

City of Portland, Oregon

Total Maximum Daily Load (TMDL) Implementation Plan

Fourth Annual Status Report

**Fiscal Year 2011-2012
(July 1, 2011 – June 30, 2012)**

Submitted to:

Oregon Department of Environmental Quality

November 1, 2012

TMDL Implementation Plan Fourth Annual Status Report November 1, 2012

Introduction

This *Total Maximum Daily Load (TMDL) Implementation Plan Fourth Annual Status Report* summarizes key activities and accomplishments for the City of Portland (City) during fiscal year (FY) 2011-2012 (July 1, 2011 to June 30, 2012). This is the fourth annual status report submitted by the City following the approval of the Total Maximum Daily Load (TMDL) Implementation Plan (IP) on March 6, 2009, in accordance with the Willamette Basin TMDL Water Quality Management Plan (WQMP). The IP was updated in FY11-12 to reflect the revised National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Stormwater Management Plan (SWMP), and the updated portion was included in the third annual status report.

This report does not encompass all elements of the TMDL Implementation Plan, but rather focuses on the most important implementation actions. It also does not quantify the pollutant load reduction of every activity because reliable, consistent, and universally accepted tools are currently not available to assess pollutant load reduction effectiveness of many of the actions (e.g., pollution prevention, education, stream restoration). For parameters with EPA-approved stormwater-related TMDL Waste Load Allocations (WLAs), pollutant load reductions from structural facilities within the City's MS4 area are estimated as part of NPDES MS4 permit compliance. That evaluation was most recently conducted as part of the 2008 NPDES MS4 Permit Renewal Submittal (<http://www.portlandonline.com/bes/index.cfm?c=50333&a=246071>).

Report Organization

This report is separated into the following sections:

- Temperature TMDL-related activities
- Cold water refugia-related activities
- Appendix A: Information from implementation of the NPDES MS4 permit (organized in accordance with the best management practices (BMPs) included in the MS4 *Stormwater Management Plan*), summarizing progress toward the permit-required measurable goals. Additional information and greater detail can be found in the NPDES MS4 *Annual Compliance Report for Permit Year 17*, submitted to DEQ on November 1, 2012.
- Appendix B: Examples of active watershed or stream restoration projects that are not included in Appendix A because they have been implemented outside areas draining to the MS4.

- Appendix C: A listing of active, approved, and recently completed projects. Activities shown in Appendix A and described in Appendix B in greater detail are also listed in Appendix C to provide a complete overview of activities by watershed.

Temperature TMDL-Related Activities

The main activity to reduce stream temperature is the planting of trees within the riparian area of streams, with the emphasis on smaller tributaries where increased shading will have the greatest impact.

A total of over 36,752 trees and 81,854 shrubs were planted on 245 acres along approximately 18,000 linear feet of stream bank. The breakdown by watershed is shown in the following table:

Watershed	No. of Trees	No. of Shrubs	Linear Feet of Stream Bank	Area in Acres
Willamette River	13,230	5,408	5,930	72.4
Columbia Slough	778	5,003	2,510	6.5
Johnson Creek	17,650	54,763	9,512	133.75
Tryon Creek	2,459	8,630	0	21
Fanno Creek	2,635	8,050	0	11.32

Removal of undersized or high invert elevation culverts that have a tendency to create upstream ponding may also help reduce stream temperature by increasing flow, decreasing surface area and limiting exposure to solar irradiation.

In the Columbia Slough, culvert replacements in the middle and upper slough fall in this category, as well as the culvert replacement along Crystal Springs in the Johnson Creek watershed (see Appendix C).

Any project that promotes infiltration, whether it is a floodplain reconnection or a green street project (see Appendix C), has the potential to increase summer base flow. However, it is difficult to quantify the effect of such projects.

Cold Water Refugia-Related Activities

A thermal infrared (TIR) survey was completed on August 28, 2011 for a portion of the Columbia River upstream of Portland, the Columbia Slough, and the Willamette River downstream of the Multnomah Channel, and on September 2, 2011 for the Lower Willamette River from the Willamette Falls to the Multnomah Channel. The purpose was to evaluate, among other things, the presence of cold water inputs to the major salmonid migration corridors. Figure 1 shows the TIR survey areas.

The specific objectives of the TIR image acquisition were to:

- Spatially characterize surface temperatures for portions of the Columbia River, Willamette River, and Columbia Slough.
- Identify and map cool water sources and thermal refugia.
- Create GIS compatible data layers (e.g., thermal image mosaics, spring locations, etc.) that can be used to plan future research, direct ground-based monitoring and analysis, and protect and restore critical habitat.

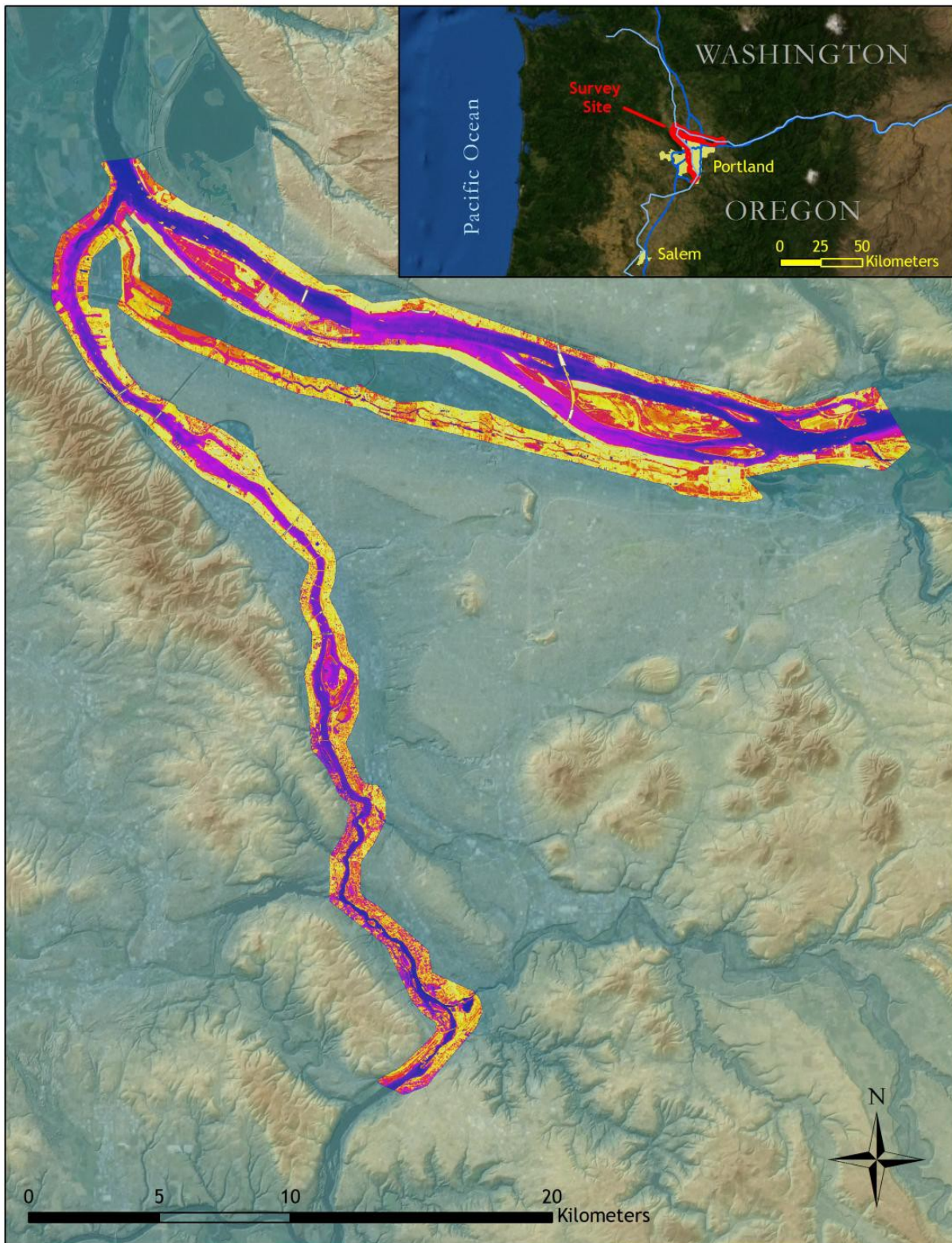
As part of the TIR survey, nine instream data loggers were deployed during the survey timeframe to calibrate and verify the thermal accuracy of the TIR imagery. The differences between TIR survey and data logger temperatures were consistent with other airborne TIR surveys conducted in the Pacific Northwest and were within the target accuracy of $\pm 0.5^{\circ}\text{C}$, with two exceptions.

Median channel temperatures were plotted by river mile for the streams in the survey area. Tributaries, springs, and inflows sampled during the analysis are included on the longitudinal profiles, as well as diversions and relevant landmark features, to provide additional context for interpreting spatial temperature patterns. If there was any doubt about the source of a feature, it was flagged for further review. These locations need to be verified in the field to confirm the presence of groundwater.

Because of the nature of the project, the focus of the survey was to depict the thermal conditions during peak temperatures. However, given the warm temperatures on the days of the survey, features such as warm canals or ponds may not be distinguishable from the surrounding terrain in the thermal image because of similarities in temperature.

It is important to note that temperature changes of less than $\pm 0.5^{\circ}\text{C}$ in the absence of a point source should be interpreted with caution until verified in the field because of the level of accuracy and resolution of the thermal imagery.

Figure 1. 2011 Thermal Infrared (TIR) Survey Areas



Observations—Willamette River

Figure 2 and Table 1 show the results of the TIR survey for the Willamette River.

Over the reach surveyed on September 2, 2011, radiant temperatures in the Willamette River ranged from a minimum of 19.9°C downstream of Oregon Falls to a local maximum of 22.2°C near Swan Island (mile 8). Surface water temperatures decreased slightly downstream of Oregon Falls and remained consistent until river mile 21.2. A consistent downstream warming trend was observed between river mile 21.2 and river mile 8.0. River temperatures at Multnomah Channel were slightly warmer on August 28 than on September 2. These differences were likely because of cooler ambient temperatures on August 28.

Twenty-seven surface inflows were detected and sampled during the survey of the Willamette River. Of these, 19 contributed flows that were colder than the mainstem. The Clackamas River (17.1°C) at mile 25.1 was the largest tributary and contributed flow that was 3.3°C cooler than the mainstem. Johnson Creek (19.1°C) at mile 18.5 and Kellogg Creek (18.5°C) at mile 18.6 both contributed cooler water to the Willamette River. There were a large number of smaller, mainly unnamed inflows to the river. Very few of the inflows to the Willamette River had temperatures higher than the mainstem.

Figure 2. Longitudinal Median Temperature in the Willamette River

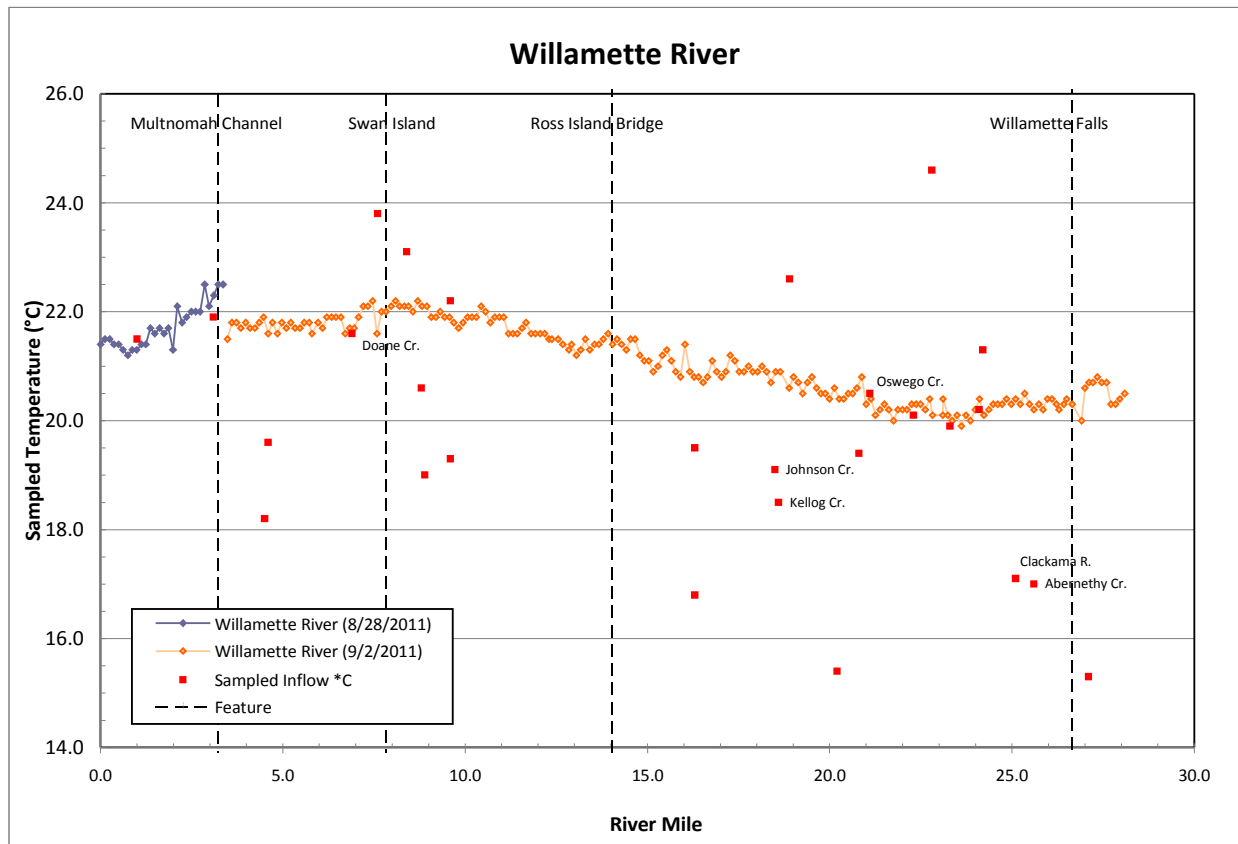


Table 1. Tributaries and other surface inflows sampled along the Willamette River with left (L) or right (R) bank designation (looking downstream)

Sampled Inflow	River Mile	Willamette River [°C]	Sampled Inflow [°C]	Difference [°C]
Columbia Slough (R)	1.0	21.4	21.5	-0.1
Mulnomath Channel (L)	3.1	21.9	21.9	0.0
Unnamed Inflow (R)	4.5	22.8	18.2	4.6
Unnamed Inflow (R)	4.6	22.3	19.6	2.7
Doane Creek (L)	6.9	22.3	21.6	0.7
Saltzman Creek (L)	7.6	22.0	23.8	-1.8
Very Small Inflow (R)	8.4	21.4	23.1	-1.7
Unnamed Creek (L)	8.8	23.6	20.6	3.0
Very Small Inflow (R)	8.9	24.2	19.0	5.2
Unnamed Inflow (L)	9.6	23.8	22.2	1.6
Unnamed Inflow (L)	9.6	23.8	19.3	4.5
Unnamed Inflow (L)	16.3	23.6	16.8	6.8
Stephens Creek (L)	16.3	21.2	19.5	1.7
Johnson Creek (R)	18.5	21.1	19.1	2.0
Kellogg Creek (R)	18.6	21.4	18.5	2.9
Unnamed Inflow (R)	18.9	23.0	22.6	0.4
Tryon Creek (L)	20.2	21.3	15.4	5.9
Very Small Inflow (L)	20.8	20.8	19.4	1.4
Oswego Creek (L)	21.1	22.0	20.5	1.5
Unnamed Inflow (L)	22.3	20.1	20.1	0.0
Off Channel Pond (R)	22.8	20.4	24.6	-4.2
Pond/Backwater (L)	23.3	21.3	19.9	1.4
Off Channel Pond (L)	24.1	21.3	20.2	1.1
Off Channel Pond (R)	24.2	19.5	21.3	-1.8
Clackamas River (R)	25.1	20.5	17.1	3.4
Abernethy Creek (R)	25.6	20.3	17.0	3.3
Unknown Inflow (L)	27.1	21.0	15.3	5.7

Observations—Columbia Slough

Figure 3 and Table 2 show the results of the TIR survey for the Columbia Slough.

Seventeen miles of the Columbia Slough were surveyed on August 28, 2011, from the confluence with the Willamette River upstream to Fairview Lake. Surface water temperatures between the Multnomah County Drainage District's pump station and Fairview Lake were warm, with sampled temperatures close to 25°C. The warm temperatures and observed spatial variability suggest low flows in this part of the slough. Downstream of an area known as the Four Corners, the surface temperatures dropped to about 18.0°C. The stream surface was somewhat masked by vegetation through this reach, and radiant temperatures were sampled only where the stream was visible. Surface temperatures in this reach showed a high degree of variability that is indicative of relatively low flows and differential heating at the surface.

At river mile 14.0, the southern arm (17.0°C) has a cooling influence to the Columbia Slough. Downstream of this confluence, radiant stream temperatures continue to decrease to a survey minimum of 15.9°C at river mile 13.3, most likely because of groundwater inflows through the stream bed. From this location, stream temperatures rise steadily downstream before leveling off at 24.5°C at river mile 4.0. The surface temperature variability observed upstream of the Peninsula Drainage Canal appears to result from differential surface heating in this fairly stagnant portion of the slough that is often covered by algal mats.

The cooling downstream of mile 1.0 is caused by mixing of cooler Willamette River water with Columbia Slough water because of tidal influence.

Of the seven surface inflows sampled, the southern arm of the Columbia Slough at mile 14.0 was the only cold-water source detected during the analysis of the imagery. However, the decreasing temperature observed in the upper slough is most likely related to the influx of cool groundwater.

Figure 3. Longitudinal Median Temperature in the Columbia Slough

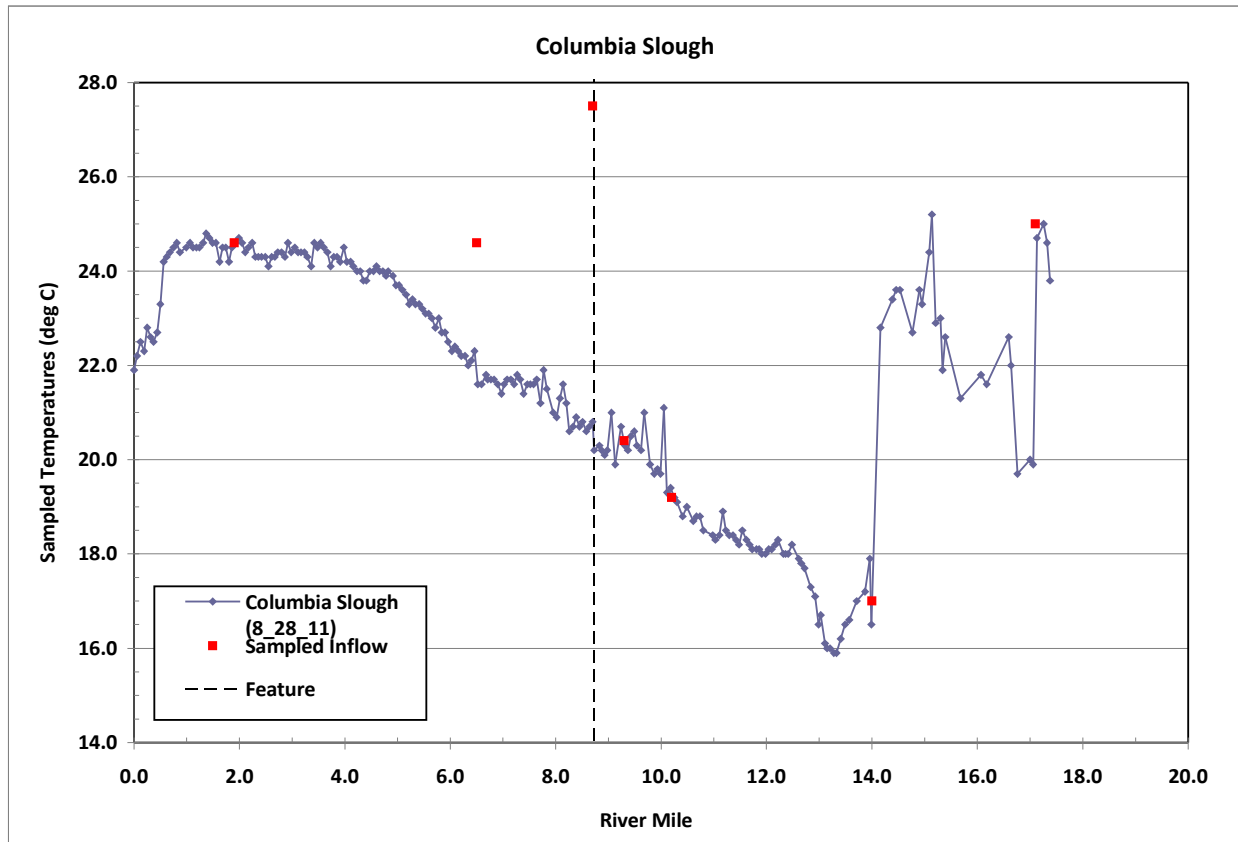


Table 2. Tributaries and other surface inflows sampled along the Columbia Slough with left (L) or right (R) bank designation (looking downstream)

Sampled Inflow	River Mile	Columbia Slough [°C]	Sampled Inflow [°C]	Difference [°C]
Unnamed Stream (R)	1.9	24.7	24.6	0.1
Pond; Stratified (R)	6.5	22.0	24.6	-2.6
Peninsula Drainage Canal (R)	8.7	20.4	27.5	-7.1
Outflow from Ponds (L)	9.3	20.4	20.4	0.0
Unnamed Tributary (L)	10.2	19.2	19.2	0.0
Southern Arm (L) at Four Corners	14.0	22.3	17.0	5.3
Fairview Lake	17.1	19.9	25.0	-5.1

Appendix A

Summary of Specific Activities Required by the MS4 Permit

BMP	Measurable Goals	Status as of 6/30/2012
PI-1: Implement public information, education, involvement, and stewardship activities that will raise awareness, foster community stewardship, and promote pollution prevention and stormwater management.		
PI-1	<ul style="list-style-type: none"> • Provide outreach to approximately 15,500 K-12 students annually (classroom programs, education field programs). • Award at least \$50,000 in community stewardship grants annually. • Involve approximately 10,000 participants in community events, workshops, stewardship projects, and restoration events annually. • By May 2011, develop and distribute a public education bill insert to over 200,000 water and sewer customers. 	<ul style="list-style-type: none"> • Provided outreach to approximately 15,000 students. • Awarded 15 stewardship grants totaling \$95,500 in FY11-12. • Involved over 19,500 participants citywide. • Done (as reported in Annual Compliance Report No. 16)
OM-1: Operate and maintain components of the municipal separate storm sewer system (MS4) to remove and prevent pollutants in discharges from the MS4.		
OM-1	<ul style="list-style-type: none"> • Develop a training handbook for PBOT-MO staff during the permit term. • Provide the following maintenance actions over the five-year permit cycle: <ul style="list-style-type: none"> – Clean 31,000 lineal feet of culverts. – Repair 10,000 lineal feet of culverts. – Clean 250,000 lineal feet of ditches. – Clean 38,000 inlets and catch basins. – Repair 1,500 inlets and inlet leads. – Clean 135 major stormwater management facilities/pollution reduction facilities. – Repair 40 pollution reduction facilities. 	<ul style="list-style-type: none"> • Continued to develop the training handbook; in process of drafting various standard operating procedures. (The materials management section of the handbook was completed in FY10-11.) – Cleaned 30,829 lineal feet of culverts. [39,379 lineal feet]* – Repaired 4,061 lineal feet of culverts. [6,235 lineal feet] – Cleaned 66,976 lineal feet of ditches. [113,876 lineal feet] – Cleaned 12,082 inlets and catch basins. [24,470 inlets and catch basins] – Repaired 200 inlets and inlet leads. [374 inlets and inlet leads]

BMP	Measurable Goals	Status as of 6/30/2012
		<ul style="list-style-type: none"> - Cleaned 127 major stormwater management facilities/pollution reduction facilities. [244 facilities] - Repaired 8 pollution reduction facilities. [17 facilities] <p>* Bracketed numbers show cumulative total to date during this permit term.</p>
OM-2: Operate and maintain components of public rights-of-way, including streets, to remove and prevent pollutants in discharges from the municipal separate storm sewer system.		
OM-2	<ul style="list-style-type: none"> • Sweep arterials six times/year. • Develop a training handbook for PBOT-MO staff during the permit term. 	<ul style="list-style-type: none"> • Done. • Continued to develop the training handbook; in process of drafting various standard operating procedures. (The materials management section of the handbook was completed in FY10-11.)
OM-3: Operate and maintain other City facilities and infrastructure (not included in OM-1 or OM-2) to remove and prevent pollutants in discharges from the municipal separate storm sewer system.		
OM-3	<ul style="list-style-type: none"> • Inspect, and maintain as necessary, all stormwater and stormwater containment and pollution prevention facilities in City maintenance yards annually. 	<ul style="list-style-type: none"> • Done
IND-1: Implement the Industrial Stormwater Management Program to control the discharge of pollutants from industrial and commercial facilities (both existing and those undergoing changes in operations) to the municipal separate storm sewer system.		
IND-1	<ul style="list-style-type: none"> • Inspect all permitted (1200Z, 1200COLS) facilities once per year. • Review each permitted facility's monitoring and annual report each year. • Survey 100 percent of newly identified facilities to determine the need for NPDES permits. 	<ul style="list-style-type: none"> • Inspected 114 of the 132 facilities with active industrial stormwater permits in FY11-12 that discharge to the MS4. The remaining 18 facilities were subsequently inspected by November 1, 2012. • Reviews done. • Surveys done.

BMP	Measurable Goals	Status as of 6/30/2012
	<ul style="list-style-type: none"> • Every 5 years, inspect industries (individual sites) previously identified as having no exposure and not required to obtain a permit. • Complete revision of City Code Title 17.39 by 2012. 	<ul style="list-style-type: none"> • Inspections done. • Done. City Council adopted code revisions in September 2011.
<p>IND-2: Provide educational programs and materials and technical assistance to reduce industrial and commercial pollutant discharges to the municipal separate storm sewer system.</p>		
<p>IND-2</p>	<ul style="list-style-type: none"> • Under the Eco-Logical Business Program, certify 10 additional auto shops and 20 additional landscape firms that provide services within the City Portland by 2015. • Evaluate one new business sector for implementation of the Eco-Logical Business Program. 	<ul style="list-style-type: none"> • Certified five additional landscape firms, for a total of 13 firms that have been newly certified to date during this permit term. Certified two additional automotive firms, for a total of two firms that have been newly certified to date during this permit term. • Expanded the program into the car washing sector in FY10-11, and added nine new car wash firms in FY11-12, for a total of 12 to date during this permit term. Prepared for expansion into the stormwater facility maintenance sector, and developed program materials for launch in the next program year.
<p>ILL-1: Identify, investigate, control, and/or eliminate illicit discharges (illicit connections, illegal dumping, and spills) to the municipal separate storm sewer system. Evaluate and, if appropriate, control non-stormwater discharges to the municipal separate storm sewer system.</p>		
<p>ILL-1</p>	<ul style="list-style-type: none"> • Conduct dry weather sampling at all major City-owned outfalls at least once annually. • Inspect the priority outfalls a minimum of three times a year. • Expand the IDEP program to include the CSO system below diversion structures, where the outfalls discharge stormwater only and should have no dry-weather flows. Currently, the program addresses all of the westside outfalls and 25 percent of the eastside outfalls. Expand the program to all eastside outfalls by December 2013. 	<ul style="list-style-type: none"> • Done. • In accordance with permit requirements, completed the revised list of priority outfalls by July 1, 2012; starting in FY12-13, these priority outfalls will be inspected three times per year. • Continued to update eastside storm system and outfall maps to reflect system changes resulting from the East Side Combined Sewer System Tunnel Project.

BMP	Measurable Goals	Status as of 6/30/2012
	<ul style="list-style-type: none"> Maintain the spill response hotline 24 hours a day. 	<ul style="list-style-type: none"> Done.
ND-1: Control erosion, sediment, and pollutant discharges from active construction sites.		
ND-1	<ul style="list-style-type: none"> Evaluate the <i>Erosion and Sediment Control Manual</i> and update as needed (at least once during the 2011-2016 permit cycle); conduct public involvement on updates. Inspect public sites with erosion control permits daily during construction. Inspect 100 percent of active private development construction sites subject to erosion control requirements. At a minimum, inspections will occur (1) after initial temporary erosion control measures are installed, and (2) near completion of development after permanent erosion control measures are in place. Conduct interim checks as part of routine building permit inspections. 	<ul style="list-style-type: none"> No activity this fiscal year. Done. All private development sites with qualifying ground disturbance areas are inspected for temporary and permanent erosion control measures at the beginning and near or at completion of the project. Interim checks are conducted during the course of regular building inspections.
ND-2: Implement and refine stormwater management requirements for new development and redevelopment projects to minimize pollutant discharges and erosive stormwater flows.		
ND-2	<ul style="list-style-type: none"> Inspect 1,500 private stormwater facilities or 450 properties annually. Use education and enforcement tools to ensure that stormwater management operations and maintenance plans are followed. Revise the SWMM during the 2011-2016 permit term. Track number, type, size, drainage area¹ and location of private facilities constructed annually. 	<ul style="list-style-type: none"> Under the Maintenance Inspection Program (MIP), inspected 476 tax lots with 1,063 associated private stormwater management facilities. Provided technical assistance and education to ensure facilities are sufficiently operated and maintained. Continued review of Chapter 4 of the manual to identify potential source control requirement updates. Done as part of the Maintenance Inspection Program.

¹ Drainage area will be tracked for all private stormwater management facilities subject to the SWMM (under an O&M plan).

BMP	Measurable Goals	Status as of 6/30/2012
<p>STR-1: Structurally modify components of the storm drainage system to reduce pollutant discharges. Implement structural improvements on existing development to reduce pollutants in discharges from the municipal separate storm sewer system.</p>		
<p>STR-1</p>	<ul style="list-style-type: none"> • Construct the following public facilities to provide treatment for stormwater runoff from approximately 336 acres: <ul style="list-style-type: none"> • Construct the NE 148th Avenue stormwater management facility by FY 2014-15. • Construct stormwater management facilities in the NE 122nd Ave subbasin by December 2012 (Columbia Slough Watershed). • Convert 5,000 linear feet of roadside ditches to swales or porous shoulder (Tryon Creek and Fanno Creek watersheds) during the permit term. • Construct stormwater management facilities along SW Beaverton-Hillsdale Highway and SW Barbur Blvd. and in commercial and multi-family residential areas (Tryon Creek and Fanno Creek watersheds) during the permit term. • Track the number, type, drainage area, and location of public facilities constructed annually. 	<ul style="list-style-type: none"> • Completed 60 percent design for NE 148th Avenue Water Quality Facility. • Completed. This project included construction of eight water quality planters along NE 122nd Avenue between NE Fremont and NE Shaver, designed to treat stormwater runoff from 2.89 acres. • Converted 2,180 linear feet of roadside ditches to swales or porous shoulder in the Fanno Creek watershed, managing approximately 1.0 acre of road runoff. [Total conversion to date during this permit term is approximately 3,835 linear feet, managing approximately 1.75 acres of road runoff, in the Tryon Creek and Fanno Creek watersheds.] • Constructed five stormwater facilities to treat 1.5 acres of existing impervious area as part of the SW Multnomah Blvd. Stormwater Project. [Total facilities constructed to date during this permit term treat a total of 12.8 acres.] • Done (using GIS to track this information)

BMP	Measurable Goals	Status as of 6/30/2012
NS-1: Protect and enhance natural areas and vegetation that help prevent pollutants from entering into the municipal separate storm sewer system.		
NS-1	<ul style="list-style-type: none"> • Plant 20,000 trees and initiate revegetation work on 70 acres by the end of the permit cycle. • Acquire 50 acres of land by the end of the permit cycle. • Update the <i>Portland Plan</i> (an update to the City's <i>Comprehensive Plan</i>) by December 2013. 	<ul style="list-style-type: none"> • Planted 36,752 trees (29,232 deciduous and 7,520 coniferous) on 245 acres. [Total to date during this permit term: Planted 78,201 trees (63,293 deciduous and 14,908 coniferous) on 389.5 acres] • Acquired 203 acres of land. [Total to date during this permit term: 416.4 acres] • Completed. City Council adopted the <i>Portland Plan</i> on April 25, 2012.

Appendix B

Examples of Non-MS4 Permit Related Watershed Activities

Columbia Slough Watershed

- Began construction of the Mason Flats project, which will improve in-stream, riparian, and wetland habitat; protect and improve water quality by providing additional stormwater treatment; and provide other groundwater, stream, and habitat benefits.

Johnson Creek Watershed

- Completed 60 percent design on the Luther Road Habitat Restoration to address an exposed combined sewer/stormwater interceptor. The project will bury the sewer pipe crossing, restore a portion of Johnson Creek and its floodplain, improve stream habitat, provide stormwater treatment, and protect natural areas.
- Completed phase I of the East Lents Floodplain Restoration project. Through the Johnson Creek willing seller program, the City of Portland helped over 60 property owners move outside of the floodplain. The project removed over 50,000 cubic yards of soil in this 70-acre site to improve stream conditions and add flood storage to reduce the frequency of flooding on local streets and residences. As floodwater accesses the site, flows slow and sediment settles out onto the floodplain. The project reduces the frequency that floodwaters access major arterials and industrial areas, including Foster Road and several auto wrecking yards, reducing the input of pollutants such as heavy metals and PAHs.
- Completed 60 percent design for the East Lents Floodplain Restoration Project, which will reduce nuisance flooding while improving water quality.
- Coordinated with the Army Corps of Engineers on design of the Springwater Wetlands Restoration Project, which will include water quality elements as part of a habitat restoration project.

Willamette Watershed

- Completed construction of the Tryon Creek Habitat Enhancement Project, which created a floodplain bench along approximately 400 feet of lower Tryon Creek; regraded the floodplain at the confluence of Tryon Creek and the Willamette River to restore hydrologic connectivity; installed large wood and boulder structures along the banks of the lower 900 feet of Tryon Creek to improve aquatic habitat; and revegetated with native plants to improve near-channel floodplain and riparian habitat.

- Completed predesign and received permits to retrofit the Willamette Park boat ramp water bioswale. The project will increase the facility's capacity to treat stormwater from the parking area.
- Continued predesign of the Willamette Park off-leash area water quality facility to treat runoff from Willamette Park's off-leash dog area as well as from roads and parking lots.

Fanno and Tryon Creek Watersheds

- Designed and began construction on the Tryon Creek Sanitary Sewer Protection Project in the lower Tryon Creek watershed. The project includes approximately 200 feet of reconstructed stream banks and instream habitat improvements.

Appendix C

Active Projects (Excerpted from City of Portland Project Database)

ACTIVE PROJECTS

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
204	Lents 1 & 2	This project is a predesign study for Lents Basins 1 & 2. These two basins are combined sewer basins located in the Johnson Cr watershed in SE Portland. Specifically, this study will address three types of identified system deficiencies: Basement flooding (system capacity problems), structurally deteriorated pipes, and CSO at levels in excess of ASFO design storms.	1 -Johnson Creek(Lower Mainstem Johnson Creek)	1-Facility Construction(Drywell)	Lents 1 and 2 sewer basins
330	ODOT Maintenance Yard Stormwater Retrofits	Stormwater retrofits at ODOT Maintenance Yard	1 -Tryon Creek(Falling Creek)	1-Facility Construction(Planter:Flow-through)	9637 SW 37th Drive
338	PCC Sylvania Parking Lot Stormwater Retrofits	Parking lot stormwater retrofit. DEQ SEP Project	1 -Fanno Creek(Red Rock Creek)	1-Facility Construction(Swale:Flow-through)	PCC Parking Lot
366	Water Quality Facility at NE 148th Avenue	Water Quality Facility at NE 148th Avenue	1 -Columbia Slough(Upper Slough)	1-Facility Construction(Filtration)	NE 148 south of Sandy Blvd
367	NE 122nd Ave Green Streets	Construct 6 green street facilities on NE 122nd between Fremont and Shaver. The unlined facilities will filter stormwater before it enters the Columbia Slough. NE 122nd drains to OF 100. This is in the upper slough.	1 -Columbia Slough(Lower Slough) 2 -Columbia Slough(Middle Slough)	1-Facility Construction(Green Street:Planter, flow-through)	NE 122nd Ave
382	1135 Culvert Replacement at NE 33rd Avenue	This project is a component of the 1135 Partnership with the Army Corps of Engineers. It consists of replacing the 4' culvert at NE 33rd Drive and Buffalo Slough with a lower, higher, bigger culvert in order to improve hydrology, water quality and upstream wetland habitat.	1 -Columbia Slough(Middle Slough)	1-Facility Construction (Culvert:Rehabilitation) 2-Restoration(Structure Removal:Culvert) 3-Revegetation(Installation)	NE 33rd Drive and Buffalo Slough
389	Capitol Highway Improvement	PBOT is undergoing a refinement planning process for SW Capitol Highway between SW Taylors Ferry and Multnomah Boulevard. BES funded the design survey, provided a drainage analysis, and will provide technical support to PBOT as part of the Capitol Hwy Refinement Planning process.	1 -Fanno Creek(Vermont Creek)	1-Facility Construction(Green Street:Swale, flow-through)	Capitol Hwy between Taylors Ferry and Multnomah
418	Ramsey Refugia Phase II	Ramsey Refugia Phase II	1 -Columbia Slough(Lower Slough)	1-Restoration(Floodplain) 2-Restoration(Stream)	
429	Westmoreland Park	Work with PP&R and USACOE at Westmoreland Park on pond removal and restoration.	1 -Johnson Creek(Crystal Springs Creek)	1-Restoration(Stream) 2-Restoration(Structure Removal:Other)	Westmoreland Park 7125 SE McLoughlin Blvd
432	Parkrose Middle School Parking Swale	Parkrose Middle School Parking Swale			
434	Tryon Headwaters - SW Dolph Ct & 30th	Tryon Headwaters - SW Dolph Ct & 30th			
436	Tryon Headwaters - SW 30th West	Tryon Headwaters - SW 30th West			
490	Barbur Blvd Transit Center Stormwater Retrofits	Stormwater Retrofits	1 -Tryon Creek(Falling Creek)	1-Facility Construction(Swale:Flow-through)	
ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location

493	Multnomah Village Green Street: Raindrop Walk	Design and construction of a sidewalk expansion and vegetated stormwater facilities along SW Capitol Highway between SW 35th and SW 36th in Multnomah Village to treat 8,500 square feet of impervious right-of-way.	1 -Fanno Creek(Vermont Creek)	1-Facility Construction(Green Street:Swale, flow-through)	Capitol Hwy between 35th to 36th Ave
647	RICAP Policy Project	Update package to the Zoning Code. BES desirable outcomes - exempt ecoroofs from design review. Part A passed Feb 2010. Part B to planning commission in May.	1 -Columbia River(-) 2 -Columbia Slough(-) 3 -Fanno Creek(-) 4 -Johnson Creek(-) 5 -Tryon Creek(-) 6 -Willamette River (-)	1-Regulatory(Code)	
652	Multnomah Stormwater Improvements CIP #E09168	Design and construction of stormwater retrofits along SW Multnomah Blvd in conjunction with Fanno Pressure Line Repair Project - #E09168	1 -Fanno Creek(Woods Creek)	1-Facility Construction(Green Street:Swale, flow-through) 2-Facility Construction(Planter:Flow-through) 3-Facility Construction(Swale:Flow-through)	Various Locations Mult Blvd - SW 30th - Garden Hm
653	Stephens Creek Confluence Restoration & Monitoring	Conduct effectiveness monitoring for five years to determine if the desired outcomes for vegetation, hydrology/sedimentation, and aquatic/terrestrial enhancement are being met for the Stephens Creek Confluence Habitat Enhancement Project. This 3.5 acre site provides critical rearing and refuge habitat for native Chinook/coho salmon and steelhead trout, and for rainbow and cutthroat trout. This project improved in-stream, stream bank, and floodplain habitat for native fish & wildlife.	1 -Willamette River(Stephens)	1-Environmental Monitoring(Habitat) 2-Restoration(Riparian)	Stephens Creek confluence
657	Green Streets: Bridlemile	Design and construct stormwater management facilities on SW 44th between SW Bancroft and SW Tunnelwood Streets and on the north side of SW Seymour Street between SW 50th and SW 47th Avenues to treat over 60,000 square feet of impervious area.	1 -Fanno Creek(Mainstem Fanno Creek)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SW 44th and SW Seymour
658	Tabor to the River: ECOPIP	Outreach and education strategy for Tabor to the River Program	1 -Willamette River(Taggart)	1-Public Engagement(Education) 2-Public Engagement(Involvement) 3-Public Engagement(Stewardship)	Taggart D subbasin (Tabor to River basin)
659	Grey to Green- Crystal Springs Culvert Improvement	Improving culvert passage for all salmonids in Crystal Springs. Sites are SE Umatilla, Tenino, 28th Ave, Eastmoreland Golf Course and newly acquired property at 8220 SE 21st Ave.	1 -Johnson Creek(-)	1-Restoration(Stream)	Crystal Springs focus but can occur in other sheds
660	Stark Inflow Controls	This CIP project was recommended as part of the 2002 Hollday, Stark, and Sullivan Predesign. It comprises three separate inflow control projects designed to relieve the risk of sewer backups in the vicinity of Laurelhurst Elementary School, NE 45th & Davis, and SE 56th & Ankeny. The work is being bundled together because of the proximity of the areas and the similarity of the work in the areas. Approximately 30 green streets will be built.	1 -Willamette River (-)	1-Facility Construction(Green Street:Swale, infiltration)	Multiple

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
662	Oaks Bottom	A habitat enhancement project to improve the hydrologic connection between Oaks Bottom and the Willamette River. Project elements include removing water control structure, replacing existing culvert with a 12-foot box culvert, extensive revegetation work, and channel excavation and interpretation enhancements. Funded with grant from LCREP and pending Army Corps of Engineers funding. Also small grant awarded from USFWS - NAWCA.	1 -Willamette River(Lents-Insley-Sellwood)	1-Restoration(Floodplain) 2-Restoration(Riparian) 3-Restoration(Structure Removal:Culvert) 4-Restoration(Wetland) 5-Revegetation(Installation) 6-Revegetation(Invasive Removal) 7-Revegetation(Maintenance)	East banks Willamette River, N. of Sellwood Bridge
678	NE Sandy Blvd (47th - 82nd) Green Street	PBOT street reconstruction with the opportunity for four large green street basin facilities in triangular spaces along alignment (48th, 60th, 64th, & 78th). Additional curb extensions and planters will be installed to improve drainage from 72nd to 82nd.	1 -Willamette River(East Willamette River)	1-Facility Construction(Green Street:Basin, rain garden, infiltratio 2-Facility Construction(Green Street:Planter, Infiltration)	NE Sandy Blvd, from 47th to 82nd
679	NE 102nd and Wygant Green Street	A curb extension that incorporates safe route to school and EPAP identified need.	1 -Columbia Slough(-)	1-Facility Construction(Green Street:Planter, flow-through)	NE 102nd and Wygant
682	NE Durham and Dekum Stormwater, Art, Bike Corral	A prototype for incorporating art, stormwater, and bike parking.	1 -Columbia River(-)	1-Facility Construction(Green Street:Swale, infiltration)	NE Durham and Dekum
683	NW Pettygrove and 16th Green Street	An early action project for the Pettygrove green connector. The green street is an addition to an adjacent existing private development project.	1 -Willamette River (-)	1-Facility Construction(Green Street:Swale, infiltration)	NW Pettygrove and 16th
685	NE Fremont and 9th-11th Green Street	Green street adjacent to Irving Park. Project initiated and managed by the neighborhood.	1 -Willamette River (-)	1-Facility Construction(Green Street:Swale, infiltration)	NE Fremont and 9th
686	SE 28th Green Street Reed College	Green street adjacent to Reed College property improvements	1 -Johnson Creek(Crystal Springs Creek)	1-Facility Construction(Green Street:Swale, infiltration)	SE 28th
690	JC/Mitchell Creek Restoration at Centennial School	Restore Mitchell Creek on Centennial School property	1 -Johnson Creek(Kelley Creek)	1-Restoration(Stream) 2-Restoration(Structure Removal)	SE 172nd and Foster
706	Davenport Residential Garage Ecoroof - NE Schuyler	Residential ecoroof on top of a new garage addition; phase one was begun December 2008 and completed in February 2010. Expansion began in June 2011.	1 -Willamette River (-)	1-Facility Construction(Ecoroof)	2730 NE Schuyler St
753	Multnomah Arts Center Stormwater Retrofits	A stormwater retrofit project at the Multnomah Arts Center			7688 SW Capitol Hill Hwy
754	SW Hamilton Drainage Improvements	Drainage and road shoulder improvements along SW Hamilton between Shattuck and Dosch Roads.	1 -Fanno Creek(Mainstem Fanno Creek)	1-Facility Construction(Swale:Flow-through)	SW Hamilton between Shattuck and Dosch
755	SW Stephenson Drainage Improvements	Drainage and road shoulder improvements along SW Stephenson between SW 35th and SW Boones Ferry Road	1 -Tryon Creek(Tryon Creek Mainstem)	1-Facility Construction(Swale:Flow-through)	SW Stephenson between SW 35th and Boones Ferry Rd
763	SE Tibbetts-Harrison Green Streets	Tabor to the River project (TGD-12/14) to manage basement sewer backups. Will include approx. 67 green street facilities.	1 -Willamette River(Taggart)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
764	SE Clay-Taylor Green Streets	Tabor to the River project. SE Clay-Taylor Reconstruction and Green Streets (TGD-24/31) to manage basement sewer backups. It is the combination of the first two of 35 capital projects recommended for implementation in the Taggart D Final Pre-design. Project includes: installation of 70 vegetated stormwater facilities, 7,734 linear feet of 12" sewer pipe, 258 feet of mainline 36" sewer pipe, and the removal of 10 party sewer laterals by extension.	1 -Willamette River(Taggart)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
765	SE Division Green Streets	Tabor to the River project. SE Division Green Streets (TGD-09) project is one of 35 capital projects recommended for implementation in the Taggart D Final Pre-design Report. The project will relieve basement sewer backups. The area extends from SE Division St. and SE Woodward St. between SE 13th Ave and SE 40th Ave. Project specifics include the installation of an estimated 47 vegetated stormwater facilities.	1 -Willamette River(Taggart)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
766	Stephens Central Canyon Stormwater Facility Projec	Facility on Stephens Creek tributary, treating runoff from I-5, Barbur Blvd., residential areas.	1 -Willamette River(Stephens)	1-Facility Construction(Swale:Infiltration) 2-Property Acquisition(Riparian) 3-Restoration(Stream) 4-Revegetation(Installation)	Stephens Creek near SW Brier & SW Custer
776	Nurture Development LLC	31,597 sq. ft. ecoroof on a multifamily bldg		1-Facility Construction(Ecoroof)	NW 13th and Quimby
779	Rebecca Clark Residential Ecoroof	120 sq. ft. ecoroof on a residential building			5035 N Depauw St.
781	DeBlasis Residence	200 sq. ft. ecoroof on a residential bldg		1-Facility Construction(Ecoroof)	1532 SW Davenport St.
783	Omey Residential Ecoroof	355 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	2105 N Webster St.
784	Berk Residential Ecoroof	506 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	1531 N Jessup Ave.
785	Inner City Investors	1200 sq. ft. ecoroof on a multi-family building		1-Facility Construction(Ecoroof)	1913-1917 1927-1923 NW Northrup
790	Twigg Residence	2,767 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	3117 SW Cascade Dr.
792	Housing Authority of Portland	3,391 sq. ft. ecoroof on a multi-family building		1-Facility Construction(Ecoroof)	NW Broadway & Hoyt
799	Eberdt Residence	322 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	7055 N Lancaster Ave.
801	Yamhill House LLC - Rubin Residential Ecoroof	300 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	2182 SW Yamhill St.
803	Andriash Residence	600 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	11608 SE Yamhill St.
805	Latoski Residence	995 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	4510 NE Going St.
860	Orpin Residential Ecoroof on Vermont St	1,290 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	5078 SW Vermont St.
861	Oregon College of Oriental Medicine	1,358 sq. ft. ecoroof on a commercial building		1-Facility Construction(Ecoroof)	88 NW Couch St.
867	N Concord Bike Boulevard	PBOT project incorporating 2 stormwater facilities.			
868	NE/SE 80's Neighborhood Greenway	PBOT project with bicycle and pedestrian improvements that will incorporate 12 stormwater facilities.			

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
869	N Holman Neighborhood Greenway	PBOT project with bicycle and pedestiran improvements that will incorporate 10 stormwater facilities.			
871	Innovative Housing Block	Ecoroof on Innovative Housing Block		1-Facility Construction(Ecoroof)	1962-1968 SW 5th & 1975 SW College
873	PSU College Station Housing Ecoroof	Ecoroof on PSU College Station Housing		1-Facility Construction(Ecoroof)	SW 6th and college
875	Cahill Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	7345 SW 29th
877	Rathbun Egan Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	6834 NE Garfield
878	Armstrong Residential Ecoroof - NE 13th Ave	Residential ecoroof		1-Facility Construction(Ecoroof)	6215 NE 13th Ave
879	Fixe Chapin Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4103 SE Yamhill St
880	Wolsey Corner Ecoroof	Ecoroof on multifamily building			4475 N Trenton St
881	Sarah Richardson Green Residential Ecoroof	Residential ecoroof			8005 SE Market
883	N Sumner - Jacobsen Residence Ecoroof	Residential ecoroff		1-Facility Construction(Ecoroof)	2313 N Sumner St
886	SE 52nd Katz Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	1226 SE 52nd Ave
887	SE Ankeny - Dobrot Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	2846 SE Ankeny
889	N Borthwick - King Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4805 N Borthwick Ave
890	NE Schuyler - Jacobs Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	3033 NE Schuyler St
891	SW Miles - Shafi Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4925 SW Miles
892	SE Oak St- Dearborn Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	225 SE 16th Ave
893	SE Division - Tabor Commons Ecoroof	Commercial ecoroof		1-Facility Construction(Ecoroof)	5633 SE Division
894	SW Sunset Blvd - Ferriday Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	2611 SW Sunset Blvd
895	SE Clinton - CYRK Building Multifamily Ecoroof	Multifamily ecoroof			2002 SE Clinton
897	SE 30th Ave - Cheek Residential Ecoroof	Residential ecoroof			4531 SE 30th Ave
898	N Winchell St - Ransom Green Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4339 N Winchell St
899	NE Skidmore St - Stern Residential Ecoroof	1500 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	4410 NE Skidmore St
900	N Vancouver - Lobdell Multifamily Ecoroof	2000 sq. ft. multifamily ecoroof		1-Facility Construction(Ecoroof)	3615 N Vancouver

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
901	SW Montgomery - PSU Canopy Ecoroof	2445 sq. ft. insitutional PSU canopy ecoroof		1-Facility Construction(Ecoroof)	617 SW Montgomery
903	SE Taylor - Michael Kauth Industrial Ecoroof	5750 sq. ft industrial ecoroof		1-Facility Construction(Ecoroof)	79 SE Taylor St
905	NE 11th Ave - 905 US Gen Services Admin Ecoroof	10,400 sq ft commercial ecoroof		1-Facility Construction(Ecoroof)	905 NE 11th Ave
906	NE 11th - 911 US Gen Services Admin Ecoroof	13,200 sq ft commercial ecoroof		1-Facility Construction(Ecoroof)	911 NE 11th Ave
908	Geoff Hildreth Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	6318 SW 32nd Ave
909	James Thomson Residential Ecoroof	Residential eEcoroof		1-Facility Construction(Ecoroof)	2534 SE 31st Ave
910	Aaron McDuffie Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	10930 SW Boones Ferry Rd
911	Jon Stine Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	3333 NE Fremont St
912	Brent Foster Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	2021 SE 44th Ave
913	American College of Healthcare Sciences Ecoroof	American College of Healthcare Sciences ecoroof		1-Facility Construction(Ecoroof)	5940 SW Hood Ave
914	Mary Jo Levine Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4067 SE Pardee St
915	Brown Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4527 SW Cameron Rd
916	Empress Condominium Ecoroof - NW 16th Ave	Ecoroof for Empress Condominiums Owners Association		1-Facility Construction(Ecoroof)	20 NW 16th Ave, Portland
917	OHSU Hospital Ecoroof	1344 sq ft. institutional ecoroof		1-Facility Construction(Ecoroof)	3181 SW Sam Jackson Park Rd
919	SW Boundary- Manning Shop Ecoroof	Residential ecoroof on shop building; second ecoroof at this property		1-Facility Construction(Ecoroof)	2926 SW Boundary
921	Commercial Ecoroof on Globe Hotel	2030 sq ft ecoroof on Globe Hotel		1-Facility Construction(Ecoroof)	75 NW Couch
922	AnkenyNest/ Ankeny Lofts Commercial Ecoroof	1224 sq. ft. commercial ecoroof			2501-2507 SE Ankeny
923	Omey Residential Garage Ecoroof	258 sf ecoroof on garage		1-Facility Construction(Ecoroof)	2105 N Webster St
924	Lewis Residential Ecoroof on SE Hazel St	Residential garage ecoroof		1-Facility Construction(Ecoroof)	1842 SE Hazel St
926	Killingsworth Station Multifamily Ecoroof	Multifamily ecoroof of 20,614 sq. ft.		1-Facility Construction(Ecoroof)	1455 N Killingsworth
927	Fred Meyer commercial ecoroof at NW 20th Place	25,000 sq. ft. commerical ecoroof		1-Facility Construction(Ecoroof)	100 NW 20th Place
928	Price Mart Industrial Ecoroof at N Vancouver	30,000 sq. ft. industrial ecoroof		1-Facility Construction(Ecoroof)	8700 N Vancouver
929	NE Sumner - Bohne Residential Ecoroof	432 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	5721 NE Sumner St

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
930	SE Kelly - Gregg Residential Ecoroof	506 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	2634 SE Kelly Street
931	Olson-Huddle Residential Ecoroof on N Fenwick Ave	1000 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	7235 N Fenwick Ave
932	Siri Residential Ecoroof on NE Ainsworth	325 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	1135 NE Ainsworth
935	Weston Twigg Residential Ecoroof	Residential ecoroof at 3135 SW Evergreen Lane;. newly constructed home.		1-Facility Construction(Ecoroof)	3135 SW Evergreen Lane
937	Knapp Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	924 NE Harney St
938	Children's Museum Ecoroof	Institutional ecoroof on Portland Children's Museum		1-Facility Construction(Ecoroof)	4015 SW Canyon Road
939	Tachiki Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	4704 SW 25th Ave
940	Pilip/Florea Ecoroof - N Interstate	Chicken Coop restaurant ecoroof		1-Facility Construction(Ecoroof)	6214 N. Interstate Ave.
941	Wilbert Bond Ecoroof	Residential ecoroof (50 sq.ft.)		1-Facility Construction(Ecoroof)	2105 NE 52nd Ave.
942	Bryan Steelman ecoroof	Ecoroof		1-Facility Construction(Ecoroof)	3524 N. Mississippi Ave
943	Southeast Uplift institutional ecoroof	Institutional ecoroof		1-Facility Construction(Ecoroof)	3534 SE Main St
944	Hetherington Residential ecoroof - NE 37th Ave	250 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	1937 NE 37th Ave
945	McMahon Residential Ecoroof - SE 11th Ave	256 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	1616 SE 11th Ave
946	Carthel Residential Ecoroof - SE 18th Ave	160 sq ft residential ecoroof on garage		1-Facility Construction(Ecoroof)	521 SE 18th Ave
947	Wolsey Corner multi-family ecoroof - N Trenton	180 sq ft ecoroof on Wolsey Corner multi-family building		1-Facility Construction(Ecoroof)	4475 N Trenton St
948	Dupre/Kowalsky residential ecoroof	186 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	128 NE 74th Ave
949	Hursh Residential Ecoroof at SE 45th	58 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	1427 SE 45th Ave
950	OHSU- Hatfield Research Center ecoroof	910 sq. ft. hospital ecoroof		1-Facility Construction(Ecoroof)	3251 SW Sam Jackson Park Rd
951	Copenagle Residential Ecoroof	1,155 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	1542 N. Simpson St.
952	Jaclyn McLaughlin/Welter	Residential ecoroof		1-Facility Construction(Ecoroof)	8747 SE Steele St.
953	Northwest Health Foundation Ecoroof	Ecoroof instatlation on commercial roof		1-Facility Construction(Ecoroof)	
955	Ian Mayer Ecoroof	154 sq.ft. ecoroof		1-Facility Construction(Ecoroof)	4046 NE 11th Ave.
956	Lily Copenagle Shed Ecoroofs	Two small shed ecoroofs total 665 sq.ft.		1-Facility Construction(Ecoroof)	1542 N. Simpson St.

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
957	Koehler and Faulkner Residential Ecoroof	730 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	1411 SE 55th Ave, Portland
958	Lichau Residential Ecoroof	1592 sq.ft. residential ecoroof		1-Facility Construction(Ecoroof)	7916 N Wayland
959	Brian Martin Residential Ecoroof	220 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	903 NE Rosa Parks Way, Portland 97211
960	Leland Hanson Residential Ecoroof	550 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	2712 SE Salmon St, Portland 97214
961	William Macklin Residential Ecoroof	Residential ecoroof		1-Facility Construction(Ecoroof)	1825 N. Sumner St, Portland 97217
962	Jane Gordon Residential Ecoroof	64 sq.ft. residential ecoroof		1-Facility Construction(Ecoroof)	910 SW Evans St, Portland 97219
963	Marantz-Herzberg Residential Ecoroof	360 sq.ft. residential ecoroof		1-Facility Construction(Ecoroof)	3527 SE Ankeny St, 97214
964	Portland State University Ecoroof	Commercial 315 sq. ft. Park Ave. ecoroof		1-Facility Construction(Ecoroof)	1914 SW Park Avenue
967	Andrew Leichty Residential Ecoroof	395 sq ft residential ecoroof		1-Facility Construction(Ecoroof)	3720 SW Vacuna St
968	Jane Ames Residential Ecoroof	308 sq. ft residential ecoroof		1-Facility Construction(Ecoroof)	6116 SE Stephens St
969	Thomas Fallon Residential Ecoroof	200 sq. ft. residential ecoroof			721 NE Hazelfern Place
970	PSU Ecoroof Research Plots	864 sq. ft. ecoroof		1-Facility Construction(Ecoroof)	506 SW Mill St
971	People's Food Cooperative Ecoroof	500 sq. ft. commercial ecoroof		1-Facility Construction(Ecoroof)	3029 SE 21st Ave
972	Sellin Residential Ecoroof	200 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	208 SW Marconi Ave
973	Shelby Residential Ecoroof	400 sq. ft. residential ecoroof		1-Facility Construction(Ecoroof)	1834 NE 38th Ave

APPROVED CIP

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
498	Fanno/Tryon Stormwater Retrofits CIP #8674	Design and construction of stormwater retrofit projects identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2016.	1 -Fanno Creek(-) 2 -Tryon Creek(-)	1-Facility Construction(Swale:Flow-through)	Fanno and Tryon
499	Fanno BeavHills Hwy Drainage Retrofit CIP #8675	Design and construction of drainage improvements on Beaverton Hillsdale Highway identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2014.	1 -Fanno Creek(-)	1-Facility Construction(Swale:Flow-through)	Beaverton Hillsdale Highway
500	Fanno SW 45th Avenue Culvert Replacement CIP #8676	Design and construction of replacement of the SW 45th Ave. culvert identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2014/2015.	1 -Fanno Creek(-)	1-Facility Construction(Culvert:Replacement)	SW 45th at Fanno Creek
501	Stormwater Outfall Maintenance CIP #8677	Design and construction of rehabilitation and replacement of stormwater outfalls along Fanno Creek maintem identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2014.	1 -Fanno Creek(-)	1-Facility Construction(Outfall:Rehabilitation)	Fanno Creek maintem
502	Tryon Barbur Blvd Drainage Retrofits CIP #8678	Design and construction of drainage improvements on Barbur Boulevard identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2014.	1 -Tryon Creek(Tryon Creek Mainstem)	1-Facility Construction(Swale:Flow-through)	Barbur Boulevard in upper Tryon Creek watershed
503	Tryon I-5 at SW 26th WQ Facility CIP #8679	Design and construction of stormwater facilities between I-5 and Barbur Blvd. at SW 26th identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2014-2017.	1 -Tryon Creek(Tryon Creek Mainstem)	1-Facility Construction(Swale:Flow-through)	between I-5 and Barbur Blvd. at SW 26th
504	Jackson MS Strm Daylighting & SW Retro CIP #8680	Design and construction of daylighting a segment of Falling Creek at Jackson Middle School and stormwater retrofits identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2015-2017.	1 -Tryon Creek(Falling Creek)	1-Facility Construction(Swale:Flow-through) 2-Restoration(Floodplain) 3-Restoration(Riparian) 4-Restoration(Stream)	Jackson Middle School
506	Boones Ferry Road Culvert Replacement CIP #8676	Replacement of the culvert under Boones Ferry Road at Tryon Creek with an open bottom culvert or bridge. This project was identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2013-2015.	1 -Tryon Creek(-)	1-Restoration(Stream)	Boones Ferry Road at Tryon Creek
508	Fanno/Tryon Ditch-to-Swale CIP #8686	Design and construction of ditch-to-swale projects identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2016.	1 -Fanno Creek(-) 2 -Tryon Creek(-)	1-Facility Construction(Swale:Flow-through)	Fanno and Tryon
509	Fanno/Tryon Water Quality Facilities CIP #8687	Design and construction of water quality facilities identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design. Funded FY 2012-2016.	1 -Fanno Creek(Mainstem Fanno Creek) 2 -Tryon Creek(Tryon Creek Mainstem)	1-Facility Construction(Swale:Flow-through)	Fanno and Tryon creeks
511	Fanno/Tryon Sewer Maintenance CIP #8684	Sewer system rehabilitation projects identified in the Fanno and Tryon Creeks Water Quality and TMDL CIP Pre-design.			Fanno and Tryon
666	PSU Urban Plaza Green Street	PDC/PSU/BES partnership to implement SW Montgomery Green Street concept at the Urban Studies block.	1 -Willamette River(-)	1-Facility Construction(Planter:Flow-through)	SW Montgomery between 5th and 6th Avenues
667	NE 97th Street Green Street	PDC/BES partnership to develop multi-block green street along NE 97th street according to the Gateway Green Streets Master Plan.	1 -Columbia Slough(-)	1-Facility Construction(Green Street:Swale, infiltration)	NE 97th Street from Everett to Glisan

COMPLETED PROJECTS

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
600	Humboldt & Gantenbein Green Street	Two stormwater extensions with a pedestrian crossing directly in front of Humboldt Elementary School. Built as part of the federally funded Safe Routes to Schools (SR2S) Program. Gantenbein converted to one way traffic (south) between Alberta and Humboldt.	1 -Willamette River(Beech-Essex-Wheeler)	1-Facility Construction(Green Street:Swale, infiltration)	N Gantenbein & Humboldt
656	Multnomah Village Green Street: SW Capitol Hwy @33	Design and construction of a vegetated curb extension located on SW Capitol Hwy at 33rd in Multnomah Village to treat 3,200 square feet of impervious right-of-way.	1 -Tryon Creek(Tryon Creek Mainstem)	1-Facility Construction(Green Street:Swale, infiltration)	SW Capitol Hwy at 33rd Ave
668	SW Montgomery Green Street Concept Plan	BES/PDC/PSU partnership to develop multi-block green street concept plan along SW Montgomery through PSU campus.	1 -Willamette River(-)	1-Planning, Long-Term(Strategy)	SW Montgomery between 2nd and 11th Avenues
669	Tabor Commons swale and porous pavers	Retrofit of existing building and site for complete on-site stormwater management; remove asphalt, add stormwater swale and porous pavers.	1 -Willamette River(Taggart)	1-Facility Construction(Pervious Pavement:Pavers) 2-Facility Construction(Swale:Infiltration)	SE 57th and Division St.
670	NE Fremont & 90th Green Street	Citizen request green street funded through the Grey to Green Initiative. Facility is an 80-ft-long swale overflowing to the existing storm sewer. Erosion along the frontage was filling the downstream catch basin, causing a maintenance burden.	1 -Willamette River(East Willamette River)	1-Facility Construction(Green Street:Swale, infiltration)	NE Fremont & 90th
673	N Moore & Highland Green Street	Citizen request green street funded through the Grey to Green Initiative.	1 -Columbia Slough(-)	1-Facility Construction(Green Street:Swale, infiltration)	6364 N Moore
674	NW Thurman & 15th Green Street	Citizen request green street funded through the Grey to Green Initiative. One parking space on the SW corner will be converted to a green street planter.	1 -Willamette River(Tanner)	1-Facility Construction(Green Street:Planter, Infiltration)	NW Thurman & 15th
675	SW Barbur & Sheridan Green Street	Green street funded by 1% for Green green street to improve ped, bicycle, and traffic safety. Long, narrow planter on SE corner along Barbur.	1 -Willamette River(Marquam-Woods)	1-Facility Construction(Green Street:Planter, flow-through)	SW Barbur & Sheridan
676	SE Foster & Center Green Street	One green street facility in a Bike Boulevard project, partially funded by the Grey to Green Initiative.			SE Foster Blvd & Center St
677	SE Gladstone & 42nd Green Street	Two green street facilities in a Bike Boulevard project, partially funded by the Grey to Green Initiative.			SE Gladstone & 42nd Ave
681	N Channel Blvd Green Street	Green street adjacent to CBO funded trail extension on Swan Island.	1 -Willamette River(-)	1-Facility Construction(Green Street:Swale, infiltration)	N Channel Ave (Swan Island)
684	NW Pettygrove and 26th Green Street	An early action project for the Pettygrove green connector. Adjacent to Wallace Park and Chapman School, this is also a SR2S improvement and was identified as an inflow control need in the NW Neighborhood Predesign. The funding is coming from NW 23rd reconstruction off-site management fees.	1 -Willamette River(-)	1-Facility Construction(Green Street:Swale, infiltration)	NW Pettygrove and 26th
687	SE Spokane and 13th Green Street Semi-Diverter	A green street that is also a traffic semi-diverter. This is a new bike boulevard tool.	1 -Willamette River(-)	1-Facility Construction(Green Street:Swale, infiltration)	SE Spokane and 13th
707	Shiley Hall Ecoroof - University of Portland	Ecoroof over newly constructed school of engineering building at the University of Portland.	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	University of Portland--Shiley Hall

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
708	New Residence Hall Ecoroof-University of Portland	Ecoroof over newly constructed residence hall at the University of Portland		1-Facility Construction(Ecoroof)	University of Portland-New Residence Hall
709	Zuniga Residential Ecoroof	Ecoroof over newly constructed residential addition.	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	301 NE 65th
710	Wynton Residential Ecoroof	Ecoroof over newly constructed residential shed	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	3121 N Arlington place
711	Sacramento Lofts Ecoroofs	1802 sq. ft ecoroofs over newly constructed condominiums	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	506-528 NE Sacramento
712	Rust Residential Ecoroof	Ecoroofs over newly constructed residential awning	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	4234 NE Rodney Ave
713	Marsicek-Roberts Residential Ecoroof	Ecoroofs over newly constructed residential addition.	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	4208 NE 8th Ave
714	Martin (Dru) Residential Ecoroof	Residential ecoroof over a newly constructed garage	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	2734 NW Savier
715	Goldman-Armstrong Residential Ecoroof	Ecoroof over newly constructed residential addition	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	25 NE 60th
716	K4 Condominiums Ecoroof	Ecoroof project at newly constructed condominium development	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	5506 5514 NE Killingsworth
717	Ladd Tower Ecoroof	Ecoroofs over newly constructed skyscraper in the downtown area	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	1300 SW Park Ave
718	Dekum Corner Ecoroofs	Two ecoroof projects as part of a multi-use redevelopment project	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	818 NE Dekum
723	N Central & St. John	Two green street curb extensions	1 -Columbia Slough(-)	1-Facility Construction(Green Street:Swale, infiltration)	N Central and N St John
725	SW 4th & College	One large green street curb extension with pedestrian crossings.	1 -Willamette River(Mill-Jefferson)	1-Facility Construction(Green Street:Planter, flow-through)	SW 4th Ave & College St
726	SE Division & 57th	Two green street curb extensions	1 -Willamette River(Taggart)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	SE Division St & 57th Ave
727	NE Royal & 43rd	Two green street curb extensions	1 -Willamette River(Holladay-Sullivan)	1-Facility Construction(Green Street:Planter, Infiltration)	NE Royal Ct & 43rd Ave
735	SE Clay Community Design Plan	A design plan that educates about stormwater, creates a unique identity and recognizes the history of the Clay Street route.	1 -Willamette River(-)	1-Planning, Long-Term(Plan)	SE Clay Street - SE Water Ave. to 12th St.
757	Fields Hall & Schoenfeldt Hall Ecoroof, U of P	Ecoroof over newly constructed residence halls		1-Facility Construction(Ecoroof)	
758	East Multnomah Soil and Water Conservation Dist.	Retrofit of a 1904 building; 700 sf ft ecoroof over the porch.	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	5211 N WILLIAMS AVE
759	Kirkpatrick Residential Ecoroof	488 sq ft ecoroof on a newly constructed building		1-Facility Construction(Ecoroof)	1705 SE Ash St
760	SE 13th Avenue LLC Commercial Ecoroof	4,481 sq. ft. on a new commercial, one-story bldg, over modified bitumen waterproofing membrane.	1 -Johnson Creek(-)	1-Facility Construction(Ecoroof)	7853 SE 13th Ave.

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761	1200 Building Ecoroof	7500 sq ft lightweight ecoroof retrofit on a multi-family building		1-Facility Construction(Ecoroof)	
762	Oak Basin CP-B	Green street (14 facilities) and sewer replacement CIP project in the Oak combined sewer basin. Located along Ankeny and side streets from 16th to 20th.	1 -Willamette River(Oak-Alder-Division)	1-Facility Construction(Green Street:Planter, flow-through) 2-Facility Construction(Green Street:Planter, Infiltration)	
767	Garcia Residential Ecoroof	360 sf ecoroof constructed on a residential home.		1-Facility Construction(Ecoroof)	6849 N Missouri St
768	Port of Portland	10,106 sq ft ecoroof on a commercial building.	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	7200 NE Airport Way
769	PSU Montgomery Street Bike Garage Ecoroof	1,120 sq. ft. ecoroof covering a renovated PSU bike shelter.		1-Facility Construction(Ecoroof)	
770	Cartwright/Lipscomb Residential Ecoroof	400 sq ft residential ecoroof on a residential home addition	1 -Fanno Creek(-)	1-Facility Construction(Ecoroof)	3808 SW Dosh Rd.
772	Lincoln High School Batting Cage Ecoroof	2,800 sq ft ecoroof installed on top of batting cages			1600 SW Salmon St.
773	Trillium Charter School	1,000 sq ft institutional ecoroof	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	5420 N Interstate
775	Vertigo LLC	7,000 sq. ft. commercial ecoroof	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	2700 SE Ankeny St.
777	Porque No?	75 sq. ft. ecoroof on a commercial building	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	3524 N Mississippi
786	SW 48th - Residential Ecoroof on 14 House, SEED	1,294 sq. ft ecoroof on a residential building	1 -Fanno Creek(-)	1-Facility Construction(Ecoroof)	3344 SW 48th Ave
787	St. Andrew's Church	1,400 sq. ft. ecoroof on a commercial building	1 -Columbia Slough(-)	1-Facility Construction(Ecoroof)	806 NE Alberta St.
793	Mead Bldg/Multnomah County	5,667 sq. ft.ecoroof on a commercial building			421 W 55th Ave.
796	Travillian Residence	191 sq. ft. ecoroof on a residential building	1 -Willamette River(-)	1-Facility Construction(Ecoroof)	3973 NE 7th Ave.
797	Mays Residential Ecoroof	224 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	7522 SW 59th Avfe.
802	SW Boundary - Manning Residence Ecoroof	488 sq. ft. ecoroof on a residential building		1-Facility Construction(Ecoroof)	2926 SW Boundary
804	Left Bank LLC / Beth German Commercial Ecoroof	831 sq. ft. ecoroof on a commercial building		1-Facility Construction(Ecoroof)	240 N Broadway St.
806	Caifu1 LLC	1,020 sq. ft. ecoroof on a commercial building		1-Facility Construction(Ecoroof)	5010 NE 33rd Ave.
807	Rivermark Community Credit Union	1267 sq. ft. ecoroof on a commercial building		1-Facility Construction(Ecoroof)	2537 SE Hawthorne Blvd.
866	NE Going & 33rd Bike Boulevard	PBOTcycle track project incorporating 2 stormwater facilities.	1 -Columbia Slough(-)	1-Facility Construction(Green Street:Planter, Infiltration) 2-Facility Construction(Green Street:Swale, infiltration)	
920	Doleman Coop Ecoroof	Residential ecoroof on chicken coop		1-Facility Construction(Ecoroof)	4709 SE 64th Ave, Portland 97206

ID	Project Name	Description	Watershed (Subwatershed)	Project Types	Location
936	Keith Clark Residential Ecoroof	207 sq. ft. ecoroof		1-Facility Construction(Ecoroof)	1532 SW Davenport, Portland OR 97201
954	Staci Mayes Ecoroof	Small 260 sq.ft. ecoroof		1-Facility Construction(Ecoroof)	3426 SE Stephens St.