



City of Newberg TMDL Implementation Plan

Annual Report Covering 2017 Activities

Submitted: March 31, 2018

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ACRONYMS

ACWA - Association of Clean Water Agencies

ASCE - American Society of Civil Engineers

AWWA - American Water Works Association

BMP - Best Management Practice

CESCL - Certified Sediment and Erosion Control Lead

CRRC - Citizen's Rate Review Committee

City - City municipal staff of Newberg, Oregon

DEQ - Oregon Department of Environmental Quality

ESC - Erosion and Sediment Control

EWRI - Environmental and Water Resources Institute

FOG - Fats, Oil, and Grease

GIS – Geographic Information System

GFU - George Fox University

GYWC - Greater Yamhill Watershed Council

IDDE - Illicit Discharge Detection and Elimination

MS4 – Municipal Separate Stormwater Sewer System

NORP - Northwest Oregon Restoration Partnership

NPDES – National Pollutant Discharge Elimination System

O&M- Operations and Maintenance

PW - Public Works

TMDL - Total Maximum Daily Load

YCSW - Yamhill County Solid Waste



EXECUTIVE SUMMARY (2013-2017)

In 2017, the City's TMDL Implementation Plan consists of seven best management practices which are then comprised of 36 overall strategies, and 56 goals which are focused on reducing mercury, bacteria, and stabilizing the temperatures on Chehalem Creek, Hess Creek, and Spring Brook (see Appendix 1). Six of the best management practices are generally aligned with typical MS4 NPDES requirements. The seventh best management practice addresses stream temperature.

As can be seen in Table 1, the City has either completed or engaged in ongoing activities for 78% of the 55 established goals. In the last 5-year plan period (2013-2017) there were seven goals that are incomplete but started, three goals not completed, and two goals that were delayed. Goals not completed or ongoing will be incorporated into the next 5-year plan period with updated completion dates.

Table 1: Status of Measurable Goals, December 2017

| Best Management Practice | Total Goals | Measurable Goals | | | | | |
|--|-------------|------------------|---------|------------------------|---------------|---------|------------------|
| | | Completed | Ongoing | Incomplete But Started | Not Completed | Delayed | Added or Not Due |
| Public Education | 6 | 0 | 5 | 0 | 1 | 0 | 0 |
| Public Involvement | 5 | 0 | 4 | 1 | 0 | 0 | 0 |
| Illicit Discharge Detection and Elimination | 11 | 3 | 6 | 2 | 0 | 0 | 0 |
| Construction Site Stormwater Runoff Control | 5 | 1 | 4 | 0 | 0 | 0 | 0 |
| Post-Construction Stormwater Runoff Control | 10 | 2 | 6 | 2 | 0 | 0 | 0 |
| Pollution Prevention in Municipal Operations | 14 | 2 | 8 | 1 | 1 | 2 | 0 |
| Temperature | 5 | 0 | 3 | 1 | 1 | 0 | 0 |
| Totals | 56 | 8 | 36 | 7 | 3 | 2 | 0 |
| Percentage of Required Goals | 100% | 14% | 64% | 13% | 5% | 4% | 0% |

Table 2 provides a more detailed look at both Strategies and Goals and makes a comparison to the previous plan year. As can be seen, there was improvement in the amount of strategies and goals completed. The Public Education saw a decrease in the percent change, a new strategy/goal to install signage at stream crossings or green infrastructure locations became due in 2017 and was not completed. The Construction Site Stormwater Runoff Control strategy saw an increase in the percent change as erosion control site inspections for active construction projects was modified to an ongoing status. The biggest positive percentage change occurred under the Post-Construction Stormwater Runoff Control strategy. Two strategies/goals were moved into ongoing status which include the requirement for stormwater management for development and conducting pre-construction conferences.

Table 2: Status of Goals and Strategies with Deadlines before January 2018

| Measure | Strategies | | | Measurable Goals | | |
|--|--------------|------------|-------------|------------------|------------|-------------|
| | Implemented | Percent | Change* | Implemented | Percent | Change* |
| Public Education | 5/6 | 83% | -17% | 5/6 | 83% | -17% |
| Public Involvement | 3/4 | 75% | 0% | 4/5 | 80% | 0% |
| Illicit Discharge Detection and Elimination | 5/6 | 83% | 0% | 9/11 | 82% | 0% |
| Construction Site Stormwater Runoff Control | 3/3 | 100% | +33% | 5/5 | 100% | +20% |
| Post-Construction Stormwater Runoff Control | 4/5 | 80% | +40% | 8/10 | 80% | +30% |
| Pollution Prevention in Municipal Operations | 6/9 | 67% | 0% | 10/14 | 71% | +7% |
| Temperature | 2/3 | 67% | 0% | 3/5 | 60% | 0% |
| Total | 28/36 | 78% | +56% | 44/56 | 78% | +40% |

* Change in number of measurable goals or strategies completed or placed in an on-going status from 2016 to 2017



MEASURE 1 – PUBLIC EDUCATION

The Public Education measure has three best management practices which include Stormwater Education, Watershed Education, and Infrastructure Education. Each best management practice is comprised of different strategies listed below:

- **Stormwater Education** is comprised of three strategies which include providing information on the City website, educating citizen groups, and stormwater information provided in the annual Water Quality Report.
- **Watershed Education** includes signage at stream crossings or stormwater facilities and classroom education.
- **Infrastructure Education** includes installation of markers at storm drains located throughout the City.

2017 Tasks Completed

Activities completed in 2017 for each best management practice are described.

PE-1 Stormwater Education

The City has 16 web pages related to stormwater covering information on erosion and sedimentation control, riparian vegetation, water quality, illicit discharge, public works standards, and the TMDL program. The City posted on social media 31 times about stormwater activities, the Trees for Streams program, illicit discharge, compost, and volunteer events. The TMDL is uploaded each year to the City's website after receiving comments from DEQ.

Leadership Newberg attended a presentation at the Newberg Wastewater Treatment Plant in March to learn about City programs such as volunteer opportunities, Trees for Streams, watershed grants, the fats, oils, and grease (FOG) program, and compost. The participants were also given a tour of the waste water treatment plant and its composting facilities.

The Water Quality Report was sent to residents of the city in June and contained information on stormwater volunteer opportunities and illicit discharge.

PE-2 Watershed Education

In March, the City sponsored two Mad Science presentations. Both presentations were about fresh water as a natural resource. The first presentation was given at Joan Austin Elementary and approximately 180 fourth and fifth-grade students were in attendance, and the second presentation was given at Mabel Rush Elementary to approximately 100 fifth-grade students.

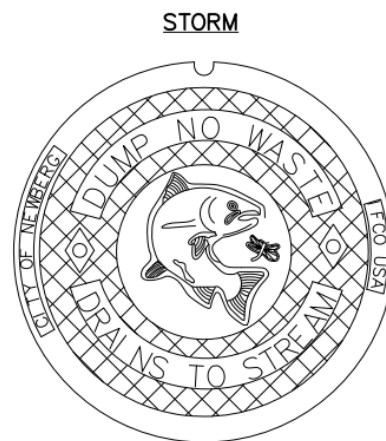
In April, the City spoke with approximately 25 fifth-grade students about green infrastructure and its use in reducing stormwater volume and streambank erosion. The students learned about infiltration and the different kinds of green infrastructure. They used GIS to determine

where stormwater could be managed, and calculated the volume of stormwater reduced through green infrastructure.

In November, the City and the Greater Yamhill Watershed Council spoke with a group of 40 George Fox University students in an Environmental Science class about their local watershed, natural resource issues, key organizations involved in conservation, and ways to get involved and volunteer.

PE-3 Infrastructure Education

Storm drains installed as part of new development are permanently marked with either “No Dumping” or “Dump No Waste Drains to Stream.” There were no storm drains marked with the after-market “No Dumping! Drains to Creek” plastic labels in 2017.



Effectiveness Summary (January 2013 to December 2017)

Stormwater Education (PE-1)

There were 16 pages on the City website with information on the TMDL program, stormwater, riparian vegetation, and water quality from 2013 to 2017. In 2017, the City posted 31 times on social media from April through December about compost, Trees for Streams, illicit discharge, stormwater activities and volunteer events. The City posted 12 items regarding compost, native plant sales, Trees for Streams, and volunteer events in 2016. In 2015, the City started using social media and posted seven items covering riparian vegetation, volunteer groups removing invasive plants, erosion, and urban forestry. The annual TMDL reports are uploaded to the City’s website each year after receiving comments from DEQ.

From 2014 to 2017, staff has provided a presentation to Leadership Newberg in March of each year on our stormwater programs, compost program, and FOG program. The 10 to 15 participants were also given a tour of the wastewater treatment plant and its composting facilities.

In 2016, the City and GYWC spoke with a group of 30 university students about stormwater and the use of green infrastructure to reduce its effects on streams. After the talk, the students renovated six stormwater planters. In 2015, the City and GYWC spoke with two groups, 60 and 70 people respectively, about the correlation between invasive plants, stormwater, and streambank erosion. The groups removed invasive blackberry, laid down compost, planted native trees and shrubs, and stabilized the restoration site for the winter. In 2014, the City and the GYWC spoke with 30 George Fox University students about the effect of invasive plants on streambank erosion before going to a restoration site to remove invasive plants. Also in 2014, the City sponsored a group of 50 people to clean up Renne Park.

From 2013 to 2015, the City staffed a booth with the GYWC at the Camellia Festival in April that was attended by 2,000 to 3,000 people. We spoke with many people about riparian habitat and restoration. In April 2014, the City spoke to people at the Newberg Earth Day where approximately 200 people learned about rain gardens, composting, and natural gardening. A booth was set up for a week in April 2014 at the city's library with similar information. On Public Works Day in 2013 and 2014, the City included an area where children planted groundcovers and released ladybugs as they learned about the benefits of ladybugs for pest control and, in 2015, we had a booth with information on the benefits of compost on infiltration. The City staffed two booths in 2013 and one booth in 2014 at the Newberg Farmers Market where 600 to 800 people gather each week in the summer. We sponsored one booth for the GYWC in 2013 and two booths for the Yamhill County Solid Waste (YCSW) in 2014. The booths from 2013 to 2015 included information about natural gardening, erosion control, bioswales, water quality, recycling, and hazardous waste disposal. In 2013, the City staffed a booth with the GYWC and the YCSW at the four-day Newberg Old-Fashioned Festival which attracts approximately 10,000 people each year. We spoke about fish habitat, water quality, natural gardening, and recycling. We included information about volunteer programs, illicit discharges, the Trees for Streams program, and volunteer opportunities in our annual Water Quality Report from 2013 to 2016.

In summary, the City has maintained 16 pages on its website, posted the TMDL reports to its website, and started using social media to reach the public about stormwater issues. We provided 8 presentations that reached over 270 people and either staffed or sponsored 14 booths at events with attendances that varied from several hundred to several thousand. Each year, we have included information about stormwater in our Water Quality Report.

Watershed Education (PE-2)

The City has sponsored a Mad Science presentation on water quality to approximately 640 elementary students from 2013 to 2017. In 2014 and 2015, the City partnered with the GYWC and the Newberg School District on an after-school ecology class that reached approximately 30 middle school students. In 2015, we spoke with 20 middle school students about watersheds, invasive plants, and erosion before working with them on a restoration site. In 2013, the City provided a presentation to 15 high school students on water management and its effect on water quality.

From 2013 to 2016, the City partnered with the Newberg School District and GFU to hold World Water Monitoring events with middle school students. Staff taught students about streams and water quality for a day and then helped them collect water samples from Hess Creek for physical and chemical analyses during a field day. Students received instruction in soil types in 2014 and macro-invertebrates in 2015 and 2016. Each year, GFU staff have provided historical information about the watershed and taught the students about stream ecology so they can better understand watershed issues. From 2013 to 2016, approximately 1,000 students have been introduced to the concept of watershed management and its effect on water quality.

The City, GFU, and Green Girl Land Development Solutions sponsored raingarden classes in 2013 and 2014. After the classes, the participants built bioswales that infiltrate a 2.5-inch rain event.

The City partnered with GYWC in the fall of 2017 to speak with a group of 40 George Fox University students in an Environmental Science class about their local watershed, natural resource issues, key local conservation organizations, and ways to get involved and volunteer.

The City worked closely with the GYWC in 2013 and 2014 to provide watershed education to the public. We provided a \$1,000 donation in 2013 and attended monthly meetings in 2013 and 2014. In addition, we reconnected the group in 2013 with a consortium of watershed councils which provide low-cost plants for stream restoration purposes. In December of 2014, the City resigned from the GYWC board in order to work more closely with them on local projects.

In summary, the City has provided or sponsored 34 presentations that reached over 1,800 people from 2013 to 2017. The presentations contained information about infiltration, native vs. invasive plants, macro-invertebrates, and water quality. The City attended GYWC meetings in 2013 and 2014 before resigning their board member status in 2014 to work more closely with the group on projects within the city's jurisdiction.

Infrastructure Education (PE-3)

Through its volunteer program, the City marked 670 storm drains from 2013 to 2017 with the after-market "No Dumping! Drains to Creek" plastic labels.

2017 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.



MEASURE 2 – PUBLIC INVOLVEMENT

The Public Involvement measure has four best management practices which include reviewing the Stormwater Utility Fee, Public Participation in Stormwater Management, Public Participation in Reporting Stormwater Issues, and Public Participation in Educational Focus. Each best management practice is comprised of different strategies listed below:

- The **Stormwater Utility Fee** is comprised of one strategy which requires participating in the Citizen Rate Review Committee meetings to present funding needs to the committee.
- **Public Participation in Stormwater Management** includes administering a grant program to fund non-profit organizations proposing projects that fulfill goals of the TMDL plan.
- **Public Participation in Reporting Stormwater Issues** is comprised of two strategies which include providing a mechanism for public reporting, and responding to public concerns.
- **Public Participation in Educational Focus** is comprised of conducting a public survey to revise and refine educational messaging.

2017 Tasks Completed

Activities completed in 2017 for each best management practice are described below.

PI-1 Stormwater Utility Fee

The Citizen's Rate Review Committee (CRRC) was started in 1992 and consists of volunteers from the public who meet every two years to review utility rates proposed by staff. After a discussion with the committee, the rates are presented by staff to the City Council for approval.

The CRRC began meeting in October 2017 and will continue to meet through April 2018 with a City Council public hearing and adoption of rates. No public comments relating to stormwater were made at the January 4, 2018 stormwater rate meeting. The audio recording from the stormwater rate committee can be found on the City's website under *Agendas and Minutes*.

PI-2 Public Participation in Stormwater Management

In 2017, the City provided \$630 in watershed grants to the Newberg School District for stormwater education modules at Joan Austin Elementary and Mabel Rush Elementary.

Two additional inquiries were made about the City's Watershed Grant program, however no additional watershed grants were awarded in 2017.

PI-3 Public Participation in Reporting Stormwater Issues

In 2017, the City used its website to provide a phone number for the public to call about stormwater issues. The City responded to six illicit discharge complaints and one erosion and sediment control complaint in 2017 (see Appendix 2). Flood complaints were not documented.

PI-4 Public Participation in Educational Focus

The City was unable to provide staff in 2017 to complete this task.

Effectiveness Summary (January 2013 to December 2017)

Stormwater Utility Fee (PI-1)

The CRRC began meeting in October 2017 to update utility rates. The City Council will hold a public hearing and adopt rates in April of 2018. No public comments related to stormwater were made at the January 4, 2018 stormwater rate meeting. The audio recording from the stormwater rate committee can be found on the City's website under *Agendas and Minutes*.

The CRRC met to review stormwater rates in October and November in 2015 and the City Council approved new rates for 2017 and 2018 in March 2016. The rates for 2016 were \$8.67 and for 2017 and 2018 they are \$9.45 and \$10.30, respectively. While the CRRC and City Council meetings were advertised and open to the public, no one from the public commented on the stormwater rates. The minutes from the CRRC meetings and the town hall are available on the City website.

The CRRC met in early 2014 and in late 2015 to discuss stormwater rates. While the meetings were advertised and open to the public, no one commented on the stormwater rates. The rates were \$7.30 in 2013 and \$8.67 in 2016.

Public Participation in Stormwater Management (PI-2)

In 2017, the City provided \$630 in watershed grants to the Newberg School District for stormwater education modules at Joan Austin Elementary and Mable Rush Elementary.

In 2016, the City provided \$1,678 in watershed grants to the Newberg School District to defray costs associated with the World Water Monitoring event for 8th graders and a stormwater education module for 5th graders. Both projects used Hess Creek as the stream of interest.

In 2015, the City provided \$495 as a watershed grant to the Newberg School District for the World Water Monitoring event. We provided \$1,000 in 2014 for a project restoring 240 feet of Hess Creek's streambank. The project partners were the Newberg School District, GYWC, and the Yamhill Watershed Stewardship Fund.

Public Concerns with Stormwater (PI-3 and PI-4)

In 2017 the City used its website to provide a phone number for the public to call about stormwater issue and responded to six illicit discharge complaints and one erosion and sediment control complaint.

In 2016, the City used its website to provide a phone number for the public to call in the event of flooding or stormwater concerns.

In 2015, the City used social media twice, in addition to its website, to inform the public of stormwater issues. In 2014 and 2015, the City provided a link (YourGov) for citizens to report stormwater issues.

There were two complaints regarding Oregon Drainage Law, 24 complaints involving illicit discharges, and six complaints about erosion and sediment control from 2013 to 2017. Complaints of street flooding were not documented from 2013 to 2017. The public survey was not completed in 2015, 2016, or 2017.

2017 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.



MEASURE 3 – ILLICIT DISCHARGE DETECTION AND ELIMINATION (IDDE)

The Illicit Discharge Detection and Elimination measure has four best management practices which include Develop an IDDE Plan, Training Staff to Implement IDDE, Implementation of the IDDE Plan, and Hazardous Waste Collection. Each best management practice is comprised of different strategies listed below:

- **Development of an IDDE Plan** was completed in 2014, which includes procedures for addressing non-stormwater discharges, investigative sampling and monitoring, and worksheets for inspections.
- **Train Staff to Implement the IDDE** includes training new staff in illicit discharge investigation and spill response.
- **Implementation of the IDDE Plan** includes outfall field screening, investigation of outfalls for illicit discharges, cleaning up illegal dumps, providing for Fire Department spill response, providing for Public Works spill response, and providing spill response cards and kits on municipal trucks and sweepers.
- **Hazardous Waste Collection** includes providing opportunities for residents to freely dispose of hazardous waste twice per year.

2017 Tasks Completed

ID-1 Develop IDDE Plan

The City created an Illicit Discharge Detection and Elimination Plan in 2014, this best management practice is complete.

ID-2 Train Staff to Implement IDDE

Each department or division within the City is responsible for their own employee training. One employee attended an Environmental Forensics-Site Characterization and Remediation class in 2017.

ID-3 Implement IDDE Plan

The City screens outfalls during stormwater system maintenance and stream assessments, however no activity documentation was completed during 2017 maintenance. No illegal dumps were reported in 2017.

There were six illicit discharge complaints investigated by staff in 2017 (see Appendix 2). The investigations resulted in one warning letter and two verbal warnings.

The Fire Department (TVF&R) responded to four “spill incidents,” two of which were food grade oil and two that included gasoline/diesel spills. No oil entered the public stormwater system.

Public Works Maintenance did not respond to any spills within the City in 2017. Spill kits are available on 10 public works vehicles. There were no spill kits used in 2017.

ID-4 Hazardous Waste Collection

The Yamhill County Solid Waste (YCSW) continues to sponsor the hazardous waste collection events for Newberg in May and for McMinnville in October. The events are open to all Yamhill County residents. The 2017 events collected 16.3 tons of hazardous waste, 11.2 tons of paint and paint-related waste, and 512 pounds of medication (see Table 3). Additionally, as part of the National Drug Take-Back program, the Newberg-Dundee police department maintained a drug drop-off box in the Public Safety Building where they collected 902.4 pounds in 2017.

Table 3: Household Hazardous Waste and Medications Collected from 2013 to 2017

| Year | Newberg | | | McMinnville | | |
|---------|------------------------|--------------|----------------------|------------------------|--------------|----------------------|
| | Hazardous Waste (tons) | Paint (tons) | Medications (pounds) | Hazardous Waste (tons) | Paint (tons) | Medications (pounds) |
| 2013 | 9.5 | 13.7 | 168 | 5.0 | 7.3 | 440 |
| 2014 | 3.6 | 17.8 | 705 | 9.6 | 14.7 | 490 |
| 2015 | 4.8 | 12.7 | 1,200 | 7.5 | 10.5 | 318 |
| 2016 | 11.2 | 15.1 | 797 | 8.5 | 7.1 | 420 |
| 2017 | 9.2 | 7.1 | 92 | 7.1 | 4.1 | 420 |
| Average | 7.7 | 13.3 | 592.4 | 7.5 | 8.7 | 417.6 |

Effectiveness Summary (January 2013 to December 2017)

IDDE Plan (ID-1)

The IDDE Plan including tracking worksheets, investigation procedures, and sampling protocols was completed in 2014.

Staff Training (ID-2)

One person was trained in an environmental forensics course in 2017. One person was certified as a stormwater inspector for illicit discharges in 2016. In-house training on the IDDE Plan was provided in 2015 to some of the staff. One person attended a session on IDDE program implementation at the ACWA Stormwater Summit in May 2014. One person completed a course on industrial stormwater permits in December 2013.

IDDE Plan Implementation (ID-3)

Staff responded to reports of 27 illicit discharges from 2013 to 2017 (see Appendix 2) with the investigations resulting in one citation, 10 warning letters, and 16 clean ups of the affected areas by the dischargers. Five of the investigations resulted in no further action by the City due to the nature of the discharge. There was one wastewater system overflow (SSO) spill in 2016 and one in 2014. There was one dumping incident in 2014. Basic spill kits were kept on two emergency response vehicles in 2014 and in 10 municipal vehicles in 2015. No spill kits on public works vehicles were used in 2015, 2016, and 2017. Spill kit usage was not documented in 2013 and 2014. In 2017, the Fire Department (TVF&R) responded to four “spill incidents,” two of which were food grade oil and two that included gasoline/diesel spills. No oil entered the public stormwater system.

Hazardous Waste Collection (ID-4)

From 2013 to 2017, the YCSW has collected an annual average of 7.7 tons of hazardous waste in Newberg and 7.5 tons in McMinnville. Although Oregon has the PaintCare collection program, people continue to bring an average of 13.3 tons of paint and paint-related products annually to the hazardous waste event in Newberg and 8.7 tons in McMinnville. The Drug Take-Back program has been implemented with great success in Newberg and McMinnville resulting in an average of 592 pounds of medication collected annually in Newberg and 417 pounds in McMinnville.

2017 Adaptive Management

Adaptive management for this best management practice is captured in the City’s 5-year TMDL matrix update which covers 2018- 2022.



MEASURE 4 – CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

The Construction Site Stormwater Runoff Control measure has three best management practices which include develop an Erosion and Sedimentation Control Program, Train Staff in Erosion and Sediment Control, and Implement Erosion and Sediment Control Program. Each best management practice is comprised of different strategies listed below:

- **Development of an Erosion and Sediment Control Program** was completed in 2014, which includes information on the City's requirements for those engaged in construction projects including tools and steps necessary to prevent adverse effects of erosion from construction sites.
- **Training Staff in Erosion and Sediment Control** is an ongoing effort. All staff responsible for erosion and sedimentation control plan review and enforcement are involved in training which requires recertification or new certification every three years.
- **Implementation of the Erosion and Sediment Control Program** includes plan review, site inspection and enforcement of the City's ordinance.

2017 Tasks Completed

CS-1 Develop Erosion and Sediment Control Program

The City created an Erosion and Sediment Control Program manual in 2014, this best management practice is complete.

CS-2 Train Staff in Erosion and Sediment Control

Each department or division within the City is responsible for their own employee training. No ESC training was attended in 2017; both of the City's engineering inspectors are Certified Erosion and Sedimentation Control Leads.

CS-3 Implement Erosion and Sediment Control Program

Erosion and Sediment Control information for major projects is listed in Appendix 3. There were 15 larger projects many of which required DEQ 1200-C permits that the City inspected throughout construction. Staff also reported that there were 86 single-family residential ESC permits with associated inspections in 2017 throughout the City of Newberg. Staff reported no ESC citations in 2017.

Effectiveness Summary (January 2013 to December 2017)

ESC Plan Development (CS-1)

Staff completed an ESC manual in 2014 for construction sites less than one acre with sites greater than one acre required to provide a copy of their 1200-C permit and DEQ-approved plan to the City.

ESC Staff Training (CS-2)

Each department or division within the City is responsible for their own employee training. One person was certified in 2016, one person was re-certified in 2015, two people were certified in 2014, and no training occurred in 2013. There are two people currently certified to conduct ESC inspections.

ESC Plan Implementation (CS-3)

In 2017 there were 86 single-family residential ESC permits and associated inspections, and inspections for major project are listed in Appendix 3. There were 83 ESC inspections in 2016 and 293 ESC inspections in 2015. The number of ESC inspections for 2013 and 2014 was not documented. The number of inspections per project location was undocumented from 2013 to 2016.

In 2015, a project was reported to DEQ for violation of its 1200-C permit. One notice of non-compliance was issued in 2014 and none were issued in 2013 and 2016. Code Enforcement received 2 ESC complaints in 2014 and 2 complaints in 2013. An ODOT project was the subject of a 2013 complaint but was referred to the County because it was not within our jurisdiction.

2017 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.



MEASURE 5 – POST-CONSTRUCTION RUNOFF CONTROL

The Post-Construction Runoff measure has three best management practices which include develop a Stormwater Management Program, Train Staff in Stormwater Management, and Implement Stormwater Management Program. Each best management practice is comprised of different strategies listed below:

- **Development of a Stormwater Management Program** was completed in 2012 with the Municipal Code adoption and the Public Works Design and Construction Standards.
- **Training Staff in Stormwater Management** is an ongoing effort and includes general training in stormwater runoff responsibilities in watershed and stormwater management, and also includes training new staff on stormwater facility inspections. Every three years all staff should be provided stormwater facility inspector training.
- **Implementation of the Stormwater Management Program** includes review of plan submittals, requiring stormwater management for development, conducting pre-construction meetings, evaluate stormwater retrofit opportunities, implement stormwater retrofit program, inspect stormwater facilities, and implement stormwater monitoring program.

2017 Tasks Completed

DS-1 Develop Stormwater Management Program

The primary development of a Stormwater Management Program was completed in 2012 with the Municipal Code adoption and subsequent Public Works Design and Construction Standards.

DS-2 Train Staff in Stormwater Management

Each department or division within the City is responsible for their employee training. On-the-job training was conducted in 2017 to train two new staff members in the engineering department. The City continued to attend TMDL designated management agency (DMA) meetings to learn from other DMA coordinators throughout the Willamette basin.

DS-3 Implement Stormwater Management Program

There were over 30 pre-application meetings in 2017 where City stormwater requirements were discussed with the applicant. There were 102 plan reviews in 2017, and three pre-construction conferences. The City has a stormwater credit program that had one participant in 2017.

There were eight completed construction projects in 2017 (see Table 4 and Appendix 4) that exceeded the stormwater management threshold. The eight projects completed seven detention ponds, and 23 green infrastructure facilities (one water quality swale, three vegetated swales, 14 filtration planters, four rain gardens, and one installation of pervious

pavers). In addition, ODOT installed nearly continuous stormwater planters along Springbrook Road from OR99W to OR219 as part of the Newberg-Dundee Bypass project.

Table 4: Projects and Required Stormwater Management, 2013 to 2017

| Stormwater Management Type | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|--|------|------|------|------|------|---------|
| None | 2 | 4 | 0 | 5 | 0 | 2.2 |
| Detention Facility Only | 0 | 2 | 2 | 1 | 1 | 1.2 |
| Detention Facility and Green Infrastructure* | 0 | 1 | 2 | 1 | 4 | 1.6 |
| Green Infrastructure Facilities Only | 0 | 4 | 1 | 2 | 3 | 1.8 |

*For the purpose of this table, green infrastructure is synonymous with low impact development approach (LIDA) facilities.

The City is still in the beginning stages of establishing a temperature monitoring program in 2017. Temperature loggers were placed at the upper and lower stretches of Hess Creek, Chehalem Creek, and Spring Brook. The City is working with property owners along the creeks to identify more preferred locations with easier access and less potential for public tampering.

Effectiveness Summary (January 2013 to December 2017)

Stormwater Management Program Development (DS-1)

Staff updated the stormwater design standards in March 2014 and August 2015 to comply with the municipal code adopted in 2012. It includes a requirement for applicants to use green infrastructure i.e. low impact development approach (LIDA) facilities to the maximum extent practicable in stormwater management strategies.

Stormwater Staff Training (DS-2)

Each department or division within the City is responsible for their own employee training. In 2017 on-the-job training was conducted for two new staff members and the City continued to attend TMDL designated management agency (DMA) meetings to learn from other DMA coordinators throughout the Willamette basin.

In 2016, one person was trained on vegetated stormwater facility maintenance.

In 2015, one person attended the ACWA Stormwater Summit presentation on regulatory stormwater updates, new stormwater BMPs, and aquifer storage and recovery; one person attended the ASCE Stormwater Symposium presentations on bioretention, retrofits, and modeling; one person attended the APWA conference presentations on outfall design, design standards, and restoration; and in-house training occurred for stormwater maintenance procedures.

One person attended presentations on green infrastructure design, stream restoration, and HEC-RAS analyses at the 2014 ASCE-EWRI Conference and the 2014 AWWA Sustainable Water Management Conference.

In 2013, one person attended webcasts on retrofitting techniques, one person attended a webcast on BMP selection for achieving TMDL goals, and one person attended two presentations on creating and implementing a stormwater retrofit program.

Stormwater Management Program Implementation (DS-3)

In 2017 there were over 30 pre-application meetings where stormwater requirements were discussed with the applicant. Eight projects requiring stormwater management plans were constructed in 2017, and three pre-construction meetings were held.

There were 30 pre-application meetings in 2016 where stormwater requirements were discussed with the applicant. An average four stormwater management plans have been submitted between 2013 and 2016 with an annual average of three projects being exempted from stormwater management. There has been an average of 2.5 pre-construction conferences each year through 2016.

In 2016, the city completed a retrofit project for two stream crossings on Villa Rd to reduce flooding by Hess Creek. The new 16ft diameter culvert on Hess Creek replaced 2 (3ft and 5ft) old culverts, is fish-friendly (graveled bottom), and has headwalls at the inlet and outlet. The new 7ftx6ft culvert on the tributary to Hess Creek has a graveled bottom. Restoration was completed on the streams in the vicinity of the culverts with large woody debris placed in the stream, native species planted, and sculpting of the streambanks to restore floodplain connectivity.

In 2014 and 2015, College Street/Hwy 219 underwent a 0.46-mile renovation to add sidewalks and bike lanes in an area that was prone to flooding. The project included 334 feet of 6-ft wide filtration planters and 180 feet of 5-ft wide filtration planters to manage stormwater. Between 2013 and 2014, staff worked with GFU and Green Girl Land Development Solutions to create 2 bioswales that infiltrate a 2.5-inch rain event. The City has a stormwater credit program with one participant each year from 2013 to 2016.

The City developed stormwater facility inspection forms in 2015. There were no stormwater facility inspections from 2013 to 2015. There were 2 detention ponds inspected in 2016.

The City started a temperature monitoring program in 2016 and placed temperature loggers at the upper and lower stretches of Hess Creek, Chehalem Creek, and Spring Brook. A cursory review of the data pulled monthly from July to October showed some temperatures of concern during August and September on the lower reaches of the streams. In 2017 the City was still in the beginning stages of establishing a temperature monitoring program and is working with property owners to find better logger locations with easier access and less potential for public tampering.

2016 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.



MEASURE 6 – POLLUTION PREVENTION IN MUNICIPAL OPERATIONS

The Pollution Prevention in Municipal Operations measure has three best management practices which include develop an Operations and Maintenance Manual, Operations and Maintenance Staff Training, and Stormwater Infrastructure Training. Each best management practice is comprised of different strategies listed below:

- **Developing an Operations and Maintenance Manual** would include reviewing existing operation and maintenance practices and documenting them, including optimization of water quality in the manual, update the catch basin cleaning program, implement a revised catch basin cleaning program, evaluate the street sweeping program and revise as necessary to optimize water quality, and revise street sweeping program as necessary.
- **Operation and Maintenance Staff Training** includes training new staff on stormwater maintenance duties as described in the Operations and Maintenance Manual, as procedures in the Operation and Maintenance Manual are revised staff need to be trained on the changes, and train staff in maintenance procedures that maximize water quality.
- **Stormwater Infrastructure Maintenance** includes cleaning catch basins, placing trash racks over major inlets, inspect, clean, repair, replace, and install stormlines, inspect repair and replace culverts, and sweep streets every 4 to 6 weeks.

2017 Tasks Completed

OM-1 Operations and Maintenance Manuals

The City does not have a documented operations and maintenance manual. The catch basin cleaning program and street sweeping program best management practices have been completed.

OM-2 Operations and Maintenance Staff Training

Eight employees attended the American Public Works Association (APWA) Street Maintenance & Collection Systems School in 2017, one new employee was trained in the street sweeper program and learned to operate the street sweeper, and two employees achieved their Level 2 Road Scholar certification through the ODOT T2 Training Center.

OM-3 Stormwater Infrastructure Maintenance

The City cleans streets on a 5-week rotation. In 2017, the street sweeping route covered approximately 170 curb miles (both sides of the street), and public works maintenance reported that 97 loads were taken to the land fill for a total of 1,940 cubic yards of debris.

It is estimated that less than 5% of major inlets have trash racks; one was installed in 2017. Over 3,000 feet of stormline was cleaned, and over 1,800 feet of stormline was inspected. There were 60 feet of stormline repairs in 2017.

The following specific maintenance was completed for the City's stormwater infrastructure:

- 101 catch basins cleaned
- 1 trash rack installed
- 1,851 feet of stormline inspected
- 3,036 feet of stormline cleaned
- 90 ft of stormline replaced
- 3,200 ft of ditches inspected/cleaned

Effectiveness Summary (January 2013 to December 2017)

Operations and Maintenance Manuals (OM-1)

The City does not have an operations and maintenance manual. The catch basin cleaning program was reviewed in 2015 with no changes. The street sweeping program was reviewed in 2015 and material disposal practices established.

Operations & Maintenance Training (OM-2)

In 2017 staff training consisted of attending APWA and ODOT training, as well as on-the-job training. In-house stormwater training was provided in 2015 and 2016 for staff. Seven staff attended a stormwater class in 2014. There was no stormwater training in 2013.

Stormwater Infrastructure Maintenance (OM-3)

Maintenance for the stormwater system is shown in Table 5. An average 58 catch basins were cleaned from 2013 to 2017. An average of 1,358 feet of stormline was inspected and 4,260 feet cleaned from 2013 to 2017. Staff replaced 446 feet of stormline between 2013 and 2017.

Streets are swept on a 5-week rotation. An average 0.70 cubic yards of debris was collected per curb mile between 2013 and 2017 and sent to the landfill.

Table 5: Stormwater Infrastructure and Street Maintenance from 2013 to 2017

| Component | 2013 | 2014 | 2015 | 2016 | 2017 | Average |
|-----------------------------------|-------|--------|-------|-------|-------|---------|
| Catch Basins Cleaned | - | 47 | 126 | 17 | 101 | 58 |
| Trash Racks Installed | - | - | 1 | - | 1 | 0.4 |
| Stormline Inspected, feet | 500 | 1,859 | 1,519 | 1,064 | 1,851 | 1,358 |
| Stormline Cleaned, feet | 391 | 10,163 | 5,278 | 2,435 | 3,036 | 4,260 |
| Stormline Repaired, feet | - | - | 13 | - | 50 | 12.6 |
| Stormline Replaced, feet | 81 | 115 | 160 | - | 90 | 89 |
| Street Sweeping, curb miles | 3,109 | 1,022 | 4,840 | 4,629 | 1,758 | 3,071 |
| Street Debris, cubic yards | 1,131 | 1,436 | 1,426 | 1,352 | 1,940 | 1,457 |
| Debris per Curb Mile, cubic yards | 0.36 | 1.40 | 0.30 | 0.45 | 1.10 | 0.70 |

2017 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.



TEMPERATURE

In 2012, the City responded to DEQ comments by adding the Temperature measure and three best management practices. The best management practices include Maintaining Existing Stream Vegetation, Increase Effective Shade along City streams, and conducting Stream Assessments. Each best management practice is comprised of different strategies listed below:

- **Maintaining Existing Stream Vegetation** includes Updating City Code that can affect stream health, and updating the Stream Corridor Overlay as any changes arise.
- **Increase Effective Shade** includes providing incentives for citizens to plant trees along city streams
- **Stream Assessment** includes assessing two stream miles annually for vegetative cover, stream channel configuration, and canopy coverage, it also includes completing a wetland inventory that encompass the Urban Reserve area.

2017 Tasks Completed

T-1 Maintain Existing Stream Vegetation

There were no new ordinances adopted in 2017 and there were no changes to the stream corridor overlay. There were no projects in 2017 that affected the area covered by the stream corridor overlay.

T-2 Increase Effective Shade

The City provides native plants to homeowners with riparian property to decrease and stabilize stream temperatures through the Trees for Streams Program. In 2017, 215 trees, 490 shrubs and 315 groundcovers were planted; of those, 480 were planted in the Chehalem Creek watershed, 253 were planted in the Hess Creek watershed, 193 were planted in the Spring Brook watershed, and 123 were planted along the Willamette River (see Table 6).

T-3 Stream Assessment

No additional stream assessments were completed in 2017. The Department of Land Conservation and Development (DLCD) is not currently funding periodic reviews for comprehensive plan updates. At the time where DLCD has identified funding, a wetland inventory of the City's urban reserve area will likely be included in Newberg's Comprehensive Plan Update.

Effectiveness Summary (January 2013 to December 2016)

Maintain Existing Stream Vegetation (T-1)

There have been no municipal code changes affecting stream health since 2012. In 2014, a property with a Hess Creek tributary was annexed and the stream corridor overlay was amended by the City. In 2016, there were 10,700 sq ft of streambank improvements along Hess Creek as part of the City's Villa Rd project and there was 900 sq ft of improved streambank vegetation along a Chehalem Creek tributary as a result of a treehouse being built within the stream corridor.

Increase Effective Shade (T-2)

From 2013 to 2017, over 3,100 native trees, shrubs, and groundcovers have been planted along streams and in raingardens through the City's Trees for Streams program. Of those, 747 were planted in the Chehalem Creek watershed; 1,781 in the Hess Creek watershed; 363 in the Spring Brook watershed; and 301 along the Willamette River (see Table 6).

Table 6: Native Trees, Shrubs and Groundcovers Planted from 2013 to 2017

| | 2013 | 2014 | 2015 | 2016 | 2017 | Total |
|-----------------------------------|------|------|------|------|-------|-------|
| Chehalem Creek Watershed | | | | | | |
| Trees | 7 | 26 | 18 | 6 | 27 | 84 |
| Shrubs | 17 | 56 | 1 | 21 | 180 | 275 |
| Groundcovers | 20 | 51 | 22 | 22 | 273 | 388 |
| Hess Creek Watershed | | | | | | |
| Trees | 245 | 276 | 18 | 18 | 51 | 608 |
| Shrubs | 315 | 317 | 115 | 115 | 172 | 1,034 |
| Groundcovers | 25 | 32 | 26 | 26 | 30 | 139 |
| Spring Brook Watershed | | | | | | |
| Trees | 0 | 6 | 40 | 44 | 113 | 203 |
| Shrubs | 0 | 30 | 31 | 16 | 80 | 157 |
| Groundcovers | 0 | 0 | 3 | 0 | 0 | 3 |
| Willamette River Watershed | | | | | | |
| Trees | 18 | 16 | 23 | 12 | 31 | 100 |
| Shrubs | 17 | 37 | 22 | 22 | 92 | 190 |
| Groundcovers | 0 | 7 | 2 | 2 | 0 | 11 |
| Total | 664 | 854 | 321 | 304 | 1,049 | 3,192 |

Stream Assessment (T-3)

From 2013 to 2015, there were 3.05 stream miles assessed in the Newberg watersheds by City Staff. There were no stream assessments completed in 2016 or 2017. In 2015, the City assessed streambank vegetation, channel characteristics, and canopy cover for 0.8 stream miles of Chehalem Creek. Approximately 0.25 stream miles of Chehalem Creek were assessed in 2014 and 2 stream miles of Hess Creek were assessed in 2013. The City also updated the Stormwater Master Plan in 2014, and as part of the Stream Channel Vulnerability Assessment field visits along the stream corridors were conducted in October of 2013.

2016 Adaptive Management

Adaptive management for this best management practice is captured in the City's 5-year TMDL matrix update which covers 2018- 2022.

2017 TMDL ACTIVITIES SUMMARY

A summary of activities completed in the 2017 calendar year for each of the six measures and temperature is described in more detail below:

Measure 1 – Public Education

The City fulfilled its Public Education measure through a variety of activities in 2017. The City maintained 16 webpages related to stormwater, posting to social media 31 ties about stormwater activities or volunteer events, and providing stormwater information in the annual Water Quality Report. The City also presented information to Leadership Newberg about the Waste Water Treatment Plant, the Trees for Streams program, available watershed grants, FOG, and compost.

The City also used a partnership with the Mad Science organization to do two classroom presentations at local schools. Additionally, the City taught fifth-grade students about green infrastructure using GIS as a tool to manage and calculate the volume of stormwater reduced through green infrastructure. A presentation was also given to an ecology class at George Fox University, where students were taught about their local watershed, natural resource issues, key organizations involved in conservation, and ways to get involved and volunteer.

There were no storm drains marked with after-market plastic “No Dumping! Drains to Creek” labels in 2017, however storm drains installed as part of new developments are permanently marked with either “No Dumping” or “Dump No Waste Drains to Stream.”

Measure 2 – Public Involvement

The City provided the public with several ways to get involved in 2017. Currently the Citizen Rate Review Committee is in the process of recommending bi-annual rates to the City Council for adoption. The meeting discussing stormwater rates was held on January 4, 2018 and no public comments were received. The Council is expected adopt recommended rates in April of 2018.

The Watershed Grant was used by the Newberg School District to provide stormwater education at two different elementary schools. The education is provided by the Mad Science organization and \$630 of grant funding was awarded.

The City continues to provide ways to report stormwater issues, which is primarily done through an online phone number. The City responded to six illicit discharge complaints and one erosion control complaint in 2017.

Measure 3 – Illicit Discharge Detection and Elimination (IDDE)

The City had one staff member attend an environmental forensic course in 2017 that supports the mission of IDDE training.

No illegal dumping was reported in 2017, however six illicit discharge complaints were investigated by staff. The investigations resulted in one warning letter and two educational outreach efforts. The Public Works Department reported that no spill kits were used within the City, however kits are available on ten main public works vehicles. The Fire Department (TVF&R) responded to four “spill incidents,” two of which were food grade oil and two that included gasoline/diesel spills. No oil entered the public stormwater system.

Yamhill County Solid Waste provided two hazardous waste collection events in both May and October. The 2017 events collected 16.3 tons of hazardous waste and 11.2 tons of paint and paint-related waste. The Newberg-Dundee Police Department collected just over 900 pounds of medication through the drug take back program in 2017.

Measure 4 – Construction Site Stormwater Runoff Control

Within the City each department or division is responsible for their own employee training. There was no training that occurred within the engineering department because both of the City’s engineering inspectors are already Certified Erosion and Sedimentation Control Leads (CESCLs).

Staff members were involved with 86 single-family residential erosion and sedimentation control permits and associated inspections in 2017 throughout the City of Newberg. Additionally, there were 15 larger projects which required DEQ 1200-C permits that the City also inspected throughout construction in 2017. Staff reported no ESC citations in 2017.

Measure 5 – Post-Construction Runoff Control

The City of Newberg continued to attend TMDL DMA designated management agency (DMA) meetings in 2017 to learn from other DMA coordinators throughout the Willamette Basin. Additionally on-the-job training occurred with two new staff members with in the engineering department.

There were over 30 pre-application meetings in 2017 where City stormwater requirements were discussed with the applicant. Additionally there were over 100 plan reviews, three pre-construction conferences, and the City had one participant in the stormwater credit program in 2017.

There were eight completed construction projects that exceeded the City’s stormwater management threshold and were required to provide for both quality and quantity of stormwater. In total, the eight projects constructed seven detention ponds and 23 green infrastructure facilities (one water quality swale, three vegetated swales, 14 filtration planters, four rain gardens, and one installation of pervious pavers). In addition, ODOT installed nearly

continuous stormwater planters along Springbrook Road from OR99W to OR219 as part of the Newberg-Dundee Bypass project.

The City is still in the beginning stages of establishing a temperature monitoring program and is currently working with property owners along Chehalem Creek, Hess Creek, and Spring Brook to identify more preferred monitoring locations with easier access and less potential for public tampering.

Measure 6 – Pollution Prevention in Municipal Operations

The City does not have an operations and maintenance manual, and a new date for completion (December, 2018) has been set for the manual development. The catch basin cleaning program and street sweeping program have been established and continue to be executed.

Operations and Maintenance staff training continued in 2017. Eight staff members were sent to a street maintenance training course, one new employee was training in the street sweeper program and learned to operate the street sweeper and two employees received their Level 2 Road Scholar certifications through the ODOT T2 Training Center.

The City cleans streets on a 5-week rotation and in 2017 maintenance reported that 97 loads were taken to the landfill for a total of 1,940 cubic yards of debris. In 2017, over 100 catch basins were cleaned, over 1,800 feet of stormline was inspected, over 3,000 feet of stormline was cleaned, 90 feet of stormline was replaced and approximately 3,200 feet of ditch was both inspected and cleaned.

Temperature

There were no new stream corridor ordinances adopted in 2017 and there were no changes to the stream corridor overlay. There were also no projects that affected the area covered by the stream corridor.

The City partners with the Northwest Oregon Restoration Projects to provide native plants to homeowners who live along the creeks within the City of Newberg. In 2017, 215 trees, 490 shrubs and 315 groundcovers were planted. Of those planted 480 were planted in the Chehalem Creek watershed, 253 were planted in the Hess Creek watershed, 193 were planted in the Spring Brook watershed, and 123 were planted along the Willamette River.

No additional stream assessments were completed in 2017. Department of Land Conservation and Development (DLCD) is not currently funding periodic reviews for City comprehensive plan updates. At the time when DLCD has identified funding, and wetland inventory of the City's urban reserve area will likely be included in the comprehensive plan update.

Conclusion

In 2017, the City continued to make progress in implementing the 36 strategies and 56 goals established in the TMDL Plan. Over the 5 year plan period (2013-2017) the City has achieved 78% of both its strategies and goals, and in 2017 the City saw a positive change of 56% in strategies implemented and 40% in measureable goals implemented. As with any plan there is always room for improvement and the City of Newberg remains committed to protecting our watersheds through actions identified in the TMDL plan.

APPENDICES

Appendix 1 TMDL Implementation Matrix

| | | | | | | | Pollutant | | | | |
|--------------------------------------|-------------------------------|--|--|--|----------------------------------|----------------|-----------|----------|----------------------|---------|--------------|
| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| Measure No. 1 - Public Education | | | | | | | | | | | |
| PE-1 Stormwater Education | All | Website Education | Provide stormwater information on the city website | Provide links to webpages and post annual TMDL reports. | Ongoing | Ongoing | X | X | X | X | X |
| | | Educate Citizen Groups | Present stormwater information to interested citizen groups or at local venues | Track number of presentations and events, program messages, and number participating | Ongoing | Ongoing | X | X | X | X | X |
| | | Water Quality Report | Provide stormwater education in the annual Water Quality Report | Provide link to WQ report; track article message | June 2014 and annually | Ongoing | X | X | X | X | X |
| PE-2 Watershed Education | | Watershed Education | Provide signage at stream crossings or green infrastructure | Track number of signs and locations | October, 2017 | Not completed. | X | X | X | X | X |
| | | Classroom Education | Provide stormwater education in the classroom | Track number of presentations, program messages, and number participating | December 2013 and ongoing | Ongoing | X | X | X | X | X |
| PE-3 Infrastructure Education | Spills and illicit discharges | Mark stormdrains in high profile areas | Mark 50 catch basins a year until all are marked | Track number of catch basins marked per year. Provide GIS map showing coverage. | Ongoing | Ongoing | X | X | X | X | X |

| | | | | | | | Pollutant | | | | |
|--|--------------------------|--|--|---|----------------------------------|-------------|-----------|----------|----------------------|---------|--------------|
| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | | | | | | | | | |
| Measure No. 2 - Public Involvement | | | | | | | | | | | |
| PI-1 Stormwater Utility Fee | All | Participate in Citizen Rate Review Committee meetings. | Present funding needs to committee | Document meeting attendance, adopted rates, and effective dates of rate changes. | Ongoing | Ongoing | X | X | X | X | X |
| PI-2 Public Participation in Stormwater Management | Post-Construction Runoff | Provide funds for projects by public groups or citizens that increase water quality or watershed awareness | Provide a minimum of \$2,000 in a grant program to fund non-profit projects that fulfill goals of the TMDL Plan. | Track number of funded projects, amount disbursed per project, stream affected, and either the number of stream miles affected or the number of participants. | January, 2014 and ongoing | Ongoing | X | X | X | X | X |
| PI-3 Public Participation in Reporting Stormwater Issues | All | Provide mechanism for public to report stormwater, illicit discharge, and erosion control issues | Provide methods for citizens to report concerns during and after business hours. Notify public on a recurring basis. | Document methods. | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--|-------------------------------|---|---|--|----------------------------------|------------------------------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Respond to public concerns | Document number of flooding complaints reported by citizens. Document number of erosion complaints reported by citizens. Document number of illicit discharge complaints reported by citizens. | July, 2013 and ongoing | Ongoing | X | X | X | X | X |
| PI-4 Public Participation in Educational Focus | All | Determine focus of educational messages | Conduct survey to revise and refine educational message | Provide copy or link to survey and report results of survey | December, 2015 | Incomplete but started | X | X | X | X | X |
| Measure No. 3 - Illicit Discharge Detection and Elimination (IDDE) | | | | | | | | | | | |
| ID-1 Develop IDDE Plan | Spills and illicit discharges | Develop plan to detect illicit discharges | Develop procedures to address non-stormwater discharges | Document procedures | December, 2013 | Completed (Original deadline 2010) | X | X | X | X | X |
| | | | Develop investigative sampling and monitoring plan | Document plan. | December, 2013 | Completed (Original deadline 2010) | X | X | X | X | X |
| | | | Develop worksheets for inspections | Document worksheets. | December, 2013 | Completed (Original deadline 2010) | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|---|-------------------------------|--|--|--|----------------------------------|------------------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| ID-2 Train Staff to Implement IDDE | Spills and illicit discharges | Train employees in illicit discharge investigation and spill response. | Train staff that is new to illicit discharge investigation and spill response. Provide training in some aspect of illicit discharge investigation and spill response every 5 years for all applicable staff. | Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (maintenance, response, investigation, sampling, etc). | Ongoing | Ongoing | X | X | X | X | X |
| ID-3 Implement IDDE plan | Spills and illicit discharges | Conduct illicit discharge inspections | Fieldscreen outfalls | Inventory type, size, and location of public and private outfalls. Link to GIS. | November, 2015 | Incomplete but started | X | X | X | X | X |
| | | | Investigate outfalls for illicit discharges | Document location, number of samples taken, date, cause, and resolution | November, 2015 | Incomplete but started | X | X | X | X | X |
| | | Respond to illegal dumps | Clean up illegal dumps | Track number of citations issued and resolution. | Ongoing | Ongoing | X | X | X | X | X |
| | | Respond to spills | Fire Department Spill Response | Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution. | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|---|--------------------|---|--|--|----------------------------------|-------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Public Works Spill Response | Track date and cause of spills that occur. Document whether the spill reached the stormwater system or a stream and if water sampling was conducted. Document response resolution. | Ongoing | Ongoing | X | X | X | X | X |
| | | | Provide spill response cards and spill response kits on municipal trucks and sweepers. | Track number of municipal trucks and sweepers with spill response cards and spill kits. Document the number of spill kits used in response to spills. | December 2014 and Ongoing | Ongoing | X | X | X | X | X |
| ID-4 Hazardous Waste Collection | Illicit discharges | Provide opportunity for residents to dispose of hazardous waste | Offer free hazardous waste collection service twice per year to city residents. | Track volume of waste received during collection events. | Ongoing | Ongoing | X | X | X | X | |
| Measure No. 4 - Construction Site Stormwater Runoff Control | | | | | | | | | | | |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|---|--------------------------|--|---|---|----------------------------------|------------------------------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| CS-1 Develop Erosion and Sediment Control Program | Construction Site Runoff | Develop ESC Manual | Develop and approve an ESC Manual. Post on website. | Provide link to ESC Manual. | June, 2013 | Completed (Original deadline 2009) | X | X | X | X | X |
| CS-2 Train Staff in Erosion and Sediment Control | Construction Site Runoff | Train staff in plan review, inspection, and enforcement of ESC program | Train staff whose responsibilities change to include erosion and sediment control plan review and enforcement. Provide refresher training to all staff involved in ESC every 3 years. | Document number of staff trained and type of training (recertification or new certification) | Ongoing | Ongoing | X | X | X | X | X |
| CS-3 Implement Erosion and Sediment Control Program | Construction Site Runoff | Implement ESC program | Conduct plan review | Document location and size of all construction projects. Document which projects were required to have a 1200-C permit. | Ongoing | Ongoing | X | X | X | X | X |
| | | | Conduct site inspections at least once during active construction by trained or experienced staff. | Provide number of ESC inspections for each project. Document location and size of construction project. | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--|--|--|--|--|----------------------------------|-----------------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Enforce ordinance | Report number of warning letters or non-compliance citations by project and resolution. | Ongoing | Ongoing | X | X | X | X | X |
| Measure No. 5 - Post-Construction Stormwater Runoff Control | | | | | | | | | | | |
| DS-1 Develop Stormwater Management Program | Development and Redevelopment | Update Development Manuals and Plans | Update design standards manual and notify development community of new requirements. | Provide summary of changes and link to new design standards when complete. | May, 2013 | Completed August 2015 | X | X | X | X | X |
| DS-2 Train Staff in Stormwater Management | Development, Infrastructure, Redevelopment, and Watershed Management | Train staff with stormwater runoff responsibilities in watershed and stormwater management | Provide training opportunities for staff | Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.) | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|---|--|---|---|--|----------------------------------|-------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Train staff that is new to stormwater facility inspections. Provide refresher training for all staff every 3 years. | Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (plan review, inspection, enforcement, etc.) | June, 2014 and ongoing | Ongoing | X | X | X | X | X |
| DS-3 Implement Stormwater Management Program | Development, Redevelopment, and Watershed Management | Require Stormwater Management for Development and Redevelopment | Require plan submittals, conduct plan reviews | Document number of construction plan submittals, plan reviews, project type (commercial, institutional, residential, etc), size, and location. | Ongoing | Ongoing | X | X | X | X | X |
| | | | Require stormwater management for development | Document number and type (detention basin, flow dissipater, raingarden, filtration swale, etc.) of stormwater facilities required for each project. | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--------------------------------------|--------|------------------------------|--------------------------------------|---|----------------------------------|--|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Conduct pre-construction conferences | Document number of pre-construction conferences, project type (commercial, institutional, residential, etc), size, and location. | Ongoing | Ongoing | X | X | X | X | X |
| | | Improve Watershed Management | Evaluate Retrofit Opportunities | Summarize hierarchy used for screening. Document location and number of sites reviewed, drainage area, and result of evaluation. | May, 2014 and ongoing | Completed. Stormwater Master Plan Updated in June 2014 | X | X | X | X | X |
| | | | Implement Retrofit Program | Document number of projects including location, size, type (GI, traditional, etc), and drainage area. | May, 2014 and ongoing | Ongoing | X | X | X | X | X |
| | | Optimize Water Quality | Inspect stormwater facilities | Document number of inspections, type of facility (detention basin, raingarden, porous pavement, swale, etc.) and whether facilities were categorized as excellent, fair, or poor condition. | July, 2014 and ongoing | Incomplete but started | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--|---|-----------------------------------|--|--|----------------------------------|--|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | | Implement monitoring program | Document sampling locations, dates, parameters, and results | January, 2016 and ongoing | Incomplete but started | X | X | X | X | X |
| Measure No. 6 - Pollution Prevention in Municipal Operations | | | | | | | | | | | |
| OM-1 Operations and Maintenance Manual | Public Operations and Maintenance Practices | Update Policies | Review existing operation and maintenance practices | Document current procedures | December, 2018 | Not completed (Original deadline 2009) | X | X | X | X | X |
| | | | Update O&M manual to optimize water quality | Document modifications to manual. | April, 2014 | Delayed | X | X | X | X | X |
| | | Update Infrastructure Procedures | Update catch basin cleaning program | Document current procedures and modifications to optimize water quality. | December, 2014 | Completed | X | X | X | X | X |
| | | | Implement revised catch basin cleaning program | Track progress. | June, 2015 | Incomplete but started | X | X | X | X | X |
| | | Update Street Sweeping Procedures | Evaluate street sweeping program and revise as necessary to optimize water quality | Document current procedures and modifications to optimize water quality. | March, 2016 | Completed | X | X | X | X | X |
| | | | Implement revised street sweeping program | Track progress. | July, 2016 | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|---|---|--|--|--|----------------------------------|-------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| OM-2 Operations and Maintenance Training | Public Operations and Maintenance Practices | Train staff in infrastructure and street sweeping procedures that optimize water quality | Train staff new to stormwater maintenance duties in O&M procedures | Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.) | Ongoing | Ongoing | X | X | X | X | X |
| | | | Train all staff in revised O&M procedures | Track type of training (webcast, class, certification, etc.), number of employees trained, and the training subject (inspections, maintenance, repair, construction, etc.) | July, 2014 | Delayed | X | X | X | X | X |
| | | | Train staff in maintenance procedures that maximize water quality. | Track training events. | Ongoing | Ongoing | X | X | X | X | X |
| OM-3 Stormwater Infrastructure Maintenance | Development and Redevelopment | Catch Basins | Clean catch basins | Track number of unique* catch basins cleaned per year. | Ongoing | Ongoing | X | X | X | X | X |
| | | Inlets | Place trash racks over major inlets | Track number and percentage of major inlets installed with trash racks. | Ongoing | Ongoing | X | X | X | X | X |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--------------------------------------|---------------|----------------------------|--|--|----------------------------------|-------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| | | Stormline | Inspect, clean, repair, replace, and install stormline | Track length of stormline inspected. Document length of stormline cleaned. Document length and location of stormline repaired or replaced. Track length, diameter, and location of stormline installed | Ongoing | Ongoing | X | X | X | X | X |
| | | Culverts | Inspect, repair, and replace culverts | Document location of repaired and replaced culverts and reason for repair or replacement. For newly installed culverts, document new culvert size, material, and elevation from culvert bottom to stream bottom. | Ongoing | Ongoing | X | X | X | X | X |
| | Street Debris | Remove debris from streets | Sweep streets every 4 to 6 weeks | Track curb miles swept and debris collected per curb mile each year. Document disposal method. | Ongoing | Ongoing | X | X | X | X | X |
| Temperature | | | | | | | | | | | |

| Best Management Practice or Activity | Source | Strategy | Measurable Goal | Performance Measure | Expected Implementation Timeline | 2017 Status | Pollutant | | | | |
|--|---|---|--|--|----------------------------------|------------------------|-----------|----------|----------------------|---------|--------------|
| | | | | | | | Nutrients | Bacteria | Tot Suspended Solids | Mercury | Temperature* |
| T-1 Maintain Existing Stream Vegetation | Development, Redevelopment , and Watershed Management | Use code and other measures to maintain stream vegetation | Update city code that can affect stream health | Update ordinances that affect stream vegetation | December, 2015 | Ongoing | X | X | X | X | X |
| | | | Update Stream Corridor Overlay | Document changes to Stream Corridor Overlay map and code based on wetland inventory and property annexations | December, 2017 | Ongoing | X | X | X | X | X |
| T-2 Increase Effective Shade | Development, Redevelopment , and Watershed Management | Increase shade along city streams | Provide incentives for citizens to plant trees | Document watershed and number of native trees planted per year | Ongoing | Ongoing | X | X | X | X | X |
| T-3 Stream Assessment | Development, Redevelopment , and Watershed Management | Assess stream health and canopy coverage | Assess at least 2 stream miles annually for vegetative cover, stream channel configuration, and canopy coverage. | Document results of assessment | November, 2013 and ongoing | Incomplete but started | X | X | X | X | X |
| | | | Complete a wetland inventory that encompasses the Urban Reserve areas | Track Progress. Provide link to wetland inventory and map. | December, 2016 and ongoing. | Not Completed | X | X | X | X | X |

Appendix 2 Illicit Discharge Investigations from 2013 to 2017

| Date | Cause | Water Samples | Resolution |
|---------------------------------|---|---------------|--|
| Chehalem Creek Watershed | | | |
| 12/2017 | Business had minor localized private sewage spilling from pipe into side yard | 0 | Plumbers corrected the blockage and repaired the pipe. |
| 5/2017 | Business was repainting a building and paint residue was entering the storm drain | 0 | Business was verbally warned and put measures in place to prevent paint residue from entering the stormwater system. |
| 8/2017 | Resident dumping cheese-making waste products into front and side yards | 0 | Resident was given a verbal warning and was educated about the proper disposal of whey. |
| 3/2017 | Cooking oil spill due to vandalism | 0 | Cooking oil spill was cleaned, owner asked to secure oil barrels to prevent reoccurrence. |
| 1/2016 | Wastewater overflow caused by roots in manhole reported to DEQ | 0 | Signs posted, area cleaned up, roots removed, and water samples for E.Coli taken until confirmation end of the impact. |
| 12/2015 | Auto reconditioner's washwater discharged to catchbasin | 0 | Warning letter required owner to connect to wastewater system. |
| 10/2015 | Auto detailer's washwater discharged to catchbasin | 0 | Warning letter required owner to connect to wastewater system. |
| 09/2014 | Homeowner's wastewater lateral broke. | 0 | Discharge cleaned up and lateral fixed. |
| 03/2014 | Metal fabricator's wastewater discharged to stormwater ditch | 4 | 2 warning letters written (1 from DEQ), area cleaned up, uncovered drums removed, and catchbasin cleaned out. |
| 02/2013 | Restaurant grease dumped into a catch basin | 0 | Owner educated about our illicit discharge ordinance |
| 01/2013 | Homeowner with broken wastewater lateral | 0 | Owner cleaned up the area. |
| Hess Creek Watershed | | | |

| | | | |
|-------------------------------|--|---|---|
| 4/2016 | Resident complained of pesticide use/drift near creek | 0 | Property owner educated about proper use of pesticides. |
| 11/2015 | Residential paint cleanup discharged to stormdrain | 0 | Warning letter sent |
| 12/2014 | Iron precipitate | 2 | Two site visits. No further action taken. |
| 10/2014 | Grease from restaurant discharged to Hess Creek | 0 | Warning letter written and grease trap replaced. |
| 12/2013 | Swimming pool discharged into Hess Creek | 0 | Warning letter sent to swim center owner |
| 11/2013 | Grease trap overflowed to Hess Creek | 0 | Owner required to fix grease trap. |
| 10/2013 | Outfall with discharge | 1 | Discharge from failed pipe closure found and stopped. |
| Spring Brook Watershed | | | |
| 3/2017 | Private commercial vector truck dumped a large quantity of unidentified liquid into street leading into a storm drain and catch basin. | 0 | Private company required to clean up dumped liquid residue and warning letter was sent. |
| 2/2017 | Following new construction, a winery was identified as having a cross-connection between the storm and sewer lines. | 0 | Winery worked with staff to identify the cross-connection and fix the construction error. |
| 12/2016 | Washwater from car wash discharged to catchbasin | 0 | Owner had a hose break and was required to clean up the discharge. |
| 2/2016 | Grease from assisted living facility discharged to stormwater system | 0 | Warning letter sent and owner required to connect to wastewater system. |
| 04/2015 | Washwater from auto dealership discharged to catchbasin | 0 | Owner required to connect to the wastewater system. |
| 02/2015 | Grease from dumpster entering catch basin | 0 | Grease cleaned up and new dumpster installed |
| 06/2013 | Leaking oil barrels | 0 | Citation written and property cleaned up. |

| | | | |
|-------------------------|--|---|---------------------|
| 04/2013 | Oil and grease dumped into catchbasin in parking lot | 0 | Catchbasin cleaned. |
| Willamette River | | | |
| 06/2015 | Brown algae mats on river appeared to be raw septage | 0 | No action taken. |

Appendix 3 Construction Site Stormwater Management, 2013 to 2017

| CHEHALEM CREEK WATERSHED | | | | | | | | |
|--------------------------------------|-----------------------------|---------------|------------------------|-------------|-------------|-------------|-------------|--------------------|
| Project Name | Address | Acres | ESC Inspections | | | | | Completed |
| | | | 2013 | 2014 | 2015 | 2016 | 2017 | |
| 521 W Fifth St | 521 W Fifth St | 1.2 (1200-C) | 0 | 0 | - | - | - | 2014 |
| 725 N College | 725 N College | 0.4 | NA | NA | NA | 0 | - | 2016 |
| 1815 N College St | 1815 N College St | 0.5 | NA | 0 | - | - | - | 2014 |
| 2215 Prospect Drive | 2215 Prospect Drive | 0.4 | NA | NA | NA | 0 | - | 2016 |
| 3509 N College | 3509 N College | 0.98 | NA | NA | NA | 0 | - | 2016 |
| Chehalem Cultural Center parking lot | 415 E Sheridan St | 0.3 | 0 | 0 | - | - | - | 2014 |
| Columbia Estates | Columbia Dr/Chehalem Dr | 3.07 (1200-C) | NA | NA | NA | NA | 85 | 2017 |
| Edgewood Estates | Edgewood Dr/Crater Lane | 1.6 (1200-C) | 0 | 0 | - | - | - | 2014 |
| First St Yoga | Sheridan/Main St | 0.1 | NA | 0 | - | - | - | 2014 |
| Gracie's Landing, Ph 1 | North Valley Rd/Chehalem Dr | 10.8 (1200-C) | NA | NA | NA | NA | 78 | Under Construction |
| Gracie's Landing, Ph 2 & 3 | North Valley Rd/Chehalem Dr | (1200-C) | NA | NA | NA | NA | NA | Under Construction |
| Heritage Meadows | Heritage Way / Lynn Dr | 0.7 | 23 | 0 | 0 | - | - | 2014 |
| Heritage Meadows | Heritage Way/Lynn Dr | 0.7 | NA | 0 | 0 | - | - | 2015 |
| Homes at Creekside | Main St/Creekside Lane | 0.6 | 0 | - | - | - | - | 2013 |
| Shellie Park | 735 N College Street | 4.3 (1200-C) | NA | NA | 0 | 0 | - | 2016 |
| Terra Estates | 3805 Terrace Drive | 7.9 (1200-C) | NA | 0 | 0 | - | - | 2015 |

| | | | | | | | | |
|-----------------------|-----------------------|-----|----|----|----|---|---|------|
| West of 725 N College | West of 725 N College | 0.4 | NA | NA | NA | 0 | - | 2016 |
|-----------------------|-----------------------|-----|----|----|----|---|---|------|

*NA = Not Applicable ; - Project completed

| HESS CREEK WATERSHED | | | | | | | | |
|---|------------------------|--------------|-----------------|------|------|------|------|--------------------|
| Project Name | Address | Acres | ESC Inspections | | | | | Completed |
| | | | 2013 | 2014 | 2015 | 2016 | 2017 | |
| 805 Wynooski Road | 805 Wynooski Road | 0.2 | NA | NA | NA | 0 | - | 2016 |
| A Storage Place | Hancock and Elliott | 2.9 (1200-C) | NA | NA | NA | NA | 30 | 2017 |
| Cal Portland | 2716 Wynooski Road | 3.3 (1200-C) | NA | NA | 0 | 0 | - | 2016 |
| Chehalem Pointe Apartments | 1317 Villa Road | 5.8 (1200-C) | NA | NA | NA | NA | NA | Under Review |
| Church Street Apartments | 215 S Church St | 1.6 (1200-C) | 0 | - | - | - | - | 2013 |
| CPRD Pool Expansion | 1802 Haworth | 5.1 (1200-C) | NA | NA | NA | 0 | 40 | Under Construction |
| Deskin Commons | 1103 N Meridian St | 3.3 (1200-C) | 16 | 15 | - | - | - | 2014 |
| Elliott Self-Storage | 315 Elliott Road | 3.3 (1200-C) | NA | NA | NA | 0 | - | 2016 |
| Freeman Manufacturing Building | 1001 Wilsonville Rd | 2.0 (1200-C) | NA | NA | NA | NA | 10 | Under Construction |
| Friendsview | 1301 East Fulton St | 2.5 (1200-C) | NA | NA | NA | 0 | 30 | 2017 |
| GFU Brandt Hall | East North / Fulton St | 0.8 | NA | 0 | 0 | - | - | 2015 |
| GFU Commons Dining Hall and Pedestrian Bridge | 1400 E North | 2.0 (1200-C) | NA | NA | 0 | 0 | - | 2016 |
| GFU Stoffer Stadium | 1150 Fulton St | 4.4 (1200-C) | 18 | 12 | - | - | - | 2014 |
| GFU Student Activity Center | 1400 E Sherman St | 2.4 (1200-C) | NA | NA | NA | NA | 15 | Under Construction |
| GFU Austin Sports Complex | 1953 N Center St | 3.8 (1200-C) | NA | NA | NA | NA | 12 | Under Construction |

| | | | | | | | | |
|---------------------------------|-------------------------------|--------------|----|----|----|----|-----|--------------------|
| Grace Baptist Church | 1619 E 2 nd Street | 3.0 (1200-C) | NA | NA | NA | NA | 6 | Under Construction |
| Habitat for Humanity ReStore | 801 N Meridian | 0.6 | NA | NA | NA | 0 | 20 | 2017 |
| Hazelwood Farms | E Henry Rd | 4.9 (1200-C) | NA | NA | NA | NA | 80 | Under Construction |
| Highlands at Hess Creek Phase 3 | Donna Dr/ Kennedy Dr | 2.5 (1200-C) | 32 | 20 | 0 | - | - | 2014 |
| Highlands at Hess Creek Phase 4 | Donna Dr/Kennedy Dr | 2.5 (1200-C) | NA | 0 | 0 | - | - | 2015 |
| Hess Creek | Hess Creek at Villa Rd | (1200-C) | NA | NA | NA | NA | 60 | 2017 |
| Nova Grace | 900 Wynooski Road | 2.0 (1200-C) | NA | NA | NA | NA | 125 | 2017 |
| Old Mill Marketplace | 2401 Portland Road | 0.4 | NA | NA | 0 | 0 | - | 2016 |
| Ursus Place | 1500 E First Street | 0.99 | NA | NA | 0 | 0 | 75 | 2017 |
| Villa Road Improvements | Villa Road | (1200-C) | NA | NA | NA | NA | 20 | Under Construction |

*NA = Not Applicable ; - Project completed

| SPRING BROOK WATERSHED | | | | | | | | |
|------------------------------|----------------------------|-----------------|-----------------|------|------|------|------|-----------|
| Project Name | Address | Acres | ESC Inspections | | | | | Completed |
| | | | 2013 | 2014 | 2015 | 2016 | 2017 | |
| Marquis Newberg | 441 Werth Blvd | 2.3 | 0 | 0 | - | - | - | 2014 |
| Oak Grove Apartments | 3411 E Hayes St | 3.7 | 0 | 0 | - | - | - | 2014 |
| Providence Parking Lot | 1001 Providence Dr | 1.1 (1200-C) | NA | NA | 0 | 0 | - | 2016 |
| Springbrook Ridge Apartments | Fernwood Rd/Springbrook Rd | 7.0 | 0 | 0 | - | - | - | 2014 |

*NA = Not Applicable ; - Project completed

Appendix 4 Post-Construction Stormwater Management, 2013 to 2017

| CHEHALEM CREEK WATERSHED | | | | | | |
|---------------------------------|-----------------------------|---------------|----------------------------|--------------------|--|--------------------|
| Project Name | Address | Acres | Land Use | Project | Stormwater Facilities Required | Completed |
| 521 W Fifth St | 521 W Fifth St | 1.2 (1200-C) | Low Density Residential | 2 Lot Partition | None | 2014 |
| 725 N College | 725 N College St | 0.4 | Low Density Residential | 3 Lot Partition | None | 2016 |
| 1815 N College St | 1815 N College St | 0.5 | Medium Density Residential | 3 Lot Partition | 3 infiltration raingardens | 2014 |
| 2215 Prospect Drive | 2215 Prospect Dr | 0.4 | Low Density Residential | 3 Lot Partition | None | 2016 |
| 3509 N College | 3509 N College St | 0.98 | Low Density Residential | 2 Lot Partition | None | 2016 |
| Chehalem Cultural Center | 415 E Sheridan St | 0.3 | Institutional | Institutional | Pervious pavers in parking lot and forecourt | 2014 |
| Columbia Estates | Columbia Dr/Chehalem Dr | 3.07 (1200-C) | Medium Density Residential | 24 Lot Subdivision | Detention Pond | 2017 |
| Edgewood Estates | Edgewood Dr/Crater Lane | 1.6 (1200-C) | Low Density Residential | 10 Lot Subdivision | ConTech StormFilter manhole | 2014 |
| Gracie's Landing, Phase I | Chehalem Dr/North Valley Rd | 10.6 (1200-C) | Medium Density Residential | 24 Lot Subdivision | Detention pond, Water quality swale | Under Construction |
| Heritage Meadows Phase I | Heritage Way / Lynn Dr | 0.7 | Medium Density Residential | 5 Lot Subdivision | 5 infiltration raingardens and 5 bioswales | 2014 |
| Heritage Meadows Phase II | Heritage Way / Lynn Dr | 0.7 | Medium Density Residential | 3 Lot Subdivision | 3 infiltration raingardens and 3 bioswales | 2015 |
| Homes at Creekside | Main St/Creekside Lane | 0.6 | Low Density PUD | 5 Lot Subdivision | None | 2013 |

| Shellie Park | 735 N College St | 4.3 (1200-C) | Low Density Residential | 21 Lot Subdivision | Detention Pond | 2016 |
|--------------------------------|--------------------------|--------------|----------------------------|----------------------|--|--------------------|
| Terra Estates | 3805 Terrace Dr | 7.9 (1200-C) | Low Density Residential | 44 Lot Subdivision | Detention Pond | 2015 |
| West of 725 N College | West of 725 N College St | 0.4 | Low Density Residential | 3 Lot Partition | None | 2016 |
| HESS CREEK WATERSHED | | | | | | |
| Project Name | Address | Acres | Land Use | Project | Stormwater Facilities Required | Completed |
| 805 Wynooski Rd | 805 Wynooski Rd | 0.2 | Medium Density Residential | 2-Lot Partition | None | 2016 |
| A Storage Place | Hancock and Elliott | 2.9 (1200-C) | Community Commerical | Storage Facility | Detention pond, 2 vegetated swale | 2017 |
| Cal Portland | 2716 Wynooski Rd | 3.3 (1200-C) | Heavy Industrial | Cement Plant | 160ft bioswale, 2 detention ponds | 2016 |
| Chehalem Pointe Apartments | 1317 Villa Rd | 5.8 (1200-C) | High Density Residential | Apartment Complex | Under Review: Detention pond, vegetated swales | Under Review |
| Church Street | 215 S Church St | 1.6 (1200-C) | High Density Residential | 18 Unit Apartments | None | 2013 |
| CPRD Pool Expansion | 1802 Haworth Ave | 5.1 | Medium Density Residential | Recreation Facility | Detention pont | Under Construction |
| Deskin Commons | 1103 N Meridian St | 3.3 (1200-C) | High Density Residential | 56 Unit Apartments | Contech Stormfilter vault (6'x12') and pervious concrete sidewalk | 2014 |
| Freeman Manufacturing Building | 1001 Wilsonville Rd | 2.0 (1200-C) | Lighting Industrial | Building | 3 public stormwater planters, 3 private flow through planters, private Contech underground detention | Under Construction |
| Friendsview | 1301 E Fulton St | 2.5 (1200-C) | Institutional | Retirement Community | 2 filtration planters, ≈2500 sq ft | 2017 |
| GFU Brandt Hall | East North / Fulton St | 0.8 | Institutional | Campus Housing | StormTech SC-310 (12'x63'), 292 feet of filtration planters, 1 filtration raingarden | 2015 |

| | | | | | | |
|---------------------------------------|---------------------------------|--------------|----------------------------|-----------------------------|--|--------------------|
| GFU Dining Hall and Pedestrian Bridge | 1400 E North St | 2.0 | Institutional | Campus Building | 700 sq ft filtration planter; Contech 210 ft underground detention | 2015 |
| GFU Stoffer Stadium | 1150 Fulton St | 4.4 (1200-C) | Institutional | Campus Building | 3 infiltration planters and 3 infiltration swales | 2014 |
| GFU Student Activity Center | 1400 E Sherman St | 2.4 (1200-C) | Institutional | Activity Center | Detention pond, stormwater planters | Under Construction |
| GFU Austin Sports Complex | 1953 N Center Street | 3.8 (1200-C) | Institutional | Sports Complex | Vegetated strips, vegetated swales | Under Construction |
| Grace Baptist Church | 1619 E 2 nd Street | 3.0 (1200-C) | Low Density Residential | Church Expansion | None | Under Construction |
| Habitat for Humanity ReStore | 801 N Meridian St | 0.6 | Light Industrial | Commercial Building | 4 raingardens, pervious paver parking lot | 2017 |
| Hazelwood Farms | E Henry Street | 4.9 (1200-C) | Low Density Residential | 19 Lot Subdivision | Detention pond | Under Construction |
| Highlands at Hess Creek Phase 3 | Donna Drive/ Kennedy Drive | 2.5 (1200-C) | Medium Density Residential | 16 Lot Subdivision | Detention pond | 2014 |
| Highlands at Hess Creek Phase 4 | Donna Drive/ Kennedy Drive | 2.5 (1200-C) | Medium Density Residential | 25 Lot Subdivision | Detention pond | 2015 |
| Nova Grace | 900 Wyooski Rd | 1.9 (1200-C) | Medium Density Residential | 14 Lot Subdivision | Detention pond, flow through planters (12) | 2017 |
| Old Mill Marketplace | 2401 Portland Rd | 0.4 | Community Commercial | Commercial Building | 2 filtration planters; 1 bioswale | 2016 |
| Ursus Place | 1500 E First St | 0.99 | Medium Density Residential | 10-Lot Subdivision, 10 ADUs | Vegetated swale (1) | 2017 |
| Villa Road Improvements | Villa Road | (1200-C) | NA | Roadway Improvement | Stormwater planters, detention pond, unground ground detention | Under Construction |
| ODOT Improvements Springbrook Road | Springbrook Road OR219 to OR99W | - | NA | Roadway Improvements | 3 detention ponds, stormwater planters | 2017 |

* ADU= Accessory Dwelling Unit

| SPRING BROOK WATERSHED | | | | | | |
|------------------------------|--------------------------------|-----------------|--------------------------|----------------------------------|------------------------------------|-----------|
| Project Name | Address | Acres | Land Use | Project | Stormwater Facilities Required | Completed |
| Marquis Newberg | 441 Werth Blvd | 2.3 | Residential Professional | 54 Unit Skilled Nursing Facility | None | 2014 |
| Oak Grove Apartments | 3411 Hayes St | 3.7 | Residential Professional | 84-Unit Apartments | None | 2014 |
| Providence Parking Lot | 1001 Providence Dr | 1.1 (1200-C) | Institutional | Parking Lot | 140ft swale, ≈800 sq ft raingarden | 2016 |
| Springbrook Ridge Apartments | Fernwood Rd/ Springbrook Rd | 7.0 (1200-C) | High Density Residential | Apt Complex | None | 2014 |