THE CITY OF FIRCREST

STORMWATER MANAGEMENT PROGRAM (SWMP) PLAN – FINAL DRAFT

2018

Contents

Acronyms and Abbreviations

AKART	All Known and Reasonable Technologies
CESCL	Certified Erosion and Sediment Control Lead
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
FMC	Fircrest Municipal Code
IDDE	Illicit Discharge Detection and Elimination
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
SWMMWW	Stormwater Management Manual for Western Washington
SWMP	Stormwater Management Program
SWPPP	Stormwater Pollution Prevention Plan

CHAPTER 1 – INTRODUCTION

1.1 THE STORMWATER MANAGEMENT PROGRAM PLAN DOCUMENT

This Stormwater Management Program (SWMP) Plan has been prepared to satisfy Special Condition S5 of the current Western Washington Phase II Municipal Stormwater Permit (Permit), of which the City of Fircrest is a Permittee.

Section S5.A.2 of the Permit states:

> Each Permittee shall prepare written documentation of the SWMP, called the SWMP Plan. The SWMP Plan shall be organized according to the program components in S5.C or a format approved by Ecology, and shall be updated at least annually for submittal with the Permittee's annual reports to Ecology. The SWMP Plan shall be written to inform the public of the planned SWMP activities for the upcoming calendar year.

The current Permit became effective on August 1, 2013. Although the current expiration date is July 31, 2018, the Washington State Department of Ecology (Ecology) intends to extend the expiration date another year, until July 31, 2019.

This SWMP Plan has been organized as follows:

- **Chapter 1** provides an introduction to underlying permit requirements, required program components, City stormwater codes, stormwater utility, and a description of how the program is managed in Fircrest.
- **Chapter 2** provides an overview of the City of Fircrest's land use and stormwater infrastructure.
- **Chapters 3 – 7** address each of the five SWMP elements required by the Permit, including a summary of the specific permit requirement and current City activities to comply.

1.2 NPDES PHASE II MUNICIPAL STORMWATER PERMIT

1.2.1 PERMIT BACKGROUND

In 1987 the US Congress revised the Clean Water Act to include stormwater discharges in the National Pollutant Discharge Elimination System (NPDES) Permit program. The US Environmental Protection Agency (EPA) developed rules for the implementation of the new stormwater requirements and separated them into two phases. The State of Washington, through Ecology, implements these stormwater rules through the Municipal Stormwater Permit

program. As an owner and operator of a small municipal separate storm sewer system (MS4), Fircrest is required to be covered by, and comply with, the current Western Washington Phase II Municipal Stormwater Permit (Permit). The Permit allows Fircrest to discharge stormwater from its MS4 into waters of the State of Washington.

1.2.2 REQUIRED SWMP COMPONENTS

The Permit requires the development and implementation of a SWMP to control discharge into and from the City's system. The SWMP includes five specific elements that are designed to reduce the discharge of pollutants from the Fircrest's MS4 to the maximum extent practicable:

- Permit Section S5.C.1 - Public Education and Outreach
- Permit Section S5.C.2 - Public Involvement and Participation
- Permit Section S5.C.3 - Illicit Discharge Detection and Elimination
- Permit Section S5.C.4 - Controlling Runoff from New Development, Redevelopment and Construction Sites
- Permit Section S5.C.5 - Municipal Operations and Maintenance

1.3 FIRCREST'S STORMWATER PROGRAM

1.3.1 STORMWATER CODES

Legal authority for several components of the stormwater program was established by ordinances approved by City Council and incorporated into the City of Fircrest Municipal Code (FMC).

The following municipal code sections establish a surface water utility and associated funding:

- FMC 20.16 – Storm Drainage Service Charge
- FMC 20.17 – Storm Drain Credit for Low-Income Seniors and Low-Income Disabled Persons
- FMC 20.20 – Surface Water Drainage System

FMC 20.24 – Storm Water Management – adopts stormwater management standards for use in Fircrest.

FMC 20.25 – Illicit Discharge Detection and Elimination System – defines allowable and prohibited discharges in the City's storm drainage system and other provisions needed to help implement the Illicit Discharge Detection and Elimination System requirement of the Permit.

FMC 22.58.008(k) – Specific Use and Structure Regulations, Performance Standards, Stormwater Management – adopts stormwater management standards and requirement for use of Low Impact Development (LID) practices where feasible.

FMC 22.63.005 – Adopts design guidelines and includes specifications for implementation of LID element.

1.3.2 STORMWATER UTILITY RATE STRUCTURE

The present rate structure as specified in FMC 20.16 includes a fixed fee and an impervious surface fee. The fixed fee for single family customers in 2018 is $33.50 bimonthly, with no impervious surface supplement. The fee for all other customers is $26.00 bimonthly, per month fixed rate, plus $0.001437 per square foot of impervious surface, including roof areas.

Funds collected as the Storm Drain Service Charge are paid into and accounted for as part of the surface water utility fund for the City.

Credits against utility rates are offered for properties with flow control facilities. Credits of 25% and 50% on the impervious surface portion of the fee are allowed depending on the level of flow control installed.

In order to retain the credit, the facility owner must provide an annual certification of conformance with the conditions imposed by the approved operation and maintenance plan, prepared and submitted by a licensed civil engineer annually and within 30 days of the anniversary date of the initial granting of the credit.

1.3.3 COORDINATION AND RESPONSIBILTY

Managing the stormwater program and achieving compliance with Permit mandates requires coordination between, and documentation by, several City Departments. These efforts will be coordinated by the Public Works Department, with program administration the responsibility of the Public Works Director.

As the City is small and nearly completely developed, interdepartmental coordination and organization is far less involved than that required by larger cities. As such, regularly scheduled interdepartmental meetings are used as the first method of coordination between the departments responsible for Planning, Public Works, Recreation, Finance/Administration and the City Attorney. Additional meetings and presentations are organized when needed.

Coordination mechanisms are also needed with surrounding jurisdictions that have interconnected systems, or which share water bodies or water courses, specifically the City of Tacoma, as it owns and operates the regional stormwater holding basin located in the southeast corner of the City, and the City of University Place, into which nearly all stormwater runoff from Fircrest flows via Leach Creek. Fircrest has ongoing discussions and coordination with both of these entities.

1.3.4 GRANTS

As the NPDES Phase II permit is a mandatory requirement of the State and Federal governments, financial aid is often provided to local jurisdictions to aid in the performance of the studies and analyses required to develop the management plan and utility. Fircrest's first SWMP Plan was prepared under a Centennial Clean Water Grant of $75,000 from Ecology. Subsequently, Ecology has provided additional funding through its biennial Municipal Stormwater Capacity Grant program. Most recently, the City received a $50,000 grant through this program for the 2017-2018 biennium.

CHAPTER 2 – STORMWATER IN FIRCREST

2.1 LAND USE AND DEVELOPMENT

The City of Fircrest is a small incorporated municipality in Pierce County with a population of 6,640 (2017, est.) and a land surface area of 1.6 square miles. Fircrest adjoins the City of Tacoma to the north and east, and the City of University Place to the south and west. The City is approximately 98% built-out to current zoning, consisting primarily of single-family residential, with smaller areas of multi-family residential, commercial, and institutional land use. Open spaces consisting of the Fircrest Golf Club and six public parks account for approximately 20% of the City's land area. It is estimated that about 16 acres (< 2%) are currently available for commercial/industrial redevelopment, and 30 acres (3%) available for residential development.

The City has experienced very light development activity the past several years (typically two redevelopment applications per year), a pattern that is expected to continue.

2.2 STORMWATER SYSTEM

2.2.1 DRAINAGE BASINS

Fircrest is located almost entirely within the Leach Creek drainage basin. Leach Creek flows from north to south and is a tributary of Chambers Creek, which discharges into Puget Sound. Storm drainage systems in the northern two-thirds of the city discharge into Tacoma's Leach Creek Holding Basin, a regional flow control facility that forms the headwaters of Leach Creek. Storm drainage systems in the southern third of the city discharge directly into Leach Creek, either via outfalls within the City of Fircrest or further downstream in the City of University Place.

2.2.2 LEACH CREEK HOLDING BASIN

The Leach Creek Holding Basin was constructed in 1961 by the City of Tacoma, with major improvements made in 1991. Although completely surrounded by Fircrest, the holding basin itself is within Tacoma's corporate limits. The holding basin receives runoff from Tacoma, Fircrest, University Place, and WSDOT (SR 16), and is operated such that during heavy rainfall events stormwater is pumped from the holding basin to the Thea Foss drainage basin to avoid sending high flows to Leach Creek. The City of Tacoma also uses the Holding Basin to augment the flow in Leach Creek during periods of low flow as part of Tacoma Landfill remediation efforts.

2.2.3 COLLECTION AND CONVEYANCE SYSTEMS

The City's stormwater collection and conveyance system consists of 530 catch basins, storm sewer pipes between 4" and 60" in diameter, and open ditches.

2.2.4 OUTFALLS

A 60” storm drain pipe along Contra Costa Avenue conveys upstream runoff from Tacoma, Fircrest and a small portion of University Place south into the Leach Creek Holding Basin. This 60” outfall and a second, 30” outfall are both operated and maintained by the City of Tacoma. Five smaller outfalls into the holding basin between 12” and 24” in size are operated and maintained by the City of Fircrest. Downstream from the holding basin, there are approximately 10 outfalls that discharge from Fircrest’s MS4 directly into the main stem of Leach Creek or disperse runoff into adjacent, connected wetlands.

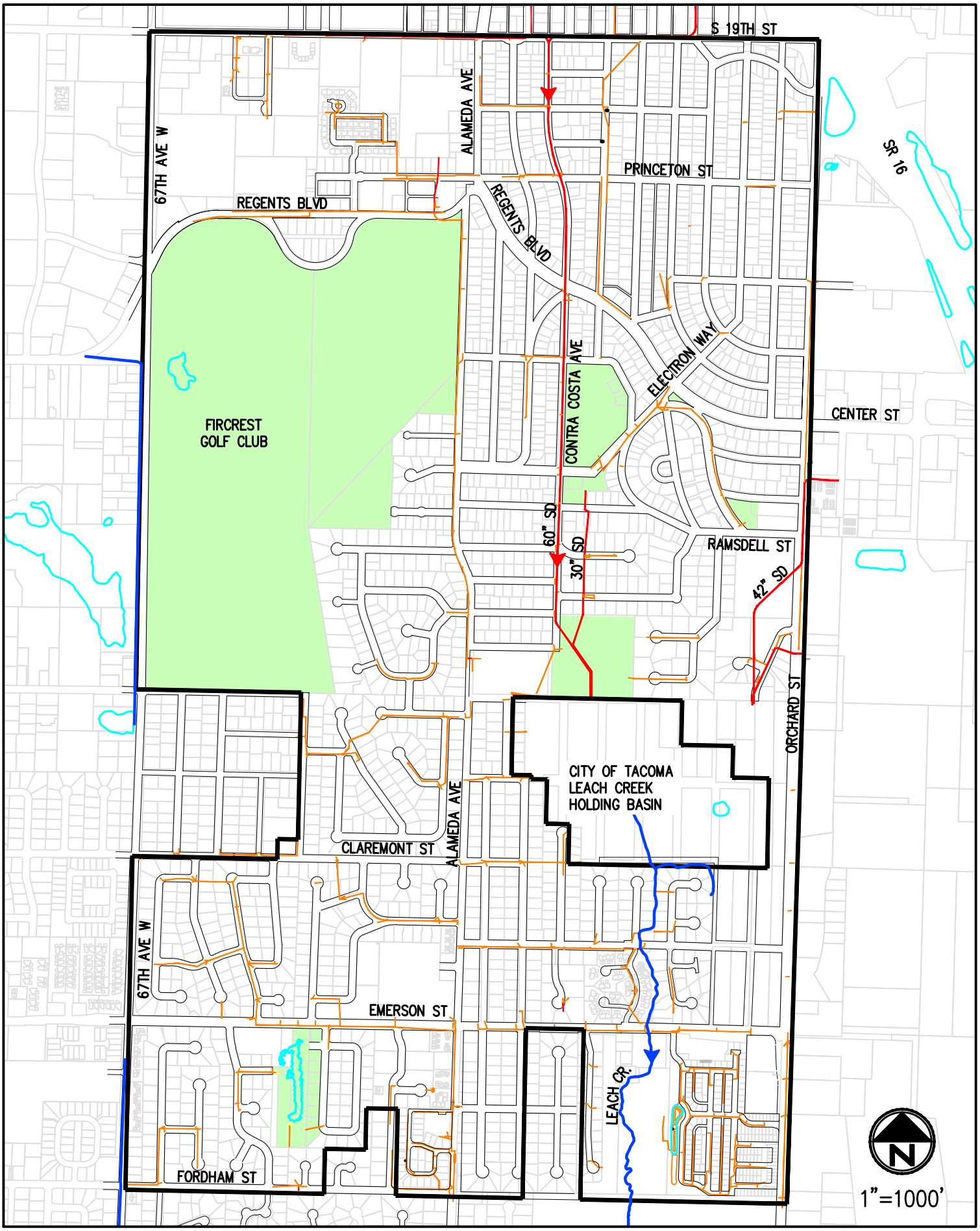
2.2.5 STORMWATER MANAGEMENT FACILIITES

Fircrest was developed prior to requirements for stormwater management facilities. As a result, existing stormwater flow control and runoff treatment facilities are typically part of commercial and multi-family residential sites developed since the 1990s. There are currently 14 privately-maintained stormwater management facilities within the City. The City of Fircrest currently operates and maintains two stormwater treatment facilities: one located at the public works yard and the other at the Drake Street outfall to Leach Creek. In addition, the City maintains permeable sidewalks that were constructed in 2017 along Emerson Street.

2.2.6 MAPPING

Developing and maintaining map of the City’s stormwater system and outfalls is required as part of the Illicit Detection and Elimination System component of the Permit discussed in Chapter 7. The current AutoCAD based stormwater map was completed in 2013 and was last updated in February 2014. Planned upgrades include conversion to a GIS format and continued refinements.

Figure 1 is a simplified map of the City’s stormwater system showing locations of storm drain pipes, the City of Tacoma Leach Creek Holding Basin, and Leach Creek. Complete mapping is available from the City’s Public Works department.



THE CITY OF FIRCREST

FIGURE 1
EXISTING STORMWATER SYSTEMS

CHAPTER 3 – PUBLIC EDUCATION AND OUTREACH

3.1 PERMIT REQUIREMENTS

Section S5.C.1 of the Permit requires the City's stormwater program to include an education and outreach program designed to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts, and encourage the public to participate in stewardship activities. The Permit allows for the education and outreach program to be developed and implemented by the local municipality, or as part of a regional effort.

The City's education and outreach program is specifically required to:

i. Build general awareness, selecting from the following target audiences and subject areas:

   a. General public and businesses:
      - General impacts of stormwater on surface waters
      - Impacts from impervious surfaces
      - Impacts of illicit discharges and how to report them
      - Low impact development (LID) principles and LID BMPs
      - Opportunities to become involve in stewardship activities

   b. Engineers, contractors, developers and land use planners:
      - Technical standards for stormwater site and erosion control plans
      - LID principals and LID BMPs
      - Stormwater treatment and flow control BMPs/facilities

ii. Effect behavior change, selecting from the following target audiences and BMPs:

   a. General public and businesses:
      - Use and storage of automotive chemicals, hazardous cleaning supplies, carwash soaps and other hazardous materials
      - Equipment maintenance
      - Prevention of illicit discharges

   b. Residents, landscapers and property managers/owners:
      - Yard care techniques protective of water quality
      - Use and storage of pesticides and fertilizers and other household chemicals
      - Carpet cleaning and auto repair and maintenance
      - Vehicle, equipment and home/building maintenance
      - Pet waste management and disposal
      - LID principles an LID BMPs

- Stormwater facility maintenance
- Dumpster and trash compactor maintenance

The City must also create stewardship opportunities and/or partner with existing organizations to encourage residents to participate in activities such as stream teams, storm drain marking, volunteer monitoring, riparian plantings and education activities.

The City is required to measure the understanding and adoption of the targeted behavior for at least one target audience in at least one subject area. No later than February 2, 2016, the resulting measurements were to be used direct education and outreach resources most effectively, as well as to evaluate changes in adoption of the targeted behaviors.

3.2 2018 PROGRAM ACTIVITY

3.2.1 BUILDING GENERAL AWARENESS

Activity Calendar Artwork

Target Audience: General Public including school-age children
Subject Areas: General Impacts of Stormwater on Surface Waters

To help build general stormwater awareness in 2018, the City will continue its annual program to develop and distribute an activities calendar that includes artwork with stormwater pollution prevention themes for each month. This effort targets the general public, including not only the school-age children who develop the artwork, but also the residential population and city employees that the calendar is distributed to.

The program will be run as follows:

An entry form will be supplied to each child that attends the one elementary school that lies within the City. The children will be able to pick from multiple categories focusing on pollution prevention.

All entries will be evaluated, with the top rated entries published in the City of Fircrest Calendar (grand prize winner on the cover, 12 top rated entries will be featured during each month, and approximately 12 selected for “honorable mention” at the end of the calendar). The grand prize winner will receive a pizza feed for their entire class, and all other artists will attend an ice cream social at the school. Once the calendars are produced, each child at the school will be provided with a calendar, and a calendar will be delivered to every residence within the City of Fircrest.

Fircrest Fund Days Booth, 8/10/18 & 8/11/18
National Night Out Booth, 8/7/18

Target Audience: General public
Subject Areas: General impacts of stormwater on surface waters, impacts of illicit discharges, and how to report them

The City will continue to staff a booth at Fircrest Fun Days and National Night Out Against Crime to provide information regarding a variety of stormwater and pollution prevention topics. Specific information provided at the booth includes:

- How to flyers:
    - Rain Gardens
    - Rain Barrels
    - Let the Rain Soak In – Pervious & Porous
- Brochure on how to be a Salmon Friendly Gardener
- Car wash kit
- Promotional items:
    - Puget Sound Starts Here water bottle
    - Doogie Bags in a dog bone shaped container (includes 10 bas in each)

3.2.2 EFFECTING BEHAVIOR CHANGE

Fish-Friendly Car Wash Kit

Target Audience: General Public, including school-age children
BMPs: Correct use of carwash soaps

The City of Fircrest received a local grant from Pierce County Surface Water Program to provide a "Fish Friendly Car Wash" kit that is available for any organization that wishes to check out the kit for fund-raising car wash events. The car wash kit is advertised on the City's website.

Utility Billing Flyers and Town Topics Articles

Target Audience: Residents
BMPs: Yard care techniques protective of water quality; use and storage of pesticides and fertilizers; pet waste management and disposal

The spring and fall utility billing flyers for 2018 and one Town Topics article will be chosen from the topics listed in Section 3.3 of this document.

Resources from the Take Action section of the Puget Sound Starts Here website www.pugetsoundstartshere.org may be used as a source of educational information.

3.2.3 CREATING STEWARDSHIP OPPORTUNITIES

The following stewardship opportunities will be provided in Fircrest during 2018:

Thelma Gilmur Park Habitat Stewardship Work Parties (held monthly) provide opportunities for resident volunteers to help remove invasive plants near the trail system. In cooperation with Pierce Conservation District. These work parties are advertised on the City's activities calendar.

Other regional stewardship opportunities exist through the following organizations:

Pierce Conservation District:
www.piercecountycd.org

Pierce Conservation District's programs focusing on water quality improvement include:

- Storm Drain Curb Marking
- Rain Garden Assistance
- Urban Tree Planting
- Habitat Stewardship Program

Chambers-Clover Watershed Council:
www.co.pierce.wa.us/1860/Chambers---Clover-Watershed-Council

Chambers-Clover Creek Watershed Council (Pierce County) promotes the protection and enhancement of the Chambers-Clover Creek Watershed, in which Fircrest is located. The Council provides an opportunity for local agencies and citizen groups to coordinate their efforts to benefit the watershed.

3.2.4 MEASURING UNDERSTANDING AND ADOPTION OF TARGETED BEHAVIORS

Positive feedback received on the activity calendar program and a lack of illicit discharge incidents provides an indication of the general effectiveness of the City's public education and outreach program. To further assess the impact of the education and outreach effort in 2018, questions will be asked of members of the public that visit the Fircrest Fun Days and National Night Out booths, with results documented. This information will be used to tailor the program for the following year.

Questions to be asked of booth visitors may include:

1. Have you noticed the pollution-prevention message in the annual activities calendar?
2. Have you noticed or benefited from stormwater messages included in utility billings in the spring and fall?
3. Are you aware that the city has a car wash kit available for check out for car wash fundraising events?

4. Do you know what is considered an “illicit discharge” into the storm drainage system and how to report one?

3.3 EDUCATION AND OUTREACH RESOURCES

This section provides a list of potential topics and target BMPs for current and future year utility billing flyers and Town Topics articles.

3.3.1 POTENTIAL GENERAL AWARENESS ARITCLE TOPICS

- Stormwater utility and spill control contact information
- Informational articles relating to water quality improvement
- Gardening and lawn care educational materials
- Irrigation and water use recommendations
- Waste disposal and household hazardous waste information (pickup times and drop off locations)
- Low Impact Development (LID) educational materials
- Pet waste disposal

3.3.2 POTENTIAL TARGET BMPS

The following lists of target audience groups and BMPs can be used for current and future public education and outreach efforts:

Target Audience: Residential

- Lawns & Landscaping, including grading, soil transfer, vegetation removal, pesticide and fertilizer applications, and watering. Stormwater contaminants from landscape and lawn related sources include toxic organic compounds, heavy metals, oils, total suspended solids, coliform bacteria, fertilizers, herbicides, fungicides and pesticides.
- Pet Waste: typically contains coliform bacteria, nutrients, and total suspended solids.
- Parking, Storage and Washing of Vehicles: can be sources of oils and greases, toxic hydrocarbons, heavy metals, soluble organics, soaps, detergents and other organic compounds, and suspended solids.
- Storage of Liquids, Food Waste, Cleaning Chemicals and other hazardous materials. Leaks and spills of pollutant materials during handling and storage are a primary source of pollution, including cleaning compounds, toxic organic compounds, heavy metals, oils, fertilizers, herbicides, fungicides and pesticides.
- House and Roof Cleaning and Treatment, including scraping and pressure washing of dwelling exterior wall and roof areas, and treatment with growth retardant chemicals and strips. Stormwater contaminants from this type of activity include detergents, soaps, petroleum products, toxic chemicals, organic matter, metals, herbicides, fungicides and suspended solids.

- Impacts of Impervious Surfaces, including concentration of pollutants, increased runoff, increased runoff rates and lost runoff treatment opportunities, generating more direct transfer of pollutants, suspended solids and surficial erosion.
- Low Impact Development, including green systems, green home remodel programs, products for reduction of water usage, promotion of natural site retention, and the preservation and maintenance of mature trees
- Recycling of waste materials from home improvement and yard projects, as well as solvents, coolants, oil, degreasers, batteries and other hazardous materials and items.
- Illicit Discharges, including identification of these discharges and reporting of incidents.

Target Audience: Business - Commercial/Industrial

- Parking, Storage and Washing of Vehicles – can be sources of oils and greases, toxic hydrocarbons, heavy metals, soluble organics, soaps, detergents and other organic compounds, and suspended solids.
- Spills, including appropriate spill cleanup, cleanup materials, disposal of cleanup materials – relating the value of absorption as opposed to dilution, and reporting opportunities.
- Storage of Liquids, Food Waste, Cleaning Chemicals and other hazardous materials – leaks and spills of pollutant materials during handling and storage are a primary source of pollution, including cleaning compounds, toxic organic compounds, heavy metals, oils, fertilizers, herbicides, fungicides and pesticides.
- Structure and Roof Cleaning and Treatment, including scraping and pressure washing of building exterior walls and roof areas, and treatment with growth retardant chemicals and strips. Stormwater contaminants from this type of activity include detergents, soaps, petroleum products, toxic chemicals, organic matter, metals, herbicides, fungicides and suspended solids.
- Impacts of Impervious Surfaces, including concentration of pollutants, increased runoff, increased runoff rates and lost runoff treatment opportunities, generating more direct transfer of pollutants, suspended solids and surficial erosion.
- Maintenance of Pollutant Collection Systems, including grease traps, oil/water separators and other similar system with specific attention to spill prevention during use, cleanout and other forms of maintenance, along with proper disposal of harvested materials.
- Illicit Discharges, including identification of these discharges and reporting of incidents.
- Low Impact Development, including green systems and products for reduction of water usage, promotion of natural site retention, and the preservation and maintenance of mature trees.
- Employee Training in the identification of potentially dangerous products and other pollutant sources. Environmental Stewardship activities.

Target Audience: City Planning and Development Staff

- Impacts of Impervious Surfaces, including concentration of pollutants, increased runoff, increased runoff rates and lost runoff treatment opportunities, generating more direct transfer of pollutants and suspended solids, as well as surficial erosion.
- Source Control BMP's, including familiarity with Volume IV of the *Stormwater Management Manual for Western Washington* with specific reference to the BMP's described for the other audience groups.
- Runoff Treatment BMP's, including familiarity with Volume V of the *Stormwater Management Manual for Western Washington*.
- Flow Control BMP's, including familiarity with Volume III of the *Stormwater Management Manual for Western Washington*.
- Illicit Discharges, including identification of these discharges and reporting of incidents.
- Low Impact Development, including green systems and products for reduction of water usage, promotion of natural site retention, and the preservation and maintenance of mature trees.
- Coordinating Agencies and Organizations, and applicable documents and regulations, including Ecology's Water Quality Program, Underground Injection Control Program, Friends of Leach Creek, and Puget Sound Water Quality Management Plan.
- Environmental Stewardship activities.

CHAPTER 4 – PUBLIC INVOLVEMENT AND PARTICIPATION

4.1 PERMIT REQUIREMENTS

Section S5.C.2 of the Permit requires the City to provide ongoing opportunities for public involvement participation through advisory councils, public hearings, watershed committees, participation in developing rate-structures or other similar activities. The City must comply with applicable state and local public notice requirements when developing elements of the SWMP.

Minimum performance measures are:

a. Create opportunities for the public to participate in the decision-making processes involving the development, implementation and update of the City's SWMP.

b. Post on City website the SWMP Plan and the annual report required under S9.A of the Permit no later than May 31 each year.

4.2 2018 PROGRAM ACTIVITY

4.2.1 Decision-Making Process Opportunities

The SWMP will be presented to the City Council at a regular meeting. During the meeting, any member of the public who wishes to comment on the SWMP will be given the opportunity to provide comments.

4.2.2 SWMP and Annual Report Posting

This SWMP Plan document will be posted on the City's website in the current year when the update is complete, expected by July 2018. In future years, the SWMP Plan and annual report will be posted on the City's website by the May 31 deadline.

CHAPTER 5 – ILLICIT DISCHARGE DETECTION AND ELIMINATION

5.1 PERMIT REQUIREMENTS

Section S5.C.3 of the permit requires the SWMP to include an ongoing program designed to prevent, detect, characterize, trace and eliminate illicit connections and illicit discharges into the MS4. The required program has several components as summarized below (see Permit for complete text):

a. Ongoing mapping of the MS4, including (by 2/2/18):
    i. Known MS4 outfalls and discharge points
    ii. Receiving waters other than groundwater
    iii. City-owned stormwater treatment and flow control BMPs
    iv. Tributary conveyance systems to all known outfalls and discharge points, with a 24-inch nominal diameter or larger
    v. All connections to the MS4 authorized by the City after 2/16/07
    vi. Connections between the City's MS4 and MS4s owned by other municipalities or public entities
    vii. Areas served by the City's MS4 that do not discharge to surface waters
    viii. Provide mapping to Ecology upon request (preferred electronic format with fully described mapping standard per example on website)
    ix. Provide mapping to federally-recognized Indian Tribes upon request

b. Implement an ordinance or other regulatory mechanism to effectively prohibit non-stormwater, illicit discharges into the Permittee's MS4 to the maximum extent feasible under Federal law, including allowable discharges, conditionally allowable discharges, escalating enforcement procedures and actions, compliance strategy implementation. The ordinance or other regulatory mechanism must be updated to meet these requirements not later than 2/2/18.

c. Implement an ongoing program designed to detect and identify non-stormwater discharges and illicit connections into the City's MS4, including the following components:
    i. Procedures for conducting investigations of the City's MS4, including field screening and methods for identifying potential sources, implementation of a field screening methodology, and completing field screening for at least 40% of the MS4 by 6/30/18 and 12% of the MS4 each year thereafter
    ii. A publicly listed and publicized hotline or other telephone number for public reporting of spills and other illicit discharges
    iii. An ongoing training program for a municipal field staff

d. Implement an ongoing program designed to address illicit discharges, including spills and illicit connections, into the City's MS4, including:
    i. Procedures for characterizing the nature and potential public environmental threat of an illicit discharge
    ii. Procedures for tracing the source of an illicit discharge
    iii. Procedures for eliminating the illicit discharge
    iv. Meet the following timelines in addressing illicit discharges:
        - Immediate response to illicit discharges, including spills, which are determined to constitute a threat to human health, welfare, or the environment
        - Investigate within 7 days, on average, any complaint, report or monitoring information that indicates a potential illicit discharge
        - Initiate an investigation within 21 days of any report or discovery of a suspected illicit connection
        - Upon confirmation of an illicit connection, use the compliance strategy in a documented effort to eliminate the illicit connection within 6 months

e. Train staff responsible for identification, investigation, termination, cleanup, and reporting of illicit discharges, including spills, and illicit connections, to conduct these activities. Provide follow-up training as needed. Document and maintain records of training.

f. Recordkeeping: Track and maintain records of the activities conducted to meet the requirements for illicit discharge detection and elimination (IDDE).

5.2 2018 PROGRAM ACTIVITY

5.2.1 MS4 Mapping

The City of Fircrest's MS4 has been previously mapped as described in Chapter 2 and includes the elements required by the current Permit, with the exception of the two stormwater treatment facilities operated and maintained by the City. The locations of these facilities will be added to the map in 2018.

In future years, the City plans to convert the AutoCAD-based map to GIS.

5.2.2 IDDE Ordinance

The lists of allowable and conditionally allowable discharges in Fircrest Municipal Code 20.25 will be revised by ordinance to match Section S5.C.3 of the Permit.

5.2.3 Program to Detect and Identify Illicit Discharges

Currently, the City's program for detention and identification of illicit discharges relies on complaints from the public or identification by City staff during system maintenance. To comply with the current Permit, the following program enhancements will be made:

Field Screening Methodology

The City will utilize the field screening methodologies outlined Chapter 3 of the *Illicit Connection and Illicit Discharge Field Screening and Source Tracing Guidance Manual*, May 2013, prepared by Herrera Environmental Consultants for the Washington State Department of Ecology (IC/ID Guidance Manual). This manual and related training resources are available on-line at the Washington Stormwater Center website:
http://www.wastormwatercenter.org/illicit-connection-illicit-discharge

The following field screen methodologies will be utilized:

- **Business Inspections** – to identify pollutant-generating sources at commercial and multi-family properties. General business inspections focus on material storage and site activities for conformance with FMC 20.25 and source control BMPs per Volume IV of the Department of Ecology's *Stormwater Management Manual for Western Washington*. Commercial properties without annually-inspected flow control and water quality treatment facilities will be prioritized in this effort.
- **Catch Basin/Manhole Inspections** – to observe if flow, odor, color, or other visual indicators of illicit discharges are present during dry weather. This effort will performed in conjunction with the MS4 operation and maintenance inspections required by Section S5.C.5 of the Permit. This work will be performed during dry weather by City maintenance staff following specific training in this screening methodology.
- **Ditch Inspections** – to help identify illicit discharges in areas of Fircrest that do not have piped storm drainage systems. This work will be performed during dry weather by City maintenance staff following specific training in this screening methodology.
- **Outfall Inspections –** to observe if outfall flow, odor, color, or other visual indicators of illicit discharges are present during dry weather. This effort will focus on Fircrest's outfalls to City of Tacoma's Leach Creek Holding Basin as well as to direct discharges to Leach Creek downstream from the Holding Basin.

Hotline for Public Reporting of Spills and other Illicit Discharges

The City Hall telephone number will be identified on the City's website specifically for reporting spills and other illicit discharges. The City Hall phone number is monitored 24 hours.

Illicit Discharge Public Education

Illicit discharge public education to inform public employees, businesses, and the general public of hazards associated with illicit discharges and improper storage of waste will be integrated into the public education efforts described in Chapter 3 of the SWMP.

5.2.4 Program to Address Illicit Discharges

The City will utilize the following procedures to address illicit discharges reported by the public or detected through field screening:

- When a spill or illicit discharge is reported or detected that has an obvious nature based on distinct odors, colors, or visual indicators, the Public Works Director or designee will take appropriate action to minimize the threat to human health, welfare, and/or the environment, and will comply with the reporting requirements of General Condition G3 of the Permit. If the nature of the spill or illicit discharge constitutes a threat to human health, welfare, or the environment, action will be taken immediately. Other potential illicit discharges will be investigated within 7 days.
- When an illicit discharge is detected that is not obvious in nature or threat level, indicator sampling will be carried out in accordance with Chapter 4 of *Illicit Connection and Illicit Discharge field Screening and Source Tracing Guidance Manual*, May 2013, prepared by Herrera Environmental Consultants for the Washington State Department of Ecology (IC/ID Guidance Manual). A private contractor will be utilized to perform indicator sampling, when required.
- The source of reported or detected illicit discharges will be traced in accordance with the methodologies described in Chapter 5 of the ID/IC Guidance Manual, utilizing City maintenance staff and/or private contractors, as required.
- Illicit connections, when reported or discovered, will be investigated within 21 days to determine the source of the connection, nature and volume of the discharge through the connection, and the party responsible for the connection.
- Illicit connections will be remedied within 6 months of detection in accordance with FMC 20.25.090.

5.2.5 Illicit Discharge Training

Illicit discharge training will be provided to City maintenance staff and others personnel involved in carrying out IDDE activities. The following resources will be utilized:

- Washington Stormwater Center training videos and power point presentation for the 2013 ID/IC Guidance Manual http://www.wastormwatercenter.org/illicit-connection-illicit-discharge/#ICIDtraining
- Individual study of the 2013 ID/IC Guidance Manual
- If supplemental resources are determined to be needed, the following documents will be utilized:

- *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, Center for Watershed Protection, October 2004.
- NPDES Stormwater Webcasts on the EPA website: https://www.epa.gov/npdes/npdes-stormwater-webcasts

5.2.6 Illicit Discharge Recordkeeping

All recordkeeping associated with the City's IDDE program will be maintained by the Public Works Director or designee. Records will include the following:

- Field Screening Data Sheets
- Records of all detected illicit discharges and actions taken
- Reports of all reported spills and illicit discharges and actions taken
- Records of illicit connections and actions taken
- Records of IDDE training provided and staff trained

CHAPTER 6 – CONTROLLING RUNOFF FROM NEW DEVELOPMENT, REDEVELOPMENT AND CONSTRUCTION SITES

6.1 PERMIT REQUIREMENTS

Section S5.C.4 of the Permit requires that the City implement and enforce a program to reduce pollutants in stormwater runoff to its MS4 from new development, redevelopment and construction site activities. The program must apply to both private and public development, including roads. The program is required to have several components as summarized below (see Permit for complete text):

a. Implement an ordinance or other enforceable mechanism that addresses runoff from new development, redevelopment, and construction site projects, no later than 12/31/16, that includes:
    i. The Minimum Requirements, thresholds, and definitions in Appendix 1 or a program approved by Ecology under the 2013 NPDES Phase I Municipal Stormwater Permit, for new development, redevelopment, and construction sites. Adjustment and variance criteria equivalent to those in Appendix 1 shall be included.
    ii. The local requirements shall include the following requirements, limitations, and criteria that, when used to implement the minimum requirements in Appendix 1 (or program approved by Ecology under the 2013 Phase I Permit), will protect water quality, reduce the discharge of pollutants to the MEP, and satisfy the State requirement under chapter 90.48 RCW to apply AKART prior to discharge:
        - Site planning requirements
        - BMP selection criteria
        - BMP infeasibility criteria
        - LID competing needs criteria
        - BMP limitations

        Permittees who choose to use the requirements, limitations, and criteria above in the *Stormwater Management Manual for Western Washington*, or a program approved by Ecology under the 2013 Phase I Permit, may cite this choice as their sole documentation to meet this requirement.
    iii. The legal authority, though the approval process for new development and redevelopment, to inspect and enforce maintenance standards for private stormwater facilities approved under the provisions of this section that discharge to the City's MS4.

b. The program shall include a permitting process with site plan review, inspection and enforcement capability to meet the following standards:
    i. Review of all stormwater site plans for proposed development activities

ii. Inspect, prior to clearing and construction, all permitted development sites that have a high potential for sediment transport as determined through plan review based on definitions and requirements in Appendix 7 of the Permit, or all construction sites that meet the minimum thresholds in Appendix 1 of the Permit.
iii. Inspect all permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls.
iv. Inspect all permitted developments upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater facilities.

c. The program shall include the following provisions to verify adequate long-term operation and maintenance (O&M) of stormwater treatment and flow control BMPs/facilities:
    i. Implementation of an ordinance or other enforceable mechanism that clearly identifies the party responsible for maintenance, requires inspection of facilities, and establishes enforcement procedures.
    ii. Establish maintenance standards that are as protective or more protective of facility function than those specified in Chapter 4 of Volume V of the *Stormwater Management Manual for Western Washington*.
    iii. Annual inspection of stormwater treatment and flow control BMPs/facilities.
    iv. Inspection of all permanent stormwater treatment and flow control BMPs/ facilities and catch basins in new residential development every six months until 90% of the lots are constructed.
    v. Maintain inspection records. Compliance during the Permit period is determined by achieving at least 80% of scheduled inspections.
    vi. When an inspection identifies and exceedance of the maintenance standard, maintenance shall be performed:
        - Within 1 year for typical maintenance of facilities, except catch basins
        - Within 6 months for catch basins
        - Within 2 years for maintenance that required capital construction of less than $25,000
    vii. Include a procedure of keeping records of inspection and enforcement actions.

d. The program shall make available as applicable copies of the “notice of Intent for Construction Activity” and copies of the “Notice of Intent for Industrial Activity” to representatives of proposed new develop and redevelopment. The City is required to continue to enforce local stormwater ordinance for sites that are also covered by Ecology permits.

e. Training shall be provided for staff whose primary job duties are implementing the program and records maintained of the training provided and staff trained.

f. Low impact development code-related requirements.
    i. No later than 12/31/16, the City was required to review, revise, and make effective its local development-related codes, rules, standards or other enforceable documents to incorporate and require LID principles and LID BMPs, with the intent to make LID the preferred and commonly-used approach to site development.
    ii. No later than 3/31/17, the City was required to submit a summary of the results of the review and revision process to incorporate LID.

6.2 2018 PROGRAM ACTIVITY

The City of Fircrest has an established program for controlling runoff from new development, redevelopment and construction sites that will continue in 2018. The following sections describe existing program elements to comply with Permit requirements, as well as specific program enhancements planned for 2018.

6.2.1 Stormwater Ordinance

Fircrest Municipal Code (FMC) 20.24 and 22.58.008(k) adopt the most recent version Ecology's *Stormwater Management Manual for Western Washington* (SWMMWW). Currently the City enforces the requirements in the SWMMWW for all development and redevelopment. By adopting the SWMMWW, the City is complying with the requirement of S5.C.4.a.ii of the Permit to include requirements, limitations, and criteria for site planning and BMPs for protection of water quality and reduction of pollutant discharge.

The legal authority to inspect and enforce maintenance standards for private stormwater facilities through the approval process for new development and redevelopment is currently established by FMC 22.95.

In 2018, the City will revise the stormwater code language in FMC 20.24 to clarify that the SWMMWW applies to new development, redevelopment and construction sites, both public and private, including roads. The code amendment will also explicitly adopt the Minimum Requirements, and definitions in Appendix 1 of the Permit to more clearly comply with section S5.C.4.a.i. The legal authority to inspect and enforce maintenance standards for private stormwater facilities will also be more clearly stated in FMC 20.24.

6.2.2 Stormwater Permitting Process

The City will continue its current stormwater permitting process with plan review, inspection and enforcement capability to ensure compliance with code requirements for both private and public projects, using qualified personnel. This includes:

- Review of all stormwater site plans
- Inspection of all submitted development sites that have a high potential for sediment transport prior to clearing and construction

- Inspection of all permitted development sites during construction to verify proper installation and maintenance of required erosion and sediment controls with enforcement as necessary, based on the inspections
- Inspection of all permitted development sites upon completion of construction and prior to final approval or occupancy to ensure proper installation of permanent stormwater controls, such as stormwater facilities and structural BMPs
- Verification that a maintenance plan has been completed and responsibility for maintenance has been assigned with enforcement as necessary, based on the inspections
- Ensure compliance with inspection requirements by the presence and records of an established inspection program that is designed to inspect all sites and achieve at least 80% of scheduled inspections

6.2.3 Operation and Maintenance of Permitted Stormwater Facilities

The City will continue its maintenance and inspection program for permitted, privately-maintained stormwater facilities within Fircrest, which utilizes the maintenance standards set forth in Chapter 4, Volume V of the current Ecology *Stormwater Management Manual for Western Washington*.

The City requires inspection reports to be submitted for all privately-maintained stormwater facilities on commercial and multi-family residential sites. Records of these inspections, including follow-up inspections by City personnel and any enforcement actions, are maintained by the Public Works Director or designee.

In 2018, the City will amended the stormwater code language in FMC 20.24 to clarify the party responsible for maintenance of permitted stormwater facilities and establish enforcement procedures, as required section S5.C.4.a.iii of the Permit.

6.2.4 Enforcement of Stormwater Ordinance for Sites with Ecology Permits

The City will enforce local ordinances controlling runoff from sites that are also covered by stormwater permits by Ecology.

6.2.5 Training

City staff currently responsible for stormwater site review and inspection are familiar with the requirements of the SWMMWW to residential, commercial and industrial development sites. If needed due to staff change or to enhance knowledge, additional training will be provided.

At least one individual from the City field staff is scheduled to be enrolled in training as a Certified Erosion and Sediment Control Lead (CESCL) - Training and Certification Program.

Records of training provided, staff that received training are maintained by the Public Works Director or designee.

Certified Erosion and Sediment Control Lead (CESCL) Training, if determined to be needed, is available from the American General Contractors (AGC) Education Foundation https://constructionfoundation.org/classes/catalog and the Building Industry Association of Washington https://www.biaw.com/Education_CESCL.aspx

Training for the Stormwater Management Manual for Western Washington is periodically available from the Department of Ecology. However no training seminars are currently scheduled.

6.2.6 Low Impact Development

The city undertook a process to revise its codes and standards in 2015 to incorporate Low Impact Development (LID), as required by section S5.C.4.f of the Permit. This process involved the City's Planning Director, Planning Administrator, Public Works Director, and City Manager. Planning Commission hearings were held for the proposed code changes on 8/18/15 and 9/1/15, followed by City Council adoption on 10/13/15 as Ordinance 1562. The following code changes resulted to implement LID:

FMC 22.58.008 includes the following subsection:

> (k) Stormwater Management. Stormwater facilities shall be designed to meet or exceed the standards outlined in the latest edition of the Department of Ecology Stormwater Management Manual for Western Washington. Plans demonstrating compliance with the manual shall be submitted for approval by the director and city engineer prior to issuance of site development permits. Consistent with NPDES Western Washington Phase II Municipal Stormwater Permit requirements, Low Impact Development (LID) designs and LID BMPs shall be required in areas where soils and geology support it. Larger projects triggering the manual's requirements for water quality treatment and/or flow control shall incorporate LID components to the extent practicable consistent with The Low Impact Development Technical Guidance Manual for Puget Sound.

FMC 22.63.005 adopts by reference the City of Fircrest *Design Standards and Guidelines for Small Lot and Multi-Family Development*, which provides detailed guidelines for implementing LID concepts into development proposals.

In 2018, the City will continue to review development proposals in accordance with adopted codes and standards, so that LID is implement to the maximum extent feasible.

CHAPTER 7 – MUNICIPAL OPERATIONS AND MAINTENANCE

7.1 PERMIT REQUIREMENTS

Section S5.C.5 of the Permit requires that the City implement an operations and maintenance (O&M) program that includes a training component and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations. The program is required to have several components as summarized below (see Permit for complete text):

a. Implement maintenance standards that are as protective, or more protective, of facility function than those specified in Chapter 4 of Volume V of the *Stormwater Management Manual for Western Washington*. For facilities which do not have maintenance standards, the City is required to develop a maintenance standard. Maintenance standards were required to be implemented no later than December 31, 2016.
    i. The purpose of the maintenance standard is to determine if maintenance is required.
    ii. When an inspection identifies an exceedance of the maintenance standard, maintenance is required to be performed:
        - Within 1 year for typical maintenance of facilities, except catch basins
        - Within 6 months for catch basins
        - Within 2 years for maintenance that requires capital construction of less than $25,000

b. Perform annual inspection of all City-owned or operated permanent stormwater and flow control BMPs/facilities, taking appropriate maintenance actions in accordance with the adopted maintenance standards.

c. Perform spot checks of potentially damaged permanent stormwater treatment and flow control BMPs/facilities after major storm events (24 hour storm event with a 10 year or greater recurrence interval).

d. Inspect all catch basins and inlets owned and operated by the City at least once no later than 8/1/17, and every two years thereafter. Clean catch basins if the inspection indicates cleaning is needed to comply with maintenance standards.

e. Compliance with inspection requirements is determined by the presence of an established inspection program designed to inspect all sites and achieving at least 95% of inspections.

f. Implement practices, policies and procedures to reduce stormwater impacts associated with runoff from all lands owned or maintained by the City, and road maintenance activities under the control of the City. The following activities shall be addressed:
    - Pipe cleaning

- Cleaning of culverts
- Ditch maintenance
- Street cleaning
- Road repair and resurfacing, including pavement grinding
- Snow and ice control
- Utility installation
- Pavement striping maintenance
- Maintaining roadside areas, including vegetation management
- Dust control
- Application of fertilizers, pesticides, and herbicides according to the instructions for their use, including reducing nutrients and pesticides using alternatives that minimize environmental impacts
- Sediment and erosion control
- Landscape maintenance and vegetation disposal
- Trash and pet waste management
- Building exterior cleaning and maintenance

g. Implement an ongoing training program for City employees whose primary construction, operations or maintenance job functions may impact stormwater quality. The training program shall address the importance of protecting water quality, operation and maintenance standards, inspection procedures, selecting appropriate BMPs, ways to perform their job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns. Follow-up training shall be provided as needed to address changes in procedures, techniques, requirements, or staffing. Permittees shall document and maintain records of training provided and the staff trained.

h. Implement a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance or storage yards, and material storage facilities owned or operated by the Permittee in areas subject to this Permit that are not required to have coverage under the General NPDES Permit for Stormwater Discharges Associated with industrial Activities. A schedule for implementation of BMPs shall be included in the SWPPP. The SWPPP shall include periodic visual observation of discharges from the facility to evaluate the effectiveness of the BMP

i. Maintain records of inspections and maintenance or repair activities conducted by the City.

7.2 2018 PROGRAM ACTIVITY

The City of Fircrest has an established program for municipal operation and maintenance, which will continue in 2018. The following sections describe existing program elements to comply with Permit requirements, as well as specific program enhancements planned for 2018.

7.2.1 Maintenance Standards

The City utilizes the maintenance standards specified in Section 4.6 of Volume V of the *Stormwater Management Manual for Western Washington* for operation and maintenance of the City's stormwater systems. Currently, city-maintained stormwater facilities consist of conveyance systems (catch basins, ditches, pipes, and energy dissipaters), flow control and runoff treatment facilities, and permeable pavement.

7.2.2 Inspection of Municipal Stormwater Facilities

Annual Inspections – There are currently two publicly-maintained stormwater treatment and flow control facilities in the City of Fircrest that require annual inspection. One LID BMP also exists, permeable pavement sidewalks along Emerson Street, which will continue to be inspected annually.

Spot Checks – Spot checks will be performed at culvert crossings along Leach Creek after each major storm event (10-year, 24-hour storm event). The two City-maintained treatment and flow control facilities will also be checked if the potential for damage is suspected.

Catch Basin Inspections and Cleaning – City staff will continue to inspect and clean all catch basins at least once every two years, with half of the City completed in each year of the two-year cycle. Decant water from the catch basin cleaning effort will be disposed of in accordance with the requirements set forth in Permit Appendix 6, Street Waste Disposal.

7.2.3 Stormwater Impact Reduction Procedures

The City has implemented the following practices, policies, and procedures to reduce stormwater impacts:

City Parks

City of Fircrest Parks and Recreation Department operates six park sites. Practices, policies, and procedures to reduce stormwater impacts at these sites consist of the following, which will be continued in 2018:

- Use fertilizers, pesticides, and herbicides according to the manufactures specifications. All applications follow state and local and guidelines and are used only after consultation with the Management Team and Public Works Department.
- Regularly consult with the Management Team and Public Works Department and receive specific guidelines from Pierce Conservation District regarding landscape maintenance and vegetation removal.
- Use environmentally friendly cleaning solutions for all exterior cleaning and maintenance.

Road and Street Maintenance

- Clean existing catch basins, pipes, and ditches in accordance with the findings of the facilities inspection program described in Sections 7.1.1 and 7.1.2
- Perform street sweeping on a schedule that will service all of the City streets at least once per month
- Implement effective sediment and erosion control practices in accordance with *Volume II of the Stormwater Management Manual for Western Washington* for all maintenance projects
- Perform road repair and resurfacing, including pavement grinding as required to prevent pavement raveling and contribution of sediments into the stormwater system
- Perform snow and ice control as required, using manufacturer's application rate for minimally environmentally toxic deicing chemicals
- Strict control of utility installation, encouraging the use of trenchless procedures, such as directional drilling, pipe bursting, slip lining and other techniques that minimize surface cuts and excavation
- Maintain pavement striping by minimizing paint application and using reflective pavement buttons
- Maintain roadside areas and vegetation minimizing use of pesticides
- Implement dust control practices

7.2.4 Training

Pollution prevention training will be continued by sending appropriate staff, when needed due to staff change or to increase knowledge, to training courses related to the *Stormwater Management Manual for Western Washington.*

Ongoing facilities review staff training will follow-on from the initial training, consisting of more advanced courses related to the stormwater manual, manufacturer's courses relating to proprietary products, and specialized courses in source control BMPs, low impact stormwater designs, and permanent and temporary erosion control over the next 3 years.

7.2.5 Stormwater Pollution Prevention Plan (SWPPP)

A SWPPP has been prepared for the City's main maintenance/storage facility located on Ramsdell Street. A copy is kept on-site.

7.2.6 Municipal O&M Recordkeeping

The Public Works Director or designee will maintain records of all inspections and maintenance activities.