

City of Portland, Oregon

**Total Maximum Daily Load (TMDL) Implementation Plan
Sixth Annual Status Report**

**Fiscal Year 2013-2014
(July 1, 2013 – June 30, 2014)**

**Submitted to:
Oregon Department of Environmental Quality
November 1, 2014**

City of Portland, Oregon
TMDL Implementation Plan
Sixth Annual Status Report
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INTRODUCTION

This *Total Maximum Daily Load (TMDL) Implementation Plan Sixth Annual Status Report* summarizes key activities and accomplishments for the City of Portland (City) during fiscal year (FY) 2013-2014 (July 1, 2013 to June 30, 2014). It summarizes the implementation status of the City's management strategies to reduce TMDL pollutants, in accordance with the City's Total Maximum Daily Load (TMDL) Implementation Plan dated February 28, 2014.

Report Organization

This annual report covers implementation actions and accomplishments that occurred during FY 2013-14. The report is organized into the following sections:

- Adaptive management
- Citywide management activities
- Temperature management strategies

ADAPTIVE MANAGEMENT

The City uses an adaptive management approach for its TMDL program to determine if the *TMDL Implementation Plan* needs to be modified to improve effectiveness. This includes both an annual process and a more comprehensive longer-term process.

- **Annual process.** The City conducts an annual adaptive management process in conjunction with preparing each annual TMDL status report to determine if the City's TMDL program is being implemented in accordance with the TMDL Implementation Plan and identify whether any program adjustments are needed. The City's annual review determined that the TMDL program is being implemented in accordance with the *TMDL Implementation Plan* and that no program adjustments are needed.
- **Comprehensive process**
The City conducted a comprehensive process as part of the *TMDL Implementation Plan Fifth Year Review Report*. This included conducting in-stream water quality trend analyses for TMDL parameters for which data were available. The trend analyses document (titled *Appendix B: Summary of Water Quality Monitoring Trend Analyses*) was submitted to DEQ November 1, 2013. Not all TMDL parameters had observable

trends; however, those that were observed showed improving trends for all watersheds. The only exception was a declining dry season trend for total phosphorus in Fanno Creek.

As described in the *TMDL Implementation Plan*, the City also considers effectiveness evaluations developed for the City's NPDES Municipal Separate Storm Sewer System (MS4) program. As part of the *NPDES MS4 Year 19 Annual Compliance Report* (November 1, 2014), the City evaluated progress toward EPA-approved stormwater-related TMDL Waste Load Allocations (WLAs). The results showed that WLAs were met for all TMDL parameters in Rock Creek (total phosphorus, TSS and E. coli), Balch Creek (E. coli), and the Willamette River (E. coli). In Fanno Creek and Johnson Creek, WLAs were met for TSS and DDT, respectively.

The City also evaluated progress toward MS4 pollutant load reduction benchmarks. The results showed that all benchmarks were met, with the exception of E. coli in Springbrook Creek. Springbrook Creek is a small watershed, and only 28 acres (2 percent) of the total 1,247-acre drainage area in the far upper watershed are within the City of Portland. The 2013 benchmark was based on a load reduction primarily resulting from redevelopment. Because redevelopment did not occur at predicted levels, the load reduction from structural BMP implementation was lower than estimated. If non-structural as well as structural BMPs were to be considered in the evaluation, it is likely that the benchmark would be achieved. In 2014, monitoring conducted by the City of Lake Oswego close to the mouth of Springbrook indicated a significantly improving trend in E. coli concentration.

Both the water quality trends analyses and the results of the NPDES MS4 progress to WLAs and benchmarks indicate that the TMDL program is effective, and no program adjustments are needed.

CITYWIDE MANAGEMENT STRATEGIES

Table 1 shows activities conducted in FY 2013-14 to implement the Citywide management strategies identified in section 3 of the *TMDL Implementation Plan*. Many of the strategies are based on the City's Stormwater Management Plan (SWMP), which describes the best management practices (BMP) the City implements to reduce the discharge of pollutants from the MS4 to receiving waters. Additional information and greater detail on SWMP BMP implementation can be found in the *NPDES MS4 Annual Compliance Report for Permit Year 19*, submitted to DEQ on November 1, 2014.

TEMPERATURE MANAGEMENT STRATEGIES

Table 2 shows activities conducted in FY 2013-14 to implement temperature management identified in section 4 of the *TMDL Implementation Plan*.

TABLE 1: ACTIVITIES CONDUCTED TO IMPLEMENT CITYWIDE MANAGEMENT STRATEGIES

PUBLIC INVOLVEMENT (PI)	
Strategy	Implementation Activities FY 2013-14
1. Provide water quality education and curriculum resources for K-12 students.	<ul style="list-style-type: none"> • Reached 6,093 students (grades K-12+) with classroom programs that provide hands-on, interactive science education about stormwater and other environmental issues. • Involved 4,348 students (K-12) in education field programs that offer watershed investigations and field assessments, stormwater tours, boat tours, and restoration experiences. Of these, 1,587 students combined education with natural area restoration service projects • Provided canoe trips to 435 students in the Columbia Slough watershed. These trips were preceded by classroom studies and stewardship projects related to stormwater pollution. • Checked out stormwater and watershed curriculum kits and field equipment to six Portland elementary and middle school teachers. • Presented Stormwater - Soak It Up, a 75-minute classroom program for grades 4-12 and special interest groups, totaling 421 students and teachers. • Presented Tours of Stormwater Solutions to 241 students. Students visited swales, stormwater planters, ecoroofs, porous pavement, and creative downspout disconnections. • Presented Watershed Awareness to 453 students, grades 3-6. This program focuses on common non-point sources of pollution and pollution prevention. • Continued the permanent storm drain curb marker program. Participating community and school volunteers also distributed doorhangers with stormwater pollution prevention messages and clean river tips to nearby residences. Number of participants: 9 • Targeted schools with onsite stormwater facilities for extended outreach. Students learned about stormwater pollution prevention and their school's sustainable stormwater facilities and participated in maintenance activities for their facilities. Number of students: 109 • Presented <i>Futures Working for Clean Rivers</i> career education classroom and field programs to 70 students in the Columbia Slough watershed.

<p>2. Educate the public about stormwater and surface water quality protection/pollution prevention and riparian and wetland protection via websites, workshops, fact sheets, and other outreach materials.</p>	<ul style="list-style-type: none"> • Mailed Riverviews newsletter to over 309,000 residential ratepayers. The focus of the newsletter was Environmental Services by the numbers—facts about wastewater and stormwater management. • Included inserts in City water/sewer bills mailed to more than 200,000 customers: <ul style="list-style-type: none"> – First quarter of 2014: “Living in a Floodplain” provided information about flooding caused by fall and winter storms and included information on incentive programs to help residents and businesses manage stormwater on their property. – Second quarter of 2014: “Your Wastewater and Stormwater System” provided an overview of upcoming sewer improvement projects and how Environmental Services incorporates green stormwater management infrastructure in sewer improvement projects. – Third quarter of 2014: “Portland Has Changed a Lot Since the 1930s” provided information about the city’s aging sewer system, current projects to replace older sewers in danger of failing, and a link to the online version of the spring 2014 Riverviews newsletter. • Updated and posted fact sheets, brochures, and educational materials on the BES website about the Sustainable Stormwater Program (140,163 page views); Treebate Incentive for planting yard trees (13,233 page views); Green Street Stewards Program (11,258 page views); Native Plant Resources (5,602 page views); and Brownfield Program (32,942 page views).
<p>3. Involve citizens in water quality improvement activities through community events, stewardship projects, and restoration projects.</p>	<p>Columbia Slough Watershed:</p> <ul style="list-style-type: none"> • Co-sponsored and participated in numerous community events, including Slough 101, Groundwater 101, Explorando El Columbia Slough, three Canoe the Slough events, the Columbia Slough Regatta, Aquifer Adventure, the Columbia Slough Corps of Rediscovery, Soup on the Slough event, one Great Blue Heron Week Event, and three Sunday Parkways events, where stormwater was a topic of instruction. The City was a co-sponsor of the Columbia Slough Watershed Awards program. The total participation was approximately 2,300 persons. • Participated in Friends of Force Lake, Friends of Smith and Bybee Lakes, Let’s Build Cully Park Committee, Columbia Biogas Community Advisory Committee, and Colwood Golf Course Acquisition community advisory groups, providing stormwater, watershed, surface water, and pollution prevention education and professional guidance.

	<p>Willamette Watershed</p> <ul style="list-style-type: none"> • Conducted public involvement and information activities for projects via presentations to neighborhood associations, newsletter articles, an annual open house, and an annual street fair. Participated in over 25 community events, reaching over 1,500 citizens, including Multnomah Days, Sunday Parkways, rain garden workshops with East Multnomah Soil & Water Conservation District, neighborhood association meetings, and The Art of Stormwater exhibitions. • Distributed over 50 copies of “Be a Partner for Watershed Health” brochure through citywide mailings and community events. • Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas, where 7,065 volunteers spent 29,934 volunteer hours on restoration activities; facilitated 19 Friends group meetings and six education events, reaching 350 people. The Youth Conservation Corps spend 463 hours working in Willamette watershed parks. • Partnered with SOLV and the Friends of Baltimore Woods to engage community volunteers in watershed restoration at Baltimore Woods in North Portland. Over 314 volunteer hours provided erosion reduction, invasive plant removal, and native tree and shrub planting. <p>Johnson Creek Watershed</p> <ul style="list-style-type: none"> • Supported the Johnson Creek Watershed Council’s 16th annual Johnson Creek Watershed-wide Restoration Event, where 260 volunteers participated in watershed improvement activities. • Supported the Crystal Springs Partnership’s planting event at the Brennan site, with participation by 20 people. • Hosted a major public event at the Foster Floodplain Natural Area in May 2014, with
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	<p>about 4,000 people attending. Provided information about City efforts to improve water quality, mitigate flooding and enhance wildlife habitat at the site.</p> <ul style="list-style-type: none"> • Worked with the Army Corps of Engineers and Portland Parks & Recreation to implement a public outreach plan for the Westmoreland Park restoration project. <p>Fanno and Tryon Creek Watersheds</p> <ul style="list-style-type: none"> • Conducted public involvement and information activities for Fanno and Tryon Creek watershed projects via direct mail, presentations to neighborhood associations and coalition committees, newsletter articles, an advisory committee, an annual open house, and an annual street fair. Projects included SW Huber Greenstreet, Boones Ferry Road culvert replacement, Lower Tryon Canyon sewer repair, Tryon and Fanno outfall replacement project, Beaverton Hillsdale Highway stormwater retrofits, South Ash Creek sewer repair and enhancement, Stevenson and Hamilton roadside swales and Albert Kelly Park stream daylighting. • Worked with Southwest Neighborhoods Inc. (SWNI) to provide public information about watershed improvement and pollution prevention work conducted by the City and partner organizations. In FY 13-14, SWNI maintained a public involvement database of 9,543 records, attended or hosted 28 meetings and events, and published 52 articles in its monthly newsletter, which is distributed to over 9,300 homes. • Responded to 49 citizen concerns relating to stormwater issues, invasive plants, project ideas, wildlife issues, pollution or dumping concerns, and requests for stewardship and involvement. • Sponsored the Tryon Creek Watershed Council's Watershed-wide Event in February, 2014, where 60 people volunteered for a total of 225 hours. • Sponsored the Friends of Tryon Creek State Park's annual Trillium Festival, which engaged over 100 volunteers to host approximately 5,500 visitors to learn about the Tryon Creek Watershed and activities to protect it.
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	<ul style="list-style-type: none"> • Hosted citizens at the SW Watershed Resource Center (WRC), located in the Southwest Neighborhoods, Inc. office at Multnomah Arts Center. Provided technical assistance and project support to neighborhood and Friends groups in the Willamette River and Fanno and Tryon Creek watersheds. Activities included: <ul style="list-style-type: none"> – Hosting of visitors to the WRC room, open during regular business hours – 85 stewardship events, where 466 attendees contributed over 1,926 hours – 21 presentations and outreach events, with 730 total attendees – 62 landowner consultations – 23 equipment checkouts • Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas. In the Fanno Creek Watershed, 258 volunteers spent 528 volunteer hours at 17 restoration events, and the Youth Conservation Corps spent 204 hours working in Fanno Creek parks. In the Tryon Creek Watershed, 117 volunteers spent 316 volunteer hours at six restoration events, and the Youth Conservation Corps spent 199 hours working in Tryon Creek Watershed parks. <p>Citywide</p> <ul style="list-style-type: none"> • Provided support for outreach and educational programming through a partnership with Portland Parks Urban Forestry to foster recruitment, retention, and education of Neighborhood Tree Stewards, with the purpose of maximizing urban forest education and outreach, community involvement and awareness, and long-term stewardship of the urban forest. • Used an AmeriCorps member to educate 305 adults at 21 events and 843 youth at 38 events about how urban trees manage stormwater and improve the city.
<p>4. Implement Multnomah County's pet waste pick-up ordinance in City parks.</p>	<ul style="list-style-type: none"> • Portland Parks & Recreation encourages compliance with leash and scoop laws through education, enforcement, and by providing off-leash areas. Programs include: <ul style="list-style-type: none"> – Education campaigns, such as Pet Health for Parks, Dogs for the Environment, and Pettiquette for Parks

	<ul style="list-style-type: none"> - Developing park signs, presentations, and flyers to increase awareness and understanding of leash/scoop laws - Park Ranger patrols, which use park warnings and citations to increase leash/scoop law compliance
5. Promote carpooling, use of public transportation, walking and biking.	<ul style="list-style-type: none"> • Portland's Bureau of Transportation (PBOT) and Drive Less Connect match carpooling partners and provide discounted carpool parking. • PBOT provides the Bicycle Lunch and Learn series, Portland by Cycle rides and classes, and Bike and Walk maps covering Portland. • PBOT coordinates the Safe Routes to School program, which includes 93 schools in the City of Portland. • PBOT coordinates Sunday Parkways, a series of free events that this year allowed 10,600 participants to use non-motorized modes of transportation along Portland streets.
6. Coordinate and implement education and outreach programs and strategies with other jurisdictions.	<ul style="list-style-type: none"> • The City of Portland continues to participate in the Regional Coalition for Clean Rivers and Streams, a group of agencies and municipalities in the Portland/Vancouver metro area dedicated to educating the public about the impacts of stormwater runoff. The coalition develops an annual regionwide public awareness campaign that can reach more than 1.4 million people living in the four-county area. Its website and other media include information about proper disposal of pet waste; vehicle care, washing, and oil; organic/chemical-free lawn care; composting; native plants; trees; household chemicals, and dumping.
7. Post the <i>TMDL Implementation Plan</i> and annual reports on the City website.	<ul style="list-style-type: none"> • The <i>TMDL Implementation Plan</i> was posted February 2014, and the FY 2013-14 TMDL annual report was posted November 2014.

OPERATIONS AND MAINTENANCE (OM)	
Strategy	Implementation Activities FY 2013-14
1. Implement an inspection, maintenance, and repair program for public stormwater collection and treatment systems.	<ul style="list-style-type: none"> • Inspected all public stormwater management facilities (SMFs) at least once during the year. These include: <ul style="list-style-type: none"> – 153 proprietary BMPs (StormFilter, Vortech, Stormceptor, etc.) – 214 surface SMFs (swales, wetlands, ponds, sand filters, etc.) – 1,807 Green Streets • Cleaned: <ul style="list-style-type: none"> – 102 SMFs – Approximately 13,760 catch basins and inlets – Approximately 70,164 linear feet of ditch and 20,563 linear feet of culvert • Repaired 15 SMFs. • Repaired or constructed 249 inlets and inlet leads and 1,162 linear feet of culvert.
2. Implement an inspection program for private stormwater management facilities.	<ul style="list-style-type: none"> • Under the Maintenance Inspection Program (MIP), inspected 563 properties with 1,162 associated private stormwater management facilities. Provided technical assistance and education to ensure facilities are sufficiently operated and maintained.
3. Review BES stormwater facility operations and maintenance practices and update them as necessary.	<ul style="list-style-type: none"> • The BES <i>Stormwater Operations and Maintenance Manual</i> was last updated in 2012-2013. • The BES <i>Green Streets Maintenance Protocol</i> was last updated in 2011.
4. Operate and maintain public streets and roads in a manner that reduces the discharge of pollutants in stormwater.	<ul style="list-style-type: none"> • The 2011 <i>PBOT Maintenance Environmental Handbook</i> is used by road maintenance staff to ensure proper practices are used during maintenance and repair of streets. • The City is currently evaluating changing from calcium magnesium acetate (CMA) to magnesium chloride (MgCl₂) for deicing roads. MgCl₂ is effective at lower temperatures and uses less sand and gravel.
5. Provide employee training on maintenance and construction practices to protect water quality.	<ul style="list-style-type: none"> • BES provides annual construction erosion control training to BES and BDS staff. • PBOT provides training on the <i>Environmental Handbook</i> for street maintenance crews.
6. Implement the City's Integrated Pest Management (IPM) program to minimize the use and application of fertilizers, herbicides, and pesticides on publicly	<ul style="list-style-type: none"> • Since 1988, Portland Parks and Recreation has used IPM to manage over 10,000 acres of land at more than 250 locations including (but not limited to) implementing the following: <ul style="list-style-type: none"> – Utilizing plants with natural resistance to pests. – Proper mowing and irrigation of park turf to increase vigor and reduce weed

owned properties.	<p>populations.</p> <ul style="list-style-type: none"> - Mulching of planting beds to reduce establishment of weeds. - Application of selected herbicides to control invasive weeds to prevent infestation spread. - Release of natural biological control insects to control purple loosestrife infestations.
7. Maintain pet waste stations and signage in parks.	<p>Portland Parks & Recreation encourages compliance with leash and scoop laws through education, enforcement, and by providing off-leash areas. Programs include:</p> <ul style="list-style-type: none"> - Education campaigns, such as Pet Health for Parks, Dogs for the Environment, and Pettiquette for Parks - Developing park signs, presentations, and flyers to increase awareness and understanding of leash/scoop laws - Park Ranger patrols, which use park warnings and citations to increase leash/scoop law compliance - Special events like Flicks with Fido, and participating community and partner events like Doggie Dash and Aarf in the Park
8. Incorporate electric vehicles into the transportation fleet.	<p>The City of Portland currently uses 86 electric vehicles in the City fleet.</p>

ILLCIT DISCHARGE DETECTION AND ELIMINATION (ILL)	
Strategy	Implementation Activities FY 2013-14
1. Require new development or properties using nonconforming sanitary sewer connections to connect to the public sewer system when a public sanitary sewer is available.	<ul style="list-style-type: none"> Portland City Code (PCC) 17.33 (Required Public Sewer Connection) mandates that properties using onsite wastewater disposal systems or nonconforming private sewer systems connect to an available public sewer and/or otherwise make approved sewer connection upon notice to comply with city code and/or failure of the existing system. BES estimates that approximately 400 properties were brought into compliance with PCC 17.33. Approximate 150 properties are delinquent and subject to enforcement actions.
2. Limit infiltration of seepage from the sanitary sewer system to the MS4.	<ul style="list-style-type: none"> BES evaluated its sanitary and combined sewer pipe segments using a geographical information system (GIS)/database tool to prioritize and map potential spot repairs and whole pipe rehabilitation/replacement. This pipe rehabilitation asset management tool was used to effectively address rehabilitation/replacement needs of the sanitary and combined sewer collection systems, which includes prevention of infiltrated seepage from the sanitary sewer system to the MS4.
3. Implement and enforce designated prohibitions on discharges to the City MS4.	<ul style="list-style-type: none"> Nineteen illicit discharges were identified and subsequently corrected and/or mitigated. Follow-up and/or enforcement letters were issued to responsible parties as appropriate, and penalties totaling \$61,400 were assessed.
4. Identify, respond to, and eliminate illicit discharges and cross connections.	<ul style="list-style-type: none"> Illicit discharge monitoring during dry weather included 134 inspections conducted at 112 major outfalls. During 54 inspections, flow was observed. Based on samples and follow-up investigations, 2 illicit discharges were identified, and resolution is on-going.
5. Require Porta-potties at parks for public events and sporting events.	<ul style="list-style-type: none"> Portland Parks and Recreation requires large events to provide one portable restroom for every 125 people of estimated attendance.

NEW DEVELOPMENT STANDARDS (ND) (during construction and post-construction)	
Strategy	Implementation Activities FY 2013-14
1. Implement an erosion and sediment control program for ground-disturbing activities.	<ul style="list-style-type: none"> • Title 10 of the Portland City Code (PCC) provides requirements for development and construction-related activities in order to control the creation of sediment and to prevent the occurrence of erosion at the source during construction and development. The Erosion and Sediment Control Regulations seek to: <ul style="list-style-type: none"> – Reduce the sediment and pollutants contained in erosion caused by construction and development; – Reduce the amount of sediment and pollutants entering storm drainage systems and surface waters from all ground disturbing activity; – Reduce the amount of erosion placing dirt and mud on the public right-of-way and surrounding properties during construction and development; and, – Reduce the amount of soil and dust placed into the air during ground disturbing activity.
2. Require erosion and sediment control plans, when applicable, during the building permit application phase.	<ul style="list-style-type: none"> • An Erosion, Sediment, and Pollutant Control Plan (ESPCP) is required for ground-disturbing activity that exceeds 500 square feet and that requires a City of Portland building, public works, or development permit (Portland City Code 10.40). In addition, an ESPCP may be required for sites on steep slopes, in environmental zones, in greenway overlay zones, or in response to a violation of the City’s erosion control requirements.
3. Require BMPs to prevent and control erosion and construction-associated pollutants.	<ul style="list-style-type: none"> • The 2008 City of Portland Erosion Control Manual, Chapter 5 (Development Activity Controls) lists the BMPs required for construction-associated pollutants. Chapter 4 of the Erosion Control Manual lists the BMPs required for erosion.
4. Implement a hillside development protection code to minimize soil erosion from steep slopes.	<ul style="list-style-type: none"> • • PCC 24.70.020 B.1 prohibits grading of areas from which adverse erosion impacts can result. • PCC 24.70.020 C requires a permit and erosion minimizing measures for tree cutting on slopes with a gradient exceeding 25%. • PCC 10.30.030 includes additional requirements for slopes greater than 10%.

<p>5. Through the City's <i>Stormwater Management Manual</i>, implement stormwater management requirements for new development and redevelopment to treat stormwater and control post-development peak runoff rates to levels similar to pre-development levels.</p>	<ul style="list-style-type: none"> • The City's <i>Stormwater Management Manual</i> (section 1.3.2) requires development and redevelopment to maintain peak flow rates at their predevelopment levels for the 2-, 5-, and 10-year, 24-hour runoff events.
<p>6. Require new development and redevelopment to manage stormwater onsite to the maximum extent practicable.</p>	<ul style="list-style-type: none"> • The City's <i>Stormwater Management Manual</i> (section 1.3) requires onsite infiltration to the maximum extent feasible. Where complete onsite infiltration is not feasible, vegetated onsite retention facilities, ecoroofs, and pervious pavement are required to the maximum extent feasible.
<p>7. Promote the use of low-impact development techniques such as bioswales, rain gardens, and other vegetated stormwater management techniques</p>	<ul style="list-style-type: none"> • The <i>Stormwater Management Manual</i> (SWMM) includes a stormwater management hierarchy requirement to consider vegetated stormwater management options for new development and redevelopment projects.
<p>8. Promote and incorporate the use of green street facilities in public and private development.</p>	<ul style="list-style-type: none"> • The City's "% for Green Funding" program supports construction of green street facilities. There were 12 green street facilities under the program in FY13-14.
<p>9. Continue to review and update the <i>Stormwater Management Manual</i>.</p>	<ul style="list-style-type: none"> • The City revised the <i>Stormwater Management Manual</i> in January 2014. Highlights of the 2014 SWMM include: <ul style="list-style-type: none"> – New submission and review requirements for manufactured stormwater treatment technologies – Added tree credit on private property as an impervious area mitigation technique, similar to existing tree credit in the right-of-way – Added downspout extension and curb extension as facility types with design criteria. – Updated operations and maintenance requirements to provide consistency with Maintenance Inspection Program administrative rules and best practices – Clarified the update and amendment process

<p>10. Enforce stormwater ordinances that protect water quality.</p>	<ul style="list-style-type: none"> • BES Enforcement Program Administrative Rules [Portland Policy Document (PPD) item ENB-4.15] describe BES procedures for assessing violations of stormwater-related Portland City Code (PCC) provisions, administrative rules and permits related to the following: <ul style="list-style-type: none"> – Stormwater Management Manual [Portland Policy Document (PPD) item ENB-4.01] – Sewer Development Services Program (PPD item ENB-4.07) – Stormwater Discharge Program (PPD item ENB-4.13) – Sewer and Drainage Facilities Design Manual (PPD item ENB-4.14) – BES Public Works Enforcement (PPD item ENB-4.22) – BES Title 10 Discharge Enforcement Program (PPD item ENB-4.30), and – Maintenance Inspection Program (PPD item ENB-4.31)
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NATURAL SYSTEMS (NS)	
Strategy	Implementation Activities FY 2013-14
1. Implement provisions of City Code that protect floodways and floodplains.	<ul style="list-style-type: none"> • PCC 33.430.015 (Environmental Protection Zone) provides the highest level of protection to the most important resources and functional values, including floodways and floodplains. The resources and functional values are identified and assigned value in the inventory and economic, social, environmental, and energy (ESEE) analysis for each specific study area. Development will be approved in the environmental protection zone only in rare and unusual circumstances.
2. Implement programs to protect riparian buffers and corridors, headwaters, springs and seeps, wetlands, and native vegetation.	<ul style="list-style-type: none"> • The City complies with Metro Title 13 of the Urban Growth Management Functional plan adopted in September 2005. Title 13 establishes baseline requirements to protect, conserve and restore the region's significant riparian corridors and wildlife habitat resources, which are collectively referred to as Habitat Conservation Areas. Approximately 12,845 acres of Title 13 Habitat Conservation Areas comprise riparian corridors and wildlife habitat along streams and wetlands within the City of Portland and specific urbanizing pockets of Multnomah County. The City achieves compliance with Title 13 through a combination of natural resource inventories, protection plans, and environmental overlay zones, willing-seller land acquisition, easements, and restoration programs.
3. Restore riparian buffers by removing invasive species and planting with native shrubs and trees.	<ul style="list-style-type: none"> • In partnership with the SW Watershed Resource Center, facilitated the restoration (invasive removal, erosion control, and/or native planting) on 810 linear feet of streambank, including installing 517 native plants, in the Fanno/Tryon Watershed. • Sponsored the Tryon Creek Watershed Council's Watershed-wide Event in February 2014, where volunteers planted at least 500 native plants. • Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas. This program planted 9,674 native plants in Willamette Watershed parks. • Partnering with SOLV and the Friends of Baltimore, cleared 33,000 square feet of invasive vegetation and planted 53 native trees and plants in the Willamette Watershed. • Under BES's Community Stewardship Grants Program, awarded 11 stewardship grants totaling \$87,000 for projects that included planting approximately 3,400 native trees, shrubs, and groundcover.

<p>4. Implement an invasive species removal program, including education and outreach.</p>	<ul style="list-style-type: none"> • The Portland City Council passed Resolution 36726 in August 2009 to establish the <i>Invasive Plant Strategy</i> as Portland’s management plan for invasive plants. The resolution directed the City to adopt the 10-year management goals outlined in the Invasive Plant Strategy report. In addition to prohibiting the planting of nuisance plants in natural resource overlay zones and City-required landscaped, the City established a Required Eradication List in Title 29, Property Maintenance. The intent of this new rule is to control the spreading of highly invasive plants that have not yet become widespread in Portland. <p>Specific implementation activities that occurred in FY13-14 include:</p> <ul style="list-style-type: none"> – Partnered with SOLV and the Friends of Baltimore to clear 33,000 square feet of invasive vegetation. – Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas. This program removed 468 invasive plants in Tryon Creek parks and removed 28 acres of invasive plants in Willamette Watershed parks. – Partnered with Johnson Creek Watershed Council to remove 6 cubic yards of invasive plants.
<p>5. Implement tree protection ordinances that provide stormwater benefits and mitigate urban heat island effects.</p>	<ul style="list-style-type: none"> • The Tree Policy Review and Regulatory Improvement Project was adopted in April 2011. A consolidated Portland City Code title (Title 11: Trees) establishes new tree preservation and planting requirements on development sites and standardizes the City’s tree removal permit system. • Adopted amendments to the Zoning Code will strengthen and clarify tree-related requirements on land division sites and in environmentally sensitive resource areas, including along stream corridors. When fully implemented (January 2015), the new regulations will help protect, expand, and improve the quality of Portland’s tree canopy.
<p>6. Implement a Revegetation Program.</p>	<ul style="list-style-type: none"> • Under the City of Portland Watershed Revegetation Program, many public agencies, businesses, and other landowners participated in and helped fund revegetation projects on their properties and neighboring properties. The program is currently managing 1,748 project acres on both public and private property. In FY 2013-14, 38,200 trees (27,235 deciduous and 10,965 coniferous) were planted on 278.6 acres.
<p>7. Implement a street tree planting program.</p>	<ul style="list-style-type: none"> • In partnership with Friends of Trees, planted 4,199 street trees and 915 yard trees in City of Portland right-of-way, on school properties, and in private yards.

<p>8. Work with watershed partners to support and coordinate tree planting and riparian restoration programs.</p>	<ul style="list-style-type: none"> • BES’s Community Watershed Stewardship Program awarded a stewardship grant of \$8,000 in FY 13-14 to Humboldt Neighborhood Association for the Albina Tree Initiative. • Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas, where 7,065 volunteers spent 29,934 volunteer hours on restoration activities; facilitated 19 Friends group meetings and six education events, reaching 350 people. • Partnered with SOLV and the Friends of Baltimore Woods in watershed restoration at Baltimore Woods in North Portland. Cleared 33,000 square feet of invasive vegetation and planted 53 native trees and plants.
<p>9. Implement stream restoration projects and provide floodplain reconnection.</p>	<ul style="list-style-type: none"> • Acquired approximately 2.56 acres of floodplain property through the Johnson Creek Willing Seller Program. • Westmoreland Park:-Transformed a nearly 2.5 acre pond that was a temperature source for Crystal Springs Creek into wetland and riparian habitat and restored approx. 2400 lineal feet of stream channel. • Spring Garden Stream: Restored 260 feet of stream and 0.41 acres of upland and riparian area (.21 acres riparian and .20 acres upland). • Continued work on the Luther Road Habitat Restoration, which has restored 2,200 lineal feet of stream and added two backwater channels, restored nearly 9.5 acres of floodplain, and restored nearly 3 acres of upland habitat.
<p>10. Work with public and private partners on culvert replacement, stream and wetland restoration projects.</p>	<ul style="list-style-type: none"> • Partnered with SOLV and the Friends of Baltimore Woods to engage community volunteers in watershed restoration at Baltimore Woods in North Portland. • Tacoma Culvert: Restored approximately 125 lineal feet of stream, reconnecting over 4,000 lineal feet of stream channel for juvenile salmonids (Tacoma to Bybee). • Eastmoreland Golf Course Culvert: Restored 545 linear feet of stream channel and reconnected over 4,000 linear feet of upstream habitat for juvenile salmonids (to headwaters). • NE 33rd Culvert: A new box culvert with natural substrate lining the bottom allows for aquatic and terrestrial wildlife passage, as well as unimpeded flow from 3,000 linear upstream feet.

11. Identify and protect cold water refugia in the Willamette River.	SEE TABLE 2 OF THIS REPORT.
12. Use updates to the citywide <i>Natural Resource Inventory</i> to inform zoning and planning updates.	<ul style="list-style-type: none"> • The City of Portland’s Comprehensive Plan Update requires periodic review and updating of the Natural Resource Inventory. An update was approved on June 11, 2014.

STRUCTURAL CONTROLS (STR)	
Strategy	Implementation Activities FY 2013-14
1. Implement retrofits to the existing storm drainage system, including use of green infrastructure.	<ul style="list-style-type: none"> • The NPDES MS4 Retrofit Plan lists the following projects that were either in construction or were completed during the FY13-14: <ul style="list-style-type: none"> – NE 148th Basin Water Quality Facility Phase II, 180 acres treated – N Fessenden St and N Richmond Ave Green Street, 0.31 acres treated – N Burgard Road Bridge, 0.38 acres treated – Multnomah Arts Center Stormwater Retrofit/Site Improvements, 0.66 acres treated – SW Sunset Blvd: DeWitt-18th Green Street, 0.39 acres treated – SW Multnomah Blvd Green Street, 2.1 acres treated – Fanno/Tryon Outfall, 34 acres treated – Spring Garden Park Daylighting, 11 acres treated – Multnomah Village Green Street, 0.8 acres treated – I-5/SW 26 Water Quality Facility, 26 acres treated – SW Huber Street Green Street, 0.29 acres treated – SW 41st Ave and SW Taylors Ferry Road Green Street, 0.34 acres treated – SW Spring Garden Street: 19th - Taylors Ferry Road Green Street, 0.42 acres treated – SW Huber St: 37th-43rd Green Street, 0.06 acres treated – N Channel Ave Green Street, 0.83 acres treated – Milwaukie Light Rail Extension, 0.34 acres treated
2. Identify, prioritize, and construct new stormwater management facilities.	<ul style="list-style-type: none"> • The City has been implementing stormwater management facilities since the beginning of the first permit term (1995) to reduce water quality impacts from development that drains to the MS4. Various City policies, programs, and plans identify, prioritize, and implement construction of stormwater management facilities. <ul style="list-style-type: none"> – Capital Program: The Capital Improvement Program (CIP) includes a Surface Water Management program area. The CIP project list is developed through a multi-step process to identify, develop, review, score and rank projects for funding and scheduling priority. – Ecoroof Program (in effect since 1996): This program promotes the use of ecoroofs on public and private property to manage stormwater onsite. There are currently 568 ecoroofs in Portland, covering 38 acres.

	<ul style="list-style-type: none"> - The City has constructed lined swales and other stormwater management facilities under other City programs to treat stormwater from existing rights-of-ways in select areas to reduce TSS loadings. - See the list in response to Strategy #1 (above) for specific projects.
3. Maintain stormwater conveyance system maps and database to track system components and conditions.	<ul style="list-style-type: none"> • BES's Asset System Management group tracks assets, such as pipes and ancillary infrastructure, and the number, type, size, drainage area, and location of stormwater facilities constructed annually.
4. Develop a comprehensive Stormwater System Plan.	<ul style="list-style-type: none"> • BES completed the combined and sanitary sewer elements of its most recent System Plan in 2012 and is currently working on the Stormwater System Plan (SWSP). Early-action recommendations from the SWSP will be proposed for capital funding beginning in FY15-16. • The Stephens Creek Stormwater System Plan (SCSWSP) (BES, January 2013) was developed as a pilot for BES's Stormwater System Plan. The SCSWSP uses an asset management approach to stormwater management that prioritizes projects to protect, improve, and maintain stormwater infrastructure, including stormwater management retrofits. The SCSWSP's stormwater project recommendations include mitigating erosion associated with City-owned stormwater outfalls on tributaries of Stephens Creek; constructing three regional detention and pollution reduction facilities in the headwaters of the watershed; and constructing stormwater management retrofits for City streets.

PROGRAM MANAGEMENT (PM)	
Strategy	Implementation Activities FY 2013-14
1. Develop annual reports by November 1 that provide an overview of the <i>TMDL Implementation Plan</i> status.	<ul style="list-style-type: none"> This FY 2013-14 TMDL Annual Report will be completed on November 1, 2014.
MONITORING	
Strategy	Implementation Activities FY 2013-14
1. Implement a monitoring program that includes stormwater and surface water.	<ul style="list-style-type: none"> The <i>Monitoring Compliance Report</i> is published as part of the NPDES MS4 Annual Report submitted to DEQ on November 1, 2014. Table B-1 in Schedule B of the 2011 NPDES permit summarizes required monitoring types, locations, frequency, and analytic parameters. The required monitoring information is included in Section 3 of the <i>Monitoring Compliance Report</i>, in the order listed in Table B-1. In FY 13-14, Portland completed permit-required pesticide monitoring in accordance with the <i>Pesticide Monitoring Plan</i> that was submitted to DEQ on June 28, 2012. Portland concluded permit-required mercury monitoring in FY 13-14 and received approval from DEQ on January 30, 2014 to eliminate the mercury monitoring from Table B-1 of the permit.

TABLE 2: ACTIVITIES CONDUCTED TO IMPLEMENT TEMPERATURE MANAGEMENT STRATEGIES

Strategy	Implementation Activities FY 2013-14
Riparian Protection	<ul style="list-style-type: none"> • In partnership with the SW Watershed Resource Center facilitated the restoration (invasive removal, erosion control, and/or native planting) on 810 linear feet of streambank including installing 517 native plants. • Through a BES/Parks and Recreation partnership, involved citizens in their local natural areas, where 7,065 volunteers spent 29,934 volunteer hours on restoration activities; facilitated 19 Friends group meetings and six education events, reaching 350 people. • Partnered with SOLV and the Friends of Baltimore Woods in watershed restoration at Baltimore Woods in North Portland. Cleared 33,000 square feet of invasive vegetation and planted 53 native trees and plants. • Westmoreland Park - transformed a nearly 2.5 acre pond that was a temperature source for Crystal Springs Creek into wetland and riparian habitat and restored approx. 2400 lineal feet of stream channel. • Spring Garden Stream - 260 feet of stream restored and 0.41 acres of upland and riparian restored (.21 acres riparian and .20 acres upland). • Continued work on the Luther Road Habitat Restoration which has restored 2200 lineal feet of stream and added two backwater channels, restored nearly 9.5 acres of floodplain, and restored nearly 3 acres of upland habitat. • Continued to protect riparian vegetation through natural resource inventories, protection plans, and environmental overlay zones.
Revegetation Program	<ul style="list-style-type: none"> • Willamette River: <ul style="list-style-type: none"> - Planted 104,290 plants on 22,818 linear feet of riverbank and 183.4 acres. This included 13,375 deciduous trees, 8,820 coniferous trees, and 82,095 shrubs. • Columbia Slough <ul style="list-style-type: none"> - Planted 41,715 plants on 1,355 linear feet of riverbanks and 47 acres. This included 9,840 deciduous trees, 760 coniferous trees, and 31,115 shrubs.

	<ul style="list-style-type: none"> • Johnson Creek <ul style="list-style-type: none"> - Planted 20,556 plants on 20,938 linear feet of streambank and 44 acres. This included 3,385 deciduous trees, 1,160 coniferous trees, and 16,065 shrubs. • Tryon Creek <ul style="list-style-type: none"> - Planted 1,670 plants on 2 acres. This included 100 deciduous trees and 1,570 shrubs. • Fanno Creek <ul style="list-style-type: none"> - Planted 2,675 plants on 2.2 acres. This included 535 deciduous trees, 225 coniferous trees, and 1,915 shrubs.
Coldwater Refugia	<p>Planning began on the Powers Marine logjam structures. This project will build historic-scale logjams along a reach of state-owned submerged lands that are adjacent to property owned by Portland Parks and Recreation. The primary objective of the project is to enhance the value of BES' Riverview asset of multiple cold-water inputs to the Willamette mainstem along the Powers Marine Park shoreline/shallow water habitat bench. During the summer and fall seasons when the mainstem temperature in the Willamette rises above optimum levels, the Riverview inputs become increasingly important as cold water sources of thermal refugia to many species of aquatic fish and wildlife.</p> <p>By building large logjam structures along the shoreline, this project will expand the depth and breadth of the tributaries' cold water mixing zones in the river, and increase resting, feeding and rearing opportunities for Willamette fish and wildlife for years to come (designed for a 50+ year lifespan). Additionally, this project's aims to increase the Riverview asset's value by enhancing the existing riparian and floodplain zone's plant community with native hardwoods, conifers, and shrubs so that the reach is guaranteed a supply of future woody debris for these and other logjams downstream.</p>
Land Acquisition	<ul style="list-style-type: none"> • Acquired 46 acres of natural area through the Watershed Land Acquisition Program. • Acquired approximately 2.56 acres of floodplain property through the Johnson Creek Willing Seller Program.