISWMP) (December 2006)*. Performance standards will define a large part of what the City will need to do to implement the updated *ISWMP 2022*; they will define compliance when the City obtains its municipal stormwater NPDES permit reissuance anticipated in 2012-13 and they will be used in part to help meet the requirements in the City's UIC WPCF permit. Performance standards to be implemented by the City have been developed for the following areas:

Public Information (BMP III-5) and Participation (BMP IV-4)

Illicit Discharge Controls (BMP V-10)

Construction Site Activities and Controls (BMP VI-6) and Post Construction New Development, Redevelopment (BMP VII-5)

Municipal Maintenance Activities (BMP VIII-11)

Monitoring (BMP IX-4).

Assuming that the City receives its NPDES and WPCF-UIC permit issuances including the approval of these performance standards by the end of FY2012-13 the City would be required to start implementing these performance standards on July 1, 2013 unless otherwise noted as Tier II. Should DEQ approval of the ISWMP 2022 extend beyond the end of FY2012-13 (i.e., beyond June 30, 2013), then the dates herein will be pushed out an equivalent amount of time, to ensure that DEQ and the public has properly reviewed and approved the performance standards before implementation. Implementation schedules for the second tiers are described below.

These performance standards provide an effective, consistent, and predictable approach to minimizing water quality impacts. These performance standards also demonstrate the City's continuing commitment to improvement.

The City has developed these performance standards based on those of other established Phase II NPDES programs, along with the practical experience of staff within the City and the City's Stormwater Quality Public Advisory Group.

The City's internal coordinators were responsible for gaining input from staff on the performance standards and proposed schedule.

### **Implementation Schedule**

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As described above, the City would be required to start implementation of these performance standards on July 1, 2013 or thereafter in accordance with the amount of time that permits are issued after June 30, 2013 (e.g., start and finish deadlines are extended by one month if permits are issued July 30, 2013) to ensure proper public review and DEQ approval.. The performance standards are divided into two tiers. Tier I performance standards are those for which implementation is scheduled to start on July 1, 2013. Tier II performance standards are those that will be implemented within the next several years with start dates as follows (extended accordingly should permit issuance be delayed):

Tier II(1) implemented by July 1, 2014.

Tier II(2) implemented by July 1, 2015.

Tier II(3) implemented by July 1, 2016.

Tier II(4) implemented by July 1, 2017.

Tier II(5) implemented by July 1, 2018.

The City's NPDES permit is a five year permit and the City's WPCF-UIC permit is a 10 year permit that requires review at the five year mark. It is anticipated that the performance standards will be reviewed and updated as appropriate for the second half of the 10 year planning period of the *ISWMP 2022*. Attachment A provides a summary of the performance standards and their respective implementation schedule.

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**PUBLIC INFORMATION AND PARTICIPATION**

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The City has a very active program to develop outreach and educational materials for distribution. The City will continue to use this approach to develop materials regionally. The following performance standards describe the City's role in disseminating this information and conducting outreach and educational activities at the local level.

**I. COORDINATION WITH EXISTING OPPORTUNITIES/ACTIVITIES****Tier I**

1. The Stormwater Program Manager will be responsible for either conducting, or delegating the following activities:
  - a. Stay sufficiently informed about the programs and materials being developed by Oregon Association of Clean Water Agencies (ACWA) and/or other suitable programs and groups by regularly attending or tracking ACWA or other appropriate stormwater, groundwater and public outreach committees.
  - b. Distribute and/or make readily available outreach and educational materials to appropriate audiences within the City. This includes, but is not limited to schools, volunteer committees, neighborhood associations, community groups, business groups and /or other environmental groups.

**II. INTERNAL COMMUNICATION AND TRAINING****Tier I****A. City Staff and Officials**

1. Identify, develop, and communicate at least annually, information about the City's stormwater quality program to city management and elected officials so that they are well informed about the requirements, their role in implementing the local stormwater program, and the City's progress.
2. Train new employees involved with stormwater pollution prevention activities on their role in implementing the local stormwater program.

**B. Procedures and Training for Handling Telephone Calls from the Public About Stormwater Pollution Prevention**

1. Establish procedures for answering, tracking, and efficiently routing stormwater- related telephone calls to the appropriate staff for handling.
2. Train staff assigned to answering or responding to telephone calls on the established procedures.

3. Promote the use of a City telephone number to facilitate public reporting of illicit discharges.

### **III. STORM DRAIN INLET STENCILS AND SIGNS**

#### **Tier I**

1. The City will have an active program to install stencils/storm drain markers on publicly owned storm drain inlets. This includes installation by municipal staff, contractors, volunteers, and/or community groups.

#### **Tier II (3)**

2. As a goal, stencils and signs will be maintained sufficiently to be legible.

### **IV. COORDINATION WITH PUBLIC SCHOOLS (K-12)**

#### **Tier I**

1. The Stormwater Program Manager will either be responsible for distributing, or delegating the distribution of, information about school based outreach and educational materials to public schools within the City. This may include disseminating information on how to obtain copies of materials and providing lending opportunities for the watershed diorama, and may include working with outside groups who work directly with school children providing pollution prevention and water education.

### **V. LOCAL COMMUNITY OUTREACH PROGRAM**

#### **Tier I**

1. The City will participate in community outreach activities from the areas listed below for the purpose of communicating the general stormwater pollution prevention message, complementing regional or statewide coordinated specific messages for target audiences, and facilitating the proper management and disposal of targeted pollutants. The City will participate in at least three activities annually.

Community outreach activities will include any combination of the following:

- a. Distributing local, regional or statewide information through other venues (e.g., local newsletter, local magazine, mailing to target group, computer web site or network, local telephone directories, etc.).
- b. Participating in existing community events such as fairs, festivals, exhibits, etc. This participation may include setting up a booth, kiosk display, or other creative means for communicating the general stormwater pollution prevention message; using a specific message to a target group; or making a presentation at a local community service group.

- c. Initiating new community events or playing a major role in planning and staging a community or city-wide event. Examples include, but are not limited to, Earth Day, Stream Stewardship Day, or other festival or fair, business mixer, seminar or workshop for a target group, contest, or coordination with businesses to provide pollution prevention discounts (e.g., recycled car wash discount).
- d. Developing and raising watershed awareness.
- e. Coordinating with local volunteer groups to conduct outreach.

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**ILLICIT DISCHARGE CONTROL**

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**I. PREPARE FOR ILLICIT DISCHARGE SCREENING AND INVESTIGATIONS****Tier I**

1. The Stormwater Program Manager will either be responsible for conducting, or delegating, the following tasks:
  - a. Receive information on non-stormwater discharge reports;
  - b. Assure that needed follow-up, elimination, and cleanup of illicit discharges are conducted;
  - c. Provide other staff with information about the status of illicit discharge source identification and elimination. In particular, staff who identify an illicit discharge will be informed about its outcome;
  - d. Make sure required reporting is completed;
  - e. Distribute information to the City's management and elected officials, as requested, about the resources needed to implement these performance standards;
  - f. Facilitate the implementation of these performance standards; and
  - g. Be responsible for sharing activities and findings with the Stormwater Coordinators (SC).
2. Train at least biennially City staff who maintain and repair the municipal storm drain conveyance system. Train other municipal staff who conduct field work where illicit discharges are likely to occur, to recognize illicit discharges and the procedures for responding to these discharges. Train all new staff who fill positions as described above, about illicit discharge recognition and response procedures.
3. Keep maps of the completed municipal storm drain system sufficiently accurate to be used for tracing illicit discharges.

**Tier II (1)**

4. Train City staff assigned to conduct illicit discharge investigations on the knowledge and skills necessary to be effective. They will be familiar with guidance developed by the City and DEQ staff and these performance standards.

**II. CONDUCT FIELD SCREENING****Tier II (1)**

1. Begin program to identify evidence of illicit discharges to the municipal storm drain conveyance system, using municipal maintenance and other local field staff while they are conducting their routine work. Report any evidence of illicit discharges identified

during these field screening activities to the Stormwater Program Manager or designee for follow-up.

### III. CONDUCT FIELD INVESTIGATIONS

#### Tier II (2)

1. Verify whether an illicit discharge has occurred, using information provided as part of field screening and complaints received from the public or other agencies. The goal will be to initiate follow-up activities within twenty-four business hours from the time the Stormwater Program Manager receives the report.
2. When an illicit discharge has occurred, find the source and eliminate it, as soon as possible. Trace the source(s) of the illicit discharge using storm drain maps, inspecting manholes, and making surface observations. Record and maintain findings, as appropriate.
3. Continue to inspect and follow-up illicit discharges until:
  - a. The source of the illicit discharge is found and eliminated<sup>1</sup>; or
  - b. The discharge has stopped and cannot be traced to a source.

#### Tier II (4)

4. If the City identifies three or more illicit discharges in a fiscal year within an area served by any major outfall<sup>2</sup> or a UIC within a two year time of travel or wellhead protection area, additional illicit discharge investigations will be conducted in the area(s) served by the major outfall(s)/UIC during the subsequent fiscal year or sooner. These additional investigations will include one or more of the following, as appropriate:
  - a. Periodic above ground surveillance of the area for visual evidence of illicit discharges;
  - b. Additional inspections of businesses, if appropriate;
  - c. Additional periodic investigations of outfalls, UICs, waterbodies, and open channels for evidence of illicit discharges; and/or
  - d. Additional targeted educational outreach in the area.

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<sup>1</sup> Elimination means that the discharge is no longer occurring, has been diverted, with approval, to the sanitary sewer, or continues to discharge to the municipal storm drain system with City approval under a separate NPDES permit.

<sup>2</sup> Major outfalls are greater than twelve inches in diameter for outfalls serving industrial areas, and thirty-six inches in diameter for outfalls serving all other areas.

#### **IV. FOLLOW-UP TO FIELD SCREENING AND INVESTIGATIONS**

##### **Tier I**

1. When a party responsible for an illicit discharge is found, provide the responsible party with:
  - a. educational information about the impacts of his or her actions,
  - b. the requirements of the local stormwater ordinance,
  - c. options for proper discharge or disposal, and/or
  - d. educational materials describing BMPs.

When the source of an illicit discharge has not been found, distribute educational outreach materials to residents and/or businesses located in the immediate vicinity of the illicit discharge.

2. If the discharge is traced to a business, the Stormwater Program Manager, or delegated staff, will distribute appropriate educational and BMP information.
3. The goal of follow-up investigations will be to stop the illicit discharge(s) as soon as practicable and protect water quality to the maximum extent practicable.

##### **Tier II (2)**

4. Begin enforcement procedures, if appropriate, as per the enforcement authorities as set forth in the City's municipal ordinances.

#### **V. PROCEDURES FOR SPILL PREVENTION, CONTAINMENT, AND RESPONSE**

Since a network of spill prevention, containment, response, and clean up programs already exists, the approach of the City's stormwater illicit discharge control program is to supplement these services and respond to spill incidents that are not already under the purview of previously existing programs. Within this context, the City will assure that the following occurs.

##### **Tier I**

1. The City's Stormwater Program Manager will either be responsible for conducting, or delegating, the following tasks:
  - a. Investigate and record reported spill reports and/or complaints about incidents within the City.
  - b. Become familiar with existing spill prevention, containment, response, and clean-up programs that cover the city's jurisdiction.

##### **Tier II (2)**

- c. Coordinate illicit discharge prevention, elimination, and clean-up activities with existing programs listed in b.

- d. Establish a mechanism for obtaining information about spill incidents from other agencies and departments within the municipality so that source identification and follow-up activities can be coordinated.

## **VI. DOCUMENT AND REPORT COMPLETION**

### **Tier I**

1. Document the number and types of illicit discharge incidents reported and follow-up investigations conducted within the agency's jurisdiction. (This does not include information from fluid spills from automobile accidents.)

### **Tier II (3)**

2. Collect information for annual reporting including:
  - a. Number of illicit discharges identified as part of staff investigations;
  - b. Number of illicit discharge reported by other city staff and the public; and
  - c. Follow-up activities.

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## **NEW DEVELOPMENT, REDEVELOPMENT, AND CONSTRUCTION SITE CONTROLS**

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The performance standards for controlling pollutants in stormwater from development, redevelopment, and construction activities are intended to achieve a level of water quality protection equivalent to the maximum extent practicable. Implementation of the performance standards and incremental program improvements will be demonstrated in annual report submittals.

### **I. DEVELOPMENT PLAN REVIEW AND PERMITTING**

The performance standards described under this section refer to activities performed by the City during an application's plan review and permitting process.

#### **Tier I**

1. Obtain adequate legal authority to implement stormwater quality control measures for development, redevelopment, and construction activities as part of the development plan review and approval process.

#### **Tier II (1)**

2. Require developers and owner/builders of projects that include permanent stormwater facilities to ensure ongoing operation and maintenance of the facilities, as part of project approval documents.
3. Require developers and owner/builders of projects with potential for significant erosion<sup>3</sup> and planned construction activity to plan, prepare for and implement effective erosion and sediment controls.
4. Ensure municipal capital improvement projects also include stormwater quality control measures during and after construction, as appropriate for each project.

#### **Tier II (2)**

5. Inform developers and owner/builders of projects that disturb a land area of one acre or more in an area that drains to a surface water body of the state requirement to obtain coverage under the DEQ 1200C permit.

#### **Tier II (3)**

6. Require developers and owner/builders to control stormwater quality impacts of their projects by using appropriate BMPs. Encourage projects with significant stormwater pollution potential to mitigate impacts through site planning or design practices

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<sup>3</sup> Significant erosion potential is a substantial or potentially substantial adverse change in site conditions that could result in erosion and/or sedimentation of site soils. Conditions created by land disturbance activities which require a grading permit, as defined by local ordinance, can be used as a threshold for significance.

and/or post construction controls<sup>4</sup>. For such projects, the developer and owner/builder will be encouraged to avoid, minimize, and mitigate, in that order, the potential adverse impacts to water quality.

#### **Tier II (4)**

7. Review and refine, if necessary, the stormwater ordinance requiring site planning or design practices and/or post construction controls to protect water quality.

#### **Tier II (5)**

8. Review, and as appropriate, incorporate policies and implementation measures into the General Plan and Development Code to help preserve and enhance water quality and protect sensitive areas. General Plan and Development Code amendments will be adopted periodically as part of the City's ongoing General Plan and Development Code updates.

### **II. ADDITIONAL EROSION AND SEDIMENT CONTROL**

#### **Tier II (1)**

1. Maintain an erosion and sediment control program that includes requirements for minimum performance standards, sufficient enforcement authority, training and tools for inspectors, and information for developers and contractors.

#### **Tier II (2)**

2. As a condition for issuing a grading permit, require developers and owner/builders to prepare, submit for review and approval, and implement effective erosion and sediment control measures as per City regulations.

### **III. CONSTRUCTION INSPECTION**

#### **Tier I**

1. For development projects with significant erosion potential, require that erosion and sediment control measures are implemented through a construction inspection process. Measures will be implemented in accordance with local ordinances and project conditions of approval, including the approved erosion and sediment control plan. Measures will also be maintained as needed during construction.

#### **Tier II (2)**

2. Through a construction inspection process, require that construction contractors properly store, use, and dispose of construction materials, chemicals, and wastes from construction sites and prevent illicit discharges to the storm drains and watercourses.

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<sup>4</sup> In this case significant stormwater pollution potential would be those projects that meet the basic requirement criteria in the Central Oregon Stormwater Manual.

3. As part of normal inspections, municipal inspectors will review construction sites for adequacy of stormwater quality control measures. The municipal inspectors will prioritize assistance and guidance to onsite inspectors based on the following criteria:
  - a. Project's potential impact on stormwater quality;
  - b. Size of the project;
  - c. Site topography and soil characteristics;
  - d. Season in which the construction phase occurs; and
  - e. Nature of the construction activity.

**Tier II (4)**

4. Require that each active construction site either be stabilized or have supplies and roll-out plans for immediate stabilization to be deployed prior to a major storm to minimize erosion and discharges of sediment from disturbed areas. As part of normal inspections, municipal inspectors will review to make sure these requirements are being met.

**Tier II (5)**

5. Review the inspection of construction sites with erosion and sediment controls following complaints or reports of sediment or pollutants being discharged in the public right of way.

**IV. EDUCATION AND OUTREACH****Tier I**

1. Distribute appropriate educational and training materials to city staff, contractors, construction site operators, developers, and owner/builders such as:
  - a. Construction BMPs including erosion and sediment controls;
  - b. Available guidance on the DEQ 1200C permit, if applicable;
  - c. Site planning or design measures and post construction controls; and
  - d. Information provided by DEQ staff regarding State and Federal permit and approval requirements for related project activities.

Distribute this information and guidance materials to developers and owner/builders early in the application or design review process, or have available on the City's website as appropriate for the type of project.

**Tier II (1)**

2. Train, at least biennially, appropriate construction inspection staff on inspection procedures, documentation, and enforcement related to stormwater pollution prevention.

3. Train, at least biennially, staff from planning, building, and public works staff on planning procedures, policies, design guidelines, and BMPs for stormwater pollution prevention and control.
4. Distribute appropriate educational and outreach materials provided by the DEQ to those utility contractors (water supply, cable, phone, electrical, etc.) seeking encroachment and/or grading permits from the municipality.

## **LIFESPAN OPERATION AND MAINTENANCE VERIFICATION**

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This section addresses those facilities falling under the purview of the stormwater ordinance requiring the need for ongoing operation and maintenance of their storm drainage facilities to ensure facilities are properly working to address quantity and quality issues that might impact City facilities.

### **I. TARGETING INSPECTIONS TO ACHIEVE THE MOST BENEFIT**

#### **Tier II(1)**

1. Develop and update as needed, an operation and maintenance review plan or standard operating procedure (SOP) that describes the following:
  - a. The inspecting divisions/department.
  - b. The division/department that will conduct the stormwater follow-up and/or enforcement.
  - c. How information and resources will be coordinated among agencies/departments.
  - d. Priorities for inspecting stormwater facilities. Identify target businesses, if any, with high potential to discharge pollutants to the municipal storm drains or within wellhead protection areas.
  - e. Proper recordkeeping procedures.

The O&M review plan or SOP shall be tailored to the amount of staffing and financial resources available given program priorities.

#### **Tier II (1)**

2. Educate business owners and operators about stormwater pollution prevention, separate from the inspection program.
3. Respond to complaints or referrals from others about a facility. The response may include actions such as:
  - a. Interviewing the caller concerning the specific nature of the problem;
  - b. Referring the caller to the DEQ staff for compliance questions concerning the State requirements (i.e., 1200 Z permit, etc.).

- c. Referring the caller to another agency if the facility is outside the City's jurisdiction;
- d. Calling the facility and providing appropriate BMP information.

For substantive complaints not covered above, schedule a facility inspection or site visit as soon as possible.

#### **Tier II (2)**

- 4. Inspect and distribute appropriate BMP information to businesses per the operation and maintenance review plan priority. Frequency of inspection should be commensurate to the businesses' potential to flood or discharge pollutants to City facilities and available staffing levels.

#### **Tier II (4)**

- 5. Re-evaluate the City's priorities for operation and maintenance of permanent stormwater facilities. Update the operation and maintenance review plan as needed. Coordinate with other city inspectors (e.g., IPP or fire) to coordinate and minimize the number of inspections per business.)

## **II. PREPARING FOR INSPECTIONS**

#### **Tier II (1)**

- 1. Train appropriate City facility inspectors so that each inspector possesses the knowledge and skill necessary to conduct effective stormwater inspections. This includes identifying potential pollutant sources that may be exposed to stormwater runoff and non-stormwater discharges to the storm drains.
- 2. The appropriate City's inspection staff will be responsible with being knowledgeable about the following:
  - a. Stormwater regulations and requirements, including the City's ordinance and applicable state permits;
  - b. Impacts of non-stormwater discharges to the river. surface water and groundwater;
  - c. Inspection techniques and procedures;
  - d. Follow-up and enforcement procedures; and
  - e. Stormwater BMPs.

The inspectors and managers will obtain periodic training to support inspection activities and to continue to improve program implementation.

## **III. CONDUCTING INSPECTIONS**

#### **Tier II (2)**

- 1. Inspectors will review the facility layout to locate the storm drain system and/or stormwater drainage path.

2. Inspectors will review/inspect the following areas, if access to the area is safe and drains to a stormwater management facility or area from which stormwater flow may ultimately leave the site.
  - a. Outdoor process/manufacturing areas;
  - b. Outdoor material storage areas;
  - c. Outdoor waste storage/disposal areas;
  - d. Outdoor vehicle and heavy equipment storage and maintenance areas;
  - e. Outdoor parking areas and access roads;
  - f. Outdoor wash areas;
  - g. Surface discharge outlets from rooftop equipment; and
  - h. Outdoor drainage from indoor areas.
  - i. The status of onsite stormwater facilities.

These areas will be inspected for 1) their need for maintenance; 2) their potential to discharge pollutants from non-stormwater discharges to public facilities, and 3) pollutant exposure to stormwater.

3. Inspectors will notify the Stormwater Program Manager of potential to discharge pollutants from non-stormwater discharges, and pollutant exposure to stormwater from a business.
4. When a business that impacts stormwater quality is identified, the City's Stormwater Program Manager will either be responsible for conducting, or delegating, the following:
  - a. Communicate stormwater requirements.
  - b. Distribute facility representatives with appropriate stormwater BMP<sup>5</sup> information, educational materials, and inter/intra-agency referrals as needed. Ask the facility representative whether employees have been trained about how to prevent stormwater pollution.
  - c. Inform the facility representative of any problems or violations found. A schedule for correcting problems identified during the inspection, and a means for verifying their implementation will be discussed with the facility representative. This information will be noted and tracked.
  - d. Document and track inspection activities, follow-up, and enforcement activities for reporting to the DEQ in annual reports.

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<sup>5</sup> Stormwater BMPs will effectively eliminate non-stormwater discharges to the storm drains, and reduce pollutant exposure to stormwater to the maximum extent practicable.

#### **IV. ACHIEVING FACILITY COMPLIANCE**

##### **Tier II (5)**

1. If a problem is identified during an inspection, the Stormwater Program Manager will either be responsible for performing, or delegating a follow-up site visit or initiating a self-certification process where the facility representative certifies in writing that the problem has been remedied within the time specified by the Stormwater Program Manager.
2. Begin enforcement procedures, if appropriate, as per the enforcement authorities as set forth in the City's municipal ordinances.

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**MUNICIPAL MAINTENANCE**

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**STREET SWEEPING**

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**I. STREET SWEEPING FREQUENCY****Tier I**

1. Clean streets according to the City's Sweeping Plan.

**II. PROBLEMS ASSOCIATED WITH EFFICIENT STREET CLEANING****A. Getting Parked/Abandoned Vehicles or Other Obstructions Off Streets****Tier I**

1. Maintain a consistent sweeping schedule.

**Tier II (2)**

2. Obtain copies of garbage and recycling collection schedules and work with water utility personnel to understand schedules of major water line flushing effort to improve coordination (e.g., to prevent conflicts with sweeping on days when collection barrels are in the road or to sweep pollutants off streets prior to major water line flushing).

**Tier II (4)**

3. Take appropriate measures to keep curbed areas clear during street cleaning. Measures may include, but are not limited to, developing and distributing newsletters and/or other public education materials notifying residents and businesses of street sweeping schedules; setting out temporary or permanent street signs; sending announcements through neighborhood association chairs, or website postings.

**B. Trees Near Streets****Tier II (2)**

1. Provide adequate staff for conveniently reporting trees interfering with street cleaning.

**III. STREET CLEANING OPERATION TO MAXIMIZE POLLUTANT REMOVAL****Tier I**

1. Provide a clean looking street. Conduct tandem driving in areas of heavy load to minimize dirt tracks, trails, or debris to degree practicable given weather and winter road safety measures.
2. Check street cleaning equipment for proper adjustment.

3. Operate street cleaning equipment at the speed specified by the manufacturer.

#### **IV. STREET CLEANING MAINTENANCE TO MAXIMIZE POLLUTANT REMOVAL**

##### **Tier I**

1. Regularly inspect and maintain street cleaning equipment.
2. Replace worn components as required to maximize efficiency.

#### **V. SPILL RESPONSE**

##### **Tier I**

1. Report spills observed on streets immediately for quick response by appropriate personnel.
2. Respond to spills in accordance with appropriate response procedures. This includes appropriate measures to block storm drain inlets to prevent and minimize discharges from entering storm drainage facilities in the event of an accident, spill, or emergency fire-fighting activity.

#### **VI. RECORD KEEPING**

##### **Tier I**

1. Track miles swept using a broom odometer or by tracking mileage.
2. Track volume or weight of material removed for street cleaning.
3. Report summary of sweeping data in annual report.

##### **Tier II (1)**

4. Document and track areas where spills were reported and coordinate with the City's illicit discharge control field surveys.

##### **Tier II (4)**

5. As needed, identify and target areas for: 1) more frequent cleaning throughout the year or just prior to the rainy season; 2) additional efforts to remove vehicles; 3) distribution of public education materials to discourage illegal dumping, etc.

#### **VII. EDUCATION/TRAINING**

##### **Tier II (1)**

1. Train annually, municipal staff, as appropriate, responsible for street sweeping to identify and report illicit discharges, and to comply with the other street sweeping performance standards.

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## WINTER ROAD CARE

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### I. WINTER ROAD CARE TO MINIMIZE POLLUTANT CONTRIBUTION

#### Tier I

1. City will consider full long-term social costs and environmental/public safety risks when determining winter road care strategies.

#### Tier II (2)

2. The City will use alternative materials, such as basalt application, as much as possible and appropriate to minimize the use of chemical deicer (e.g., Mag Chloride), especially in sensitive areas.
3. Chemical deicers will be properly stored and handled per the chemical storage performance standards.

#### Tier II (3)

4. Any solid deicers used shall be properly covered to prevent contact with stormwater, and be stored outside of the 100 year floodplain.

### II. SPILL RESPONSE

#### Tier I

1. Report spills observed on streets immediately for quick response by appropriate personnel.
2. Respond to spills in accordance with appropriate response procedures.

### III. RECORD KEEPING

#### Tier II (1)

1. Track amount of product used per month (chemical deicer and basalt sanding).

### IV. EDUCATION/TRAINING

#### Tier I

1. Train at least biennially, municipal staff and contractors, as appropriate, responsible for winter road care and chemical deicer (e.g.,  $MgCl_2$ ) application to minimize overuse, to vary amounts to reflect site-specific characteristics, such as road width and design, traffic concentration, and proximity to surface waters and sensitive areas; to identify and report illicit discharges, and to comply with the other winter road care performance standards.

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## STORM DRAIN FACILITIES

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### I. ROUTINE INSPECTION AND CLEANING<sup>6</sup>

#### Tier I

1. When cleaning storm drain inlets and lines, remove the maximum amount of material at the nearest access point to minimize the potential for discharges to watercourses.

#### Tier II (3)

2. Inspect and clean as necessary, storm drain facilities (catch basins, UICs, inlets, culverts, and v-ditches) at least biennially. The inspections and needed cleaning will preferably occur prior to winter.

### II. RECORD KEEPING

#### Tier I

1. Report the amount of material removed when cleaning storm drainage facilities in monthly record keeping forms.

#### Tier II (2)

2. Document and track areas where spills were reported and coordinate with the City's illicit discharge control staff.

#### Tier II (4)

3. As needed, identify and target areas for: 1) more frequent cleaning throughout the year or just prior to the rainy season; and 2) distribution of public education materials to discourage illegal dumping, etc.

### III. SPILL RESPONSE (MULTIPLE AGENCIES INVOLVED)

#### Tier I

1. If non-hazardous materials are spilled, maintenance staff will contain the spill area immediately and clean when practical to prevent additional release and discharge of pollutants into the storm drain system.
2. Maintenance staff will establish a response/removal procedure for non-hazardous materials after work hours (e.g., per spill plan).
3. Maintenance staff will coordinate to determine the most appropriate follow-up response (e.g., tracking the source of a spill, identifying product labels, contacting Building and Planning Departments, contacting Stormwater Program Analyst with records and for educational follow-up, sending a clean-up bill to the responsible party, etc.).

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<sup>6</sup> For open channels and other natural watercourses, other permits and approvals (401 water quality certification, 404 permit, stream alteration agreement) may be necessary for certain activities, that should be coordinated prior to start of work.

**Tier II (2)**

4. Work with local Fire and Police Departments to obtain summaries or copies of spill reports to the Stormwater Manager or his/her designee.

**Tier II (3)**

5. Maintenance staff will be aware and up to date on the City's around-the-clock immediate response/removal procedure for hazardous or unknown materials.

**IV. DISPOSAL OF MATERIAL****Tier II (3)**

1. Store material removed from storm drainage facilities on a concrete pad or other type of impermeable material away from storm drainage facilities. Drain wastewater to the sanitary sewer or allow to evaporate to prevent discharges to the storm drain system. Dispose of the material at an appropriate facility. Contact collections utility's staff prior to any new type of discharge in sanitary sewer.

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**OPERATIONS AND MAINTENANCE OF  
STORMWATER PUMP STATIONS**

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**I. VISUAL INSPECTIONS****Tier I**

1. Inspect wet wells or forebays once per month for oil spills or other noticeable pollutant discharge.

**II. MAXIMIZE REMOVAL OF POLLUTANTS PRIOR TO DISCHARGE****Tier I**

1. Conduct at least one comprehensive cleaning of wet wells annually to remove sediment prior to the start of the rainy season to minimize discharge of sediment. Clean wet wells with a vactor, if possible.
2. If there is a large potential for pollutant discharge, have a spill kit readily available.
3. If any spill is reported or observed, try to remove the material at the nearest access point. As practical, shut down the pump station if the material may reach it. (A storm event may necessitate operation of the pump station.) As possible, prevent spill from discharging.
4. Store oil absorbent materials in appropriate maintenance vehicles.

**Tier II (3)**

5. Track spills upstream to try and locate the source(s) of pollution. Document spill incidents as part of the illicit discharge program. Implement enforcement, as appropriate.

**Tier II (5)**

6. Conduct at least one comprehensive cleaning of wet wells annually to remove sediment prior to the start of the rainy season to minimize discharge of sediment. Clean wet wells with a vacuator, if possible.

**III. DISPOSAL****Tier I**

1. Dispose of screenings at a landfill, sediment at a location that will not re-enter the storm drain system or receiving waters through erosion, and oil-absorbed materials at a site licensed to accept hazardous waste.

**IV. EDUCATION/TRAINING****Tier II (1)**

1. Educate all personnel responsible for maintaining stormwater pump stations about these performance standards. City staff will conduct or provide at least one training session annually to educate pump station personnel about these performance standards and illicit discharge identification and reporting.

**Tier II (3)**

2. Conduct drills as part of the training, as appropriate.

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**LITTER CONTROL**

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**I. SERVICES****Tier I**

1. Pick up litter receptacles located on City-owned property on a frequent enough basis to minimize or prevent spillage.

**Tier II (1)**

2. Provide an adequate number of litter receptacles on City-owned property. The City will make every effort to contain litter in receptacles.

**II. EDUCATION AND ENFORCEMENT****Tier I**

1. Encourage participation in and assist with the litter removal activities associated with the Stream Stewardship Day or other similar clean-up event.

**Tier II (5)**

2. Encourage public education efforts to include an anti-littering message.

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**CORPORATION YARDS**

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**I. GENERAL STANDARDS/ TRAINING****Tier I**

1. Prepare and maintain a current Corporation Yard Stormwater Pollution Prevention Plan (SWPPP).

**Tier II (1)**

2. Prepare spill containment kits and store them in locations that have potential for spills (e.g., fueling areas, etc.). Conduct training annually, or as appropriate, on how to use the kits.
3. Mark or stencil inlets to the storm drainage system with a "protect our waters-no dumping"-type message.

**Tier II (2)**

4. Survey the facility annually for compliance with the performance standards. Any performance standard that has not been implemented will be identified in the annual report, along with a schedule for implementation.
5. Post educational materials about these performance standards and best management practices in appropriate areas.
6. For each corporation yard, assign one person the primary responsibility for ensuring that performance standards are implemented and that all persons using the facility are aware of these performance standards.

**Tier II (3)**

7. Describe activities conducted to educate staff regarding the performance standards in the annual report.

**II. GENERAL HOUSEKEEPING****Tier I**

1. Dispose of often, material removed from streets and storm drainage facilities to eliminate exposure to rainwater and runoff to the storm drain system.
2. Keep chemical storage areas neat and orderly.

**Tier II (2)**

3. Inspect the yard at least semiannually to ensure that there are no illicit discharges to the storm drain system. Train employees to report potential pollutant discharges when noticed to ensure pollutant discharges are controlled to the MEP.
4. Sweep the corporation yard at least bimonthly.

**Tier II (5)**

5. Stockpile materials away from streets, gutters, storm drain inlets, or water channels when possible.

**III. REFUSE HOLDING AREAS****Tier II (1)**

1. When materials removed from storm drainage facilities are stored on site, store the materials on a concrete pad or other type of impermeable material away from storm drainage facilities. Use covers or other methods as appropriate to prevent blowing away of debris. Drain wastewater to the sanitary sewer, only upon approval from the local sanitary sewer agency, or allow to evaporate to prevent discharges to the storm drain system. Dispose of the material at an appropriate facility.

**IV. AUXILIARY STORAGE AREAS/YARDS****Tier I**

1. Store chemicals in appropriate areas to prevent pollutant discharge to the storm drains.

**V. CHEMICAL STORAGE****Tier I**

1. Keep all containers containing hazardous materials or waste closed when not filling or emptying. Properly label containers using the NFPA or HMIS system (or other appropriate system as approved by City management). Protect the storage area from vandalism.

**Tier II (2)**

2. Review the Spill Prevention Plan and/or other appropriate materials (e.g. MSDS) for hazardous materials storage requirements.

**Tier II (3)**

3. Store paint and other chemicals in an approved covered containment area. Design the floor so that spilled materials will be contained and easily removed.
4. If any material containers (not limited to hazardous material containers) are stored outside, keep the containers in a contained area that prevents discharge to the storm drain system from spills or exposure to rain. Ensure that all the containers are

closed with tight-fitting lids. Design the area to prevent "run-on" of stormwater and runoff of spills.

5. When never-before-used materials are purchased, review the Material Safety Data Sheet (MSDS) to ensure that incompatible materials have the appropriate separation.

## **VI. CHEMICAL USAGE**

### **Tier I**

1. Ensure that necessary safety equipment and spill containment kits are readily accessible in areas where chemicals are used. Inspect safety equipment (e.g., eye wash) regularly to ensure they are operational.
2. Review MSDSs.
3. Minimize use of chemicals. Use water-based paints and non-toxic chemicals as much as possible.
4. Recycle or dispose of excess chemicals at an approved local Household Hazardous Waste Facility or other approved location, or via an appropriate contractor who handles and disposes of materials properly.
5. Ensure chemical containers have secure lids and are secured properly to the vehicle during transport.
6. Properly remove any soils contaminated with spilled materials.

### **A. Oil-based Paints**

1. Wipe paint out of brushes. Filter and reuse thinners or dispose of as hazardous waste. Dispose of the excess paint as hazardous waste or recycle. If there is too much paint to dry, recycle the paint or dispose of properly.

### **B. Water-based Paints**

1. Rinse paint out of brushes and discharge rinse water to the sanitary sewer. Recycle or dry excess paint in cans and dispose of the cans in the trash. If there is too much paint to dry, recycle the paint or dispose as hazardous waste.

### **C. Automotive Fluids**

1. Collect used fluids and recycle or dispose at an appropriate facility.

### **D. Pesticides**

1. Refer to the State of Oregon pesticide applicator requirements for pesticide mixing, application, storage and disposal requirements.

2. Consider using integrated pest management methods. Given a choice, use the least toxic pesticides and herbicides that will accomplish the job.
3. Apply pesticides at appropriate times to maximize their effectiveness and minimize their potential to run off.
4. Mix only as much pesticide as needed. Do not mix or load pesticides next to storm drain inlets or watercourses.

#### **E. Solvent/Cleaning Solutions**

5. Properly recycle or dispose of used solvents/chemicals.

### **VII. WASHING VEHICLES/ EQUIPMENT**

#### **Tier II (I)**

1. Clean all vehicles/equipment on designated wash areas that discharges washwater to landscaping, the sanitary sewer or recycling system. (Wash areas might be off-site to ensure discharge to the sanitary sewer or recycling system.)
2. Ensure wash area and sump (if applicable) are large enough so that all washwater drains to the sanitary sewer or recycling system. If necessary, re-grade area or install dikes to convey the washwater.
3. Visually monitor the wash area to make sure it is consistently used.

### **VIII. FUEL DISPENSING AREAS**

#### **Tier I**

1. Store spill containment kits nearby. If spill occurs, use dry methods to clean and follow procedures in the Hazardous Materials Business Plan and/or Spill Prevention Plan.
2. Train employees in proper fueling, cleaning, and spill response procedures.
3. Discourage mobile fueling. If mobile equipment is fueled with a mobile fuel truck, have spill kits available and choose an area away from storm drain facilities, sanitary sewer systems, and waterbodies for fueling.
4. Design new fueling area(s) to prevent "run-on" of stormwater and runoff of spills.

#### **Tier II (4)**

5. Install signs reminding people not to "top off" tanks.
6. Consider covering fuel dispensing areas. Prohibit fueling over open ground; ground should be covered by concrete or asphalt protected with a sealant.

## **IX. FLEET MAINTENANCE/VEHICLE PARKING AREAS**

### **Tier I**

1. Inspect equipment for leaks on a regular basis. Use drip pans under leaking vehicles. Repair vehicles with significant leaks.
2. Drain and replace motor oil and other fluids in a covered shop area. If fluids are changed outdoors, designate an area where there are no connections to the storm drains, watercourses, or the sanitary sewer. Select a designated area where spills can be easily cleaned up or drain to a closed pan and return to shop for proper disposal.
3. Periodically dry sweep the area.
4. Schedule outdoor repair activities for dry weather, if possible. Prevent repair supplies or work material from entering storm drains or watercourses.

### **Tier II (1)**

5. Clean equipment as it comes in for repairs using proper collection and disposal methods when necessary. Inspect equipment as it comes in for routine maintenance and clean if needed.

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## **ROAD REPAIR AND MAINTENANCE**

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### **I. GENERAL PRACTICES/ TRAINING**

#### **Tier I**

1. Schedule excavation and road maintenance activities for dry weather, if feasible.
2. Equipment repairs and fueling or maintaining vehicles and equipment will be conducted in accordance with the Corporation Yard Performance Standards.
3. Recycle used motor oil, diesel oil, concrete, broken asphalt, etc. whenever possible.

#### **Tier II (2)**

4. Distribute educational and outreach materials, as appropriate, to those utility contractors (e.g., water supply, sewer, cable, phone, electrical, etc.) seeking encroachment and/or grading permits from the City.
5. Train at least biennially municipal staff and contractors conducting road repair and maintenance to comply with these performance standards.

### **II. ASPHALT/CONCRETE REMOVAL**

#### **Tier I**

1. After breaking up old pavement, remove and recycle as much as possible to avoid contact with rainfall and stormwater runoff.

**Tier II (2)**

2. Take measures to protect storm drain inlets prior to asphalt breaking or concrete sawing operations (e.g., place sand bags or filtering barrier around inlets). Clean afterwards by sweeping or removing as much material as possible. Do not wash down to the storm drain.
3. During saw-cutting operations, block or berm around storm drain inlets using sand bags or an equivalent appropriate filter device, or absorbent materials such as pads, pillows, or socks to contain slurry, or wet/dry vacuum the slurry. If slurry enters the storm drain system, remove the material immediately.
4. Remove saw-cut slurry (e.g., with a shovel or vacuum) before leaving at the end of the day.

**III. PATCHING AND RESURFACING****Tier I**

1. To minimize runoff from patching and resurfacing activities, materials will not be stockpiled in streets, gutter areas, or near storm drain inlets or waterbodies unless these areas are protected (i.e., stockpiled material should be covered to minimize stormwater runoff.)
2. Cover and seal manholes and storm drain inlets before applying seal coat, slurry seal, etc.
3. Never wash excess material from exposed aggregate concrete or similar treatments into a street or storm drain inlet. Designate an unpaved area for clean up and proper disposal of excess materials.
4. Use only as much water as necessary for dust control to avoid runoff.
5. Sweep up as much material as possible and dispose of properly.
6. Clean up spills and leaks from other equipment and work site areas using “dry” methods (absorbent materials and/or rags). Properly dispose of absorbent materials and rags. If spills occur on dirt areas, the contaminated soil will be removed properly and on a timely basis.
7. After the job is complete, remove stockpiles (asphalt materials, sand, etc.) and other extra materials as soon as possible.

**Tier II (2)**

8. If it rains unexpectedly, take appropriate action to prevent pollution of stormwater runoff (e.g., divert runoff around work areas).

**Tier II (3)**

9. Wash down of streets is only permitted if runoff is controlled or contained, or appropriate best management practices are followed.

**IV. SIGNING AND STRIPING****Tier I**

1. Have spill kits or store spill absorbent materials on trucks to be used in the event of a spill.
2. Contain and clean up waste materials and dispose of them properly according to the MSDS.

**V. EQUIPMENT CLEAN UP/STORAGE****Tier I**

1. Clean sprayers, patch and paving equipment at the end of the day. Use approved collection methods and dispose or recycle waste materials at an approved facility.
2. If stored outdoors, cover sprayers, patch and paving equipment, if they contain pollutants, to prevent rainfall from transporting pollutants to the storm drain system.

**Tier II (1)**

3. Flush paint sprayer supply lines at the corporation yard. Use approved collection methods and dispose or recycle waste materials at an approved hazardous waste facility.

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**MONITORING**

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**I. Facility Procedures****Tier I**

1. Maintain a NELAC accredited facility for stormwater-related laboratory testing.

**II. Preparing for and Conducting Monitoring Activities****Tier I**

1. Maintain sampling plans and quality assurance plans, as appropriate.
2. Conduct appropriate recordkeeping and reporting.

# *Attachment A*

<b>PERFORMANCE STANDARDS IMPLEMENTATION SCHEDULE</b>						
Implementation start by July 1: <sup>7</sup>	Tier I 2013	Tier II (1) 2014	Tier II (2) 2015	Tier II (3) 2016	Tier II (4) 2017	Tier II (5) 2018
<b>Public Information and Participation</b>						
I. Coordination with Existing Opportunities/ Activities	X					
II. Internal Communication and Training	X					
A. City Staff and Officials						
B. Procedures and Training for Handling Telephone Calls from the Public about Stormwater Pollution Prevention						
III. Storm Drain Inlet Stencils and Signs	X			X		
IV. Coordination with Public Schools (K-12)	X					
V. Local Community Outreach Program	X					
<b>Illicit Discharge Controls</b>						
I. Preparing for Illicit Discharge Screening and Investigations	X	X				
II. Conduct Field Screening		X				
III. Conduct Field Investigations			X		X	
IV. Follow-up to Field Screening and Investigations	X		X			
V. Procedures for Spill Prevention, Containment, and Response	X		X			
VI. Document and Report Completion	X			X		
<b>Construction Site and Post-Construction New Development and Redevelopment</b>						
I. Development Plan Review and Permitting	X	X	X	X	X	X
II. Additional Erosion and Sediment Control		X	X			
III. Construction Inspection	X		X		X	X
IV. Education and Outreach	X	X				
<b>Lifespan Operation and Maintenance Verification</b>						
I. Targeting Inspections to Achieve the Most Benefit		X	X		X	
II. Preparing for Inspections		X				
III. Conducting Inspections			X			
IV. Achieving Facility Compliance						X
<b>Municipal Maintenance</b>						
<b>Street Sweeping</b>						
I. Street Sweeping Frequency	X					
II. Problems Associated with Efficient Street Cleaning	X		X		X	
A. Getting Parked/Abandoned Vehicles off Streets						
B. Trees Near Streets						
III. Street Cleaning Operation to Maximize Pollutant Removal	X					
IV. Street Cleaning Maintenance to Maximize Pollutant Removal	X					
V. Spill Response	X					
VI. Record Keeping	X	X			X	
VII. Education/Training		X				
<b>Winter Road Care</b>						
I. Winter Road Care to Minimize Pollutant Contribution	X		X	X		
II. Spill Response	X					
III. Record Keeping		X				
IV. Education/Training	X					

<sup>7</sup> Assumes DEQ approval of performance standards per permit reissuance/issuance by June 30, 2013. Timelines extended as appropriate from date of permit reissuance.

## PERFORMANCE STANDARDS IMPLEMENTATION SCHEDULE

Implementation start by July 1: <sup>7</sup>	Tier I 2013	Tier II (1) 2014	Tier II (2) 2015	Tier II (3) 2016	Tier II (4) 2017	Tier II (5) 2018
<b>Storm Drain Facilities</b>						
I. Routine Inspection and Cleaning	X			X		
II. Record Keeping	X		X		X	
III. Spill Response (Multiple Agencies Involved)	X		X	X		
IV. Disposal of Material				X		
<b>Operations and Maintenance of Stormwater Pump Stations</b>						
I. Visual Inspections	X					
II. Maximize Removal of Pollutants Prior to Discharge	X			X		X
III. Disposal	X					
IV. Education/Training		X		X		
<b>Litter Control</b>						
I. Services	X	X				
II. Education and Enforcement	X					X
<b>Corporation Yards</b>						
I. General Standards Training	X	X	X	X		
II. General Housekeeping	X		X			X
III. Refuse Holding Areas		X				
IV. Auxiliary Storage Areas/Yards	X					
V. Chemical Storage	X		X	X		
VI. Chemical Usage	X					
A. Oil-based Paints						
B. Water-based Paints						
C. Automotive Fluids						
D. Pesticides						
E. Solvent/Cleaning Solutions						
VII. Washing Vehicles/Equipment		X				
VIII. Fuel Dispensing Areas	X				X	
IX. Fleet Maintenance/Vehicle Parking Areas	X	X				
<b>Road Repair and Maintenance</b>						
I. General Practices/Training	X		X			
II. Asphalt/Concrete Removal	X		X			
III. Patching and Resurfacing	X		X	X		
IV. Signing and Striping	X					
V. Equipment Clean Up/Storage	X	X				
<b>Monitoring</b>						
I. Facility Procedures	X					
II. Preparing for and Conducting Monitoring Activities	X					