CITY OF FIRCREST
STORMWATER MANAGEMENT PROGRAM

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PREPARED BY:

Trent J. Lougheed, PE
J. W. MORRISSETTE & ASSOCIATES INC., PS
1700-B2 Cooper Point Road SW
Olympia, Washington 98502
Tel (360)352-9456 Fax (360)352-9990

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Recipient Contact:	Trent J. Lougheed, PE, City Engineer
Grant Management:	Water Quality Program Washington State Department of Ecology PO Box 47600 Olympia, Washington 98504-7600
WSDOE Project Manager:	Sonia Bumpus (360)407-6452

ACKNOWLEDGEMENTS

MAYOR:	David M. Viafore
CITY COUNCIL:	Matthew P. Jolibois Hunter T. George David R. Goodsell Shannon Reynolds Jason Medley Denny Waltier
CITY ENGINEER:	Trent J. Lougheed, PE

The following individuals provided assistance, guidance and general support toward the successful completion of this project:

Mr. Trent Lougheed, PE, J. W. Morrissette & Associates, PS, City Engineer (Consultant)

CITY OF FIRCREST
STORMWATER MANAGEMENT PROGRAM

1 – INTRODUCTION

1.1 THE STORMWATER MANAGEMENT PROGRAM DOCUMENT

U S Environmental Protection Agency Phase II regulations became effective in early 2003 and apply to all regulated small municipal separate storm sewer systems. On January 17, 2007 Washington State Department of Ecology (WSDOE) issued two Phase II Municipal Stormwater Permits, one for Western Washington and one for Eastern Washington.

The Phase II Permit for Western Washington covers at least 80 cities and portions of five counties. February 2007 is the effective date. The City of Fircrest is one of the 80 cities included in the Western Washington Phase II Permit.

Subsequent to the City submitting a Letter of Intent in February 2007, WSDOE's issuance of a 5 year Phase II NPDES Municipal General Stormwater Permit and in accordance with Condition S5 of the Phase II Permit, the City of Fircrest is required to prepare a Stormwater Management Program (SWMP) in order to continue the operation of its municipal stormwater facilities.

This document is the required Stormwater Management Program and sets forth the action plan that the City will follow as part of its first Phase II Permit between February 2007 and February 2014 in its efforts to achieve compliance with the Stormwater Permit requirements of the National Pollution Discharge Elimination System (NPDES). WSDOE is currently in the process of finalizing the new NPDES Phase II permit requirements, and these will be addressed in the 2016 Stormwater Management Program Update.

This chapter introduces the City of Fircrest Stormwater Management Program and describes the Stormwater Utility that has been developed in the City. It also describes why the program is required, the purpose and goals of the program and utility, a summary of the Federal, State and Local jurisdictions involved in the process, and a brief summary of the evolution of this program as it progressed during its preparation.

1.2 NPDES PROGRAM

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 WSDOE, implements these stormwater rules through the municipal

stormwater Permit program. The Phase II EPA Permit regulations were issued in 1999. The City of Fircrest is listed in the Western Washington Phase II Permit, and as such is required to have a Phase II NPDES – Stormwater General Permit in order to operate its stormwater facilities within the State of Washington. This permit requires the development of a stormwater management program and an associated utility to generate revenue to cover the cost of implementing the program requirements and facilities improvements. At present the City is operating under its first Phase II NPDES General Permit for its Municipal Separate Storm Sewer System (MS4), consisting of roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels and/or storm drains, outfalls, treatment facilities, and retention/detention facilities that have been designed for or are used for the collection and conveyance of stormwater.

1.3 PROGRAM FUNDING & GRANTS

As the NPDES Phase II permit is a mandatory requirement of the State and Federal governments, financial aid is often provided to the local jurisdictions to aid in the performance of the studies and analyses required to develop the management plan and utility. In this case a Centennial Cleanwater Grant of $75,000 was provided to the City by WSDOE under Grant No. G06000307. Subsequently, the WSDOE has provided additional Capacity Grants that provided funding for implementing the City's Stormwater Management Program.

1.4 STORMWATER MANAGEMENT PROGRAM

The purpose of this management program is to reduce the discharge of pollutants to the "maximum extent practicable", protect water quality and satisfy the appropriate requirements of the Clean Water Act. This program will be operated by the City and will regulate City Surface and Storm Water Facilities.

The permit requires the development and implementation of a Stormwater Management Program (SWMP) to control discharge into and from the City's system. The SWMP includes five permit specific elements that are designed to reduce the discharge of pollutants form the Fircrest Municipal Separate Storm Sewer System (M4S) 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 - Pollution Prevention, and Operations and Maintenance for Municipal Operations

Figure 1-1 provides a graphical representation of how the specific program elements are intended to inter-relate.

Stormwater Phase II Final Rule

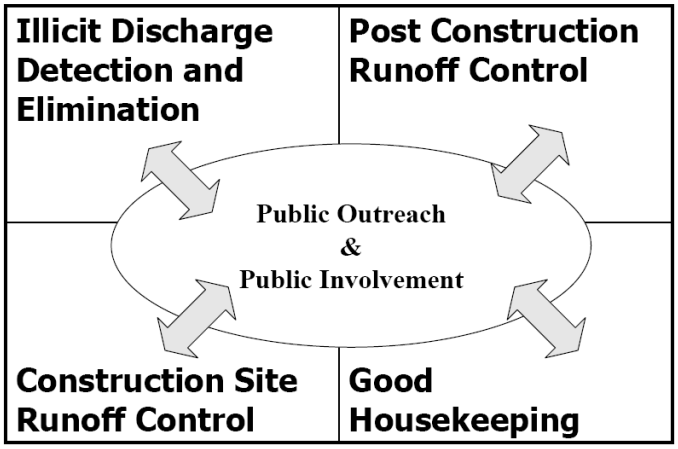


Figure 1-1

1.5 LEGAL AUTHORITY

One of the major aspects of the Stormwater Management Program is the establishment of Legal Authority on the part of the municipal jurisdiction. This authority is developed through various elements listed above, but culminates in the form of City Stormwater Management Ordinances.

Specifically, the Stormwater Ordinances must provide the legal authority to control discharges to and from the municipal storm sewer owned by the City of Fircrest. At present the City has both Stormwater Management and Storm Drain Service Charge Ordinances. Although these Ordinances adopt the 2012 WSDOE Stormwater Manual and establish a stormwater service charge, they do not address program administration, construction inspection, post-construction facility inspections, handling of illicit discharges and the establishment of a stormwater utility. These Ordinances are minimal in content and as such will be revised and expanded under this program to better address the above listed items and the other requirements of the Phase II permit.

1.6 MAPPING

Mapping of the City's stormwater system is a second major aspect of this program. The City's stormwater system must be mapped and the mapping organized under the WSDOE specified GIS mapping requirements. Again, the scope of the mapping program is established in several of the permit elements.

In the City of Fircrest, the mapping effort has been combined with mapping of the City's sanitary sewer system and was initiated in Fall 2008. Data collection was completed in 2009. Initial mapping is being setup using AutoCADD as it will be used for the

preparation of engineering drawing related to system maintenance and repair for both the sanitary and storm systems.

GIS format mapping, using the AutoCADD files began in 2010, and the last update to the GIS base mapping was in July, 2014. Updates to the GIS Stormwater Base Map will be conducted annually at the beginning of the year.

1.7 COORDINATION AND RESPONSIBILTY

Undertaking the permit tasks and achieving compliance with permit mandates requires coordination between, and documentation by, several City Departments.

As the City is relatively small and nearly completely developed, intra-department coordination and organization will be far less involved than that required by larger Cities. As such, regularly scheduled intra-departmental meetings will be used as the first method of intra-departmental coordination between the departments responsible for Planning, Public Works, Recreation, Finance/Administration and the City Attorney. Additional meetings presentations will be organized as necessary.

Coordination mechanisms will need to be developed 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. Formalization of this coordination may come in the form of inter-local agreements. This coordination effort will be formalized with the City of Tacoma.

This effort will be coordinated by the Public Works Department with program administration resting with the Public Works Director/City Engineer. Regular communication with other City departments will insure the coordinated compliance with permit requirements.

1.8 PROGRAM TIMING

The City of Fircrest has not had a Surface and Storm Water Management Program (SWMP) up to the point of commencing these studies. On 17 January 2007, the City submitted its Notice of Intent (NOI) to Washington State Department of Ecology (WSDOE). In response, WSDOE issued to the City of Fircrest a Phase II Stormwater Discharge Permit on 16 February 2007.

This first permit is valid for 5 years (from 16 February 2007 through 15 February 2012). This period allows for the phased implementation of the above listed requirements and actions.

Following is a summary of the tasks involved and the approximate schedule for which they were completed as set forth in the permit:

- **Program Milestones**

- 19 March 2007 Municipal Ordinance implemented
- 15 February 2008 Public Involvement and Participation Program in place
- 01 January 2009 Commence tracking estimated costs & actual costs for developing and implementing SWMP program
- 15 February 2009 Education and Outreach Program in place
- 15 February 2009 Illicit Discharge Detection and Elimination Program fully implemented
- 15 February 2009 Publicly list and publicize Hotline or local telephone number for public reporting of spills or other illicit discharges
- 01 July 2009 Draft SWMP developed and distributed.
- 15 August 2009 Complete training of Municipal Field Staff for illicit discharge and spill activities
- 15 August 2009 Ordinance addressing new development, redevelopment and construction site runoff implemented
- 15 August 2009 Permitting process for private and public projects with disturbed areas greater than or equal to 1 acre in place
- 15 August 2009 Monitoring/verification program for Long-Term Operation and Maintenance of post construction stormwater facilities and BMP's in place
- 15 February 2010 Ongoing training program for Municipal Field Staff for illicit discharge and spill activities implemented
- 15 February 2010 Operating and maintenance program for preventing and/or reducing pollutant runoff from municipal facilities and operations in place, including a Stormwater Pollution Prevention Plan (SWPPP) for all heavy equipment maintenance and storage areas, and material storage faciilities
- 18 August 2011 SWMP developed and implemented
- 18 August 2011 Distribute information relating to the hazards of illegal discharges and improper disposal of waste
- 15 February 2011 Stormwater System Mapping completed

- **Annual Inspection** of all municipally owned and/or operated permanent stormwater treatment and flow control facilities.

- **Spot Checks** for potentially damaged permanent treatment and flow control facilities after major storm events (>10year/24hour recurrence interval rainfall, approx 4 inches in 24 hours).

The following figure is a consolidated view of permit milestones as organized by WSDOE:

Western Washington Phase II Municipal Stormwater NPDES Permit Overview

The timeline below provides and overview of major program components deadlines ("...no later than...") for implementing permit requirements of S5 Stormwater Management Program (SWMP) for Cities, Towns and Counties. Other permit elements are listed on the next page. This is guidance only: please see the permit for additional detail and related requirements.

S5 Program Component	Feb 16, 2007	Feb 2008	Feb 2009	Aug 2009	Feb 2010	Feb 2011	Aug 2011	Feb 2012
A. Stormwater Management Plan	Set up process to track costs, actions and activities. Establish coordination among permittees as possible.		Begin tracking costs.				Program fully implemented	
C.1 Public Education and Outreach			Implement educ program. Public hotline starts. Begin to measure understanding, adoption				Distribute IDDE info to target audiences	
C.2 Public Involvement		Program begins. SWMP and annual reports are available to the public and posted on website. Create opportunities for public input.						
C.3 Illicit Discharge Detection and Elimination (IDDE)			Establish public hotline to report spills and illicit discharges.	Adopt IDDE codes & regulations to prohibit non stormwater discharge, establish escalating enforcement. Develop enforcement strategy. IDDE staff training. Recordkeeping	Train all municipal field staff. Prioritize receiving waters for visual inspection.	Storm system map is complete and maps are kept updated. Assess 3 high priority water bodies.	Program fully implemented: field assessment, inspections, procedures, process to ID priority areas. Distribute info on IDDE.	
C.4 Control Runoff from New Develop't, Redevelop't Construction Sites (generally, disturbing at least 1 acre)	Make NOIs for construction, industrial stormwater permits available. Recordkeeping (inspections, maintenance, enforcement).			Adopt regulations, implement program for runoff control, site plan review, inspection, enforcement, LID. Adopt/implement O&M regulations for post-construction BMPs & facilities. Staff training.				
C.5 Municipal Pollution Prevention, Operation and Maintenance					Adopt and implement SWPPP, inspection & maintenance schedule, procedures. Staff training.			

Figure 1-2

It is noted that the first year of the Permit Period is usually directed toward establishing the Stormwater Ordinance, the Stormwater Utility and commencing collection of fees to establish a fund for use in approaching the other permit tasks.

1.9 STORMWATER UTILITY RATE STRUCTURE

The remainder of this document lays out the required elements of the SWMP and notes current and planned compliance activities.

As noted above, the City of Fircrest has a Storm Drain Service Charge Ordinance. The present rate structure includes a Fixed Fee, plus Impervious Surface Fee. The fixed fee for single family customers is $12.50 per month with no impervious surface supplement. The fee for all other customers is $8.75 per month fixed rate, plus $0.001437 per square foot of impervious surface, which includes roof area.

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 in some communities. The Fircrest Ordinance allows credits of 25% and 50% for commercial and industrial properties.

Specifically, credits are offered for providing onsite flow control that reduces the site release rate to the predevelopment 2 year/24 hour design event release rate. A 25% reduction is provided for using the reduced release rate for up to the post-development 50 year/24 hour design event. The 50% reduction is provided for reduced release up to the post-development 100 year/24 hour design event.

The reduced release rate must be:

- Applied to the design process with supporting calculations
- Confirmed in the as-constructed facilities
- Provided with an operated and maintained plan for the facilities

These items must be certified by a civil engineer licensed to practice in the State of Washington.

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.

2 – STORMWATER SYSTEM CONTEXT

2.1 OVERVIEW OF DEVELOPMENT WITHIN THE CITY OF FIRCREST

The City of Fircrest is a small incorporated municipality located within the incorporated boundaries of the City of Tacoma on three sides and the City of University Place to the West. The City's 2011 population is listed as 6,579 residents with a change since 2000 of +8.3%. The City's surface area totals about 960 acres with about 98% build-out. It is estimated that about 16 acres are presently available for commercial/industrial redevelopment, and 30 acres available for residential development. As such, the City is expected to have light new development/redevelopment pressure.

3 – PUBLIC EDUCATION AND OUTREACH

3.1 PERMIT REQUIREMENTS

Permit Section S5.C.1 required that the City provide a stormwater education and outreach program by February 2009 that will:

- Prioritize and address specific target audiences and subject areas listed in the permit that relate to conditions within the City of Fircrest
- Develop an education and outreach program that is designed to reduce or eliminate behaviors and practices that cause or contribute to adverse stormwater impacts
- Measure changes in the level of understanding and adoption of behaviors by the target audience, using the collected information to evaluate past programs and modify/redesign future programs
- Maintain records of public education and outreach activities
- Summarize activities in the Annual Report

This goal has been met and the City currently promotes Education and Outreach through effective pathways for impacting public and business actions and behavior patterns that affect the surface and stormwater conditions within the community.

3.2 PROGRAM ACTIVITY

The specific goal of this program is to eliminate or reduce conditions, practices and behaviors that contribute surface and stormwater pollution. The Fircrest education program will be aimed primarily at:

- Elected Officials and Policy Makers
- City Residents and General Public
- City Business and Business Operating within the City
- City Planning and Development Staff
- Local Development Community
- School-aged Children

A preliminary assessment of the City demographics indicates a population of 6,525 in 2011 with about 2486 residential households and a population density of 4210 residents per square mile. A crude business summary shows:

1	Wholesale Trade
6	Retail Trade (Furniture, Food, Health Care, Clothing & Misc. Retail)
13	Real Estate
20	Profession (Legal, Accounting & Architectural/Engineering)

6	Administrative Support
1	Educational Services
33	Health Care (Physicians, Dentists and Other)
2	Art & Entertainment (Amusement, Gambling & Recreation)
7	Food Services & Drinking
9	Other Services (including 4 Personal & Laundry Services)

Based on the foregoing, the City includes mainly light commercial trade with mainly residential environments.

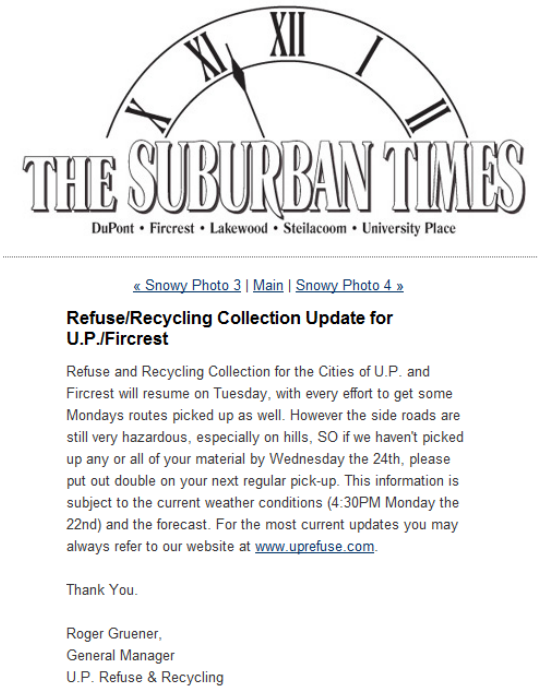
2015 Activities - During 2015, priorities will be set for the education and outreach effort for school-aged children.

The City will be holding its fourth annual art contest for development of an activities calendar. 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.

The City of Fircrest has 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 City's web site, the City's Town Topics Quarterly Update, plus public access web sites, newspapers, shopping advertisement distribution networks, local business associations (i.e. Chamber of Commerce) and nearby branded organizations (i.e. Friends of Leach Creek) working in areas related to pollution reduction will be organized into a list and prioritized with regard to impact on the Fircrest community and relatedness to Fircrest identified behavioral issues. Use of digital media community bulleting boards will be supported and maximized, such as The Suburban Times (local online newspaper). It is noted that the Suburban Times is presently available and serving as a public notice media for DuPont, Fircrest, Lakewood, Steilacoom & University Place (see Figure 3-1).



THE SUBURBAN TIMES

DuPont • Fircrest • Lakewood • Steilacoom • University Place

« Snowy Photo 3 | Main | Snowy Photo 4 »

Refuse/Recycling Collection Update for U.P./Fircrest

Refuse and Recycling Collection for the Cities of U.P. and Fircrest will resume on Tuesday, with every effort to get some Mondays routes picked up as well. However the side roads are still very hazardous, especially on hills, SO if we haven't picked up any or all of your material by Wednesday the 24th, please put out double on your next regular pick-up. This information is subject to the current weather conditions (4:30PM Monday the 22nd) and the forecast. For the most current updates you may always refer to our website at www.uprefuse.com.

Thank You.

Roger Gruener,
General Manager
U.P. Refuse & Recycling

13 Feb 2009 Figure 3-1

At least one surface and stormwater related public/town meeting will be held to provide general public education and attract interested participants for the program.

During 2015, distribution materials will be organized and designed that will address the target populations behavioral issues. Efforts will be made to attract volunteer staff to augment City budget commitment. The most direct, broad reaching and cost effective distribution networks and media will be utilized to disseminating the designed information. Further budget requests will be developed in support of this work and based upon the funds made available material distribution will commence.

2016 Activities - During 2016, a second questionnaire program will be used to assess the impact of the education and outreach effort. Education and outreach documentation will be revised to address the evolving community awareness levels and reactions to the program to this point. A fifth art contest will also commence at the local elementary school in order to develop the City's 2017 Activities Calendar (with primary focus on Pollution Prevention).

3.3 REGIONAL CUSTOMIZATION

Typically, programs of this sort require a regionally customized approach. As described above, this program will be designed to address the demographic conditions within Fircrest and further refined using canvassing activities described above during the 2015 and 2016 calendar years. The further efforts will include:

- Collection of additional area specific demographic information (age, income, education level, etc.)
- Economic Information (types of commercial or development activity)
- Land-Use Data, pet licenses, population density, home ownership statistics, etc.

3.4 BEST MANAGEMENT PRACTICE TARGETS

Considering the development environment within the City as described in Section 2, the Best Management Practices (BPM's) that will be targeted in Fircrest will be mainly Source Control BMP's and will be narrowed considerably from those focused upon in other communities. The specific items that will be addressed in this program for each target audience are listed below:

Elected Officials and Policy Makers

This target audience has been give first priority as it is the budget approval authority and is responsible for setting the direction of the City in this effort. The BMP targets presented to Elected Officials and Policy Makers will generally include all of the targets used for the other audience groups, but in somewhat less elaborate terms. As such, the below lists of target BMP's individually address each of the audience groups with the exception of Elected Officials and Policy Makers:

- **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. Additionally, a review of the value of groundcovers and xeriscaping to reduce pollutant production and waste of potable water sources.
    - 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.
    - Spills, including 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.
    - 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.
    - Roadside Ditches and Swales, including conveyance continuity, minimum flow characteristics and grass lining for bio-filtration.
    - Critical Areas and Their Buffers for protection of habitat, promotion of natural infiltration and surface flow attenuation, and maintenance of wetland hydro-period.
    - 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.
    - Environmental Stewardship activities.

- **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.
    - Environmental Stewardship activities.

- **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 2012 Washington State Department of Ecology (WSDOE) Stormwater Manual with specific reference to the BMP's described for the other audience groups.
    - Runoff Treatment BMP's, including familiarity with Volume V of the 2012 WSDOE Stormwater Manual.
    - Flow Control BMP's, including familiarity with Volume III of the 2012 WSDOE Stormwater Manual.
    - 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 the WSDOE Water Quality Program, Underground Injection Control Program, Friends of Leach Creek, Puget Sound Water Quality Management Plan to name a few.
    - Environmental Stewardship activities.

- **Development Community**
    - Familiarity with the design and development standards used by the City of Fircrest, including the 2012 WSDOE Stormwater Manual, WSDOE Guidance for UIC Wells, City of Fircrest Critical Areas, Stormwater and Grading Ordinances as a partial list.
    - Low Impact Development standards and green design standards, green home remodel programs, construction material recycling programs among others.

At the time that this document was prepared, the City's education program consisted mainly of educating City Staff and officials, coordinating with City of Tacoma staff as

related to shared stormwater facilities (City of Tacoma Holding Basin), public interaction through the branded multi-jurisdictional awareness program, “Friends of Leach Creek”, and manned information booths at two annual locally sponsored public events, “National Night Out” and “Strawberry Feed.”

2015/16 Activities - During the 2015 calendar year, the City will design handouts and reorganize presentation materials for public display based upon feedback from the community canvassing program outlined above.

3.5 INDEPENDENT CITY OF FIRCREST EFFORT

In addition to the tailored education/outreach program described above, the City will be undertaking the following:

- Utility Bill Insert Flyers and Quarterly Town Topics on the City Web Site
    - Provide stormwater utility and spill control contact information
    - Include informational articles relating to water quality improvement
    - Ideas for personal participation and action
    - Summaries of activities in other communities
    - Bulletin board of public activity programs
    - Landscaping recommendations
    - Irrigation and water use recommendations
    - Waste disposal information relating pickup times and drop off locations
    - Track material distribution and costs
- Stormwater Website
    - Add a section to the City’s web site, relating specifically to stormwater, so as to create a city specific information clearing house
    - Gather an automated email address list for use in the distribution of stormwater related information, area warnings, road closure information, etc.
    - Develop specific list servers for non-residential target groups, such as:
        - Businesses that use automotive chemicals, hazardous cleaning supplies, carwash soaps, and other hazardous materials
        - Landscapers, property managers and golf course staff that are responsible for the application of herbicides, pesticides, fungicides, fertilizers, lawn/landscape supplements, etc.
        - Engineers, Architects and Developers using regional stormwater related technical standards, erosion control standards, low impact development standards, etc.
- Encourage Proper Disposal of Household Hazardous Wastes
    - Research local and regional opportunities for the public to properly dispose of household hazardous wastes
    - Develop an inventory of proper disposal events, locations and times, and post as billboard
    - Prepare a stormwater brochure dealing with hazardous material handling, storage and disposal

    - Use City utility operations, such as street sweeping, catch basin vactoring and trash collection as educational advertisement opportunities
- Addressing Illegal Dumping and Littering
    - Increase the number public area trash bins and design locations based of most effective usage
    - Mark all catch basins with waste dumping warnings
    - Post signs identifying stormwater treatment facilities, retention/detention ponds, etc
    - Revise litter ordinance and enhance enforcement
    - Distribute illegal dumping, littering and illicit discharge education materials
- Gardening and Lawn Care Activities
    - Review local gardening and lawn care practices
    - Develop strategy for optimization of existing practices with particular emphasis on the local golf course.
    - Distribute gardening and lawn care educational materials
- Education On New Development and Low Impact Development (LID)
    - Review and revise land-use codes to encourage utilization of Low Impact Development techniques
    - Identify locally beneficial Low Impact techniques and maximize benefits for utilization of such techniques
    - Develop and distribute Low Impact Development educational materials
    - Publish City Development Standards on a City Website
    - Track the number of new site plans that include Low Impact aspects

3.5 GUIDANCE DOCUMENTS AND WEBCASTS

Specific guidance relating to Public Education and Outreach is available from Washington State Department of Ecology and the United States Environmental Protection Agency:

- Focus on Stormwater Public Education and Outreach - http://www.ecy.wa.gov/biblio/0710092.html
- Non-Point Source Outreach Tool Box - http://www.epa.gov/owow/nps/toolbox/
- A Guide For Conducting Watershed Outreach Campaigns - http://www.epa.gov/watertrain/gettinginstep/index.htm
- Classroom Curriculum Guides - http://www.ecy.wa.gov/services/ee/curricul.html
- Environment Education Guide: Protecting Washington's waters from stormwater pollution - http://www.ecy.wa.gov/biblio/0710092.html
- Working for Washington's Future: Healthy Watersheds, Healthy People - http://www.ecy.wa.gov/biblio/0801018.html
- Social Marketing: A Tool for More Effective Stormwater Education and Outreach Programs - http://www.ecy.wa.gov/programs/wq/stormwater/municipal/public_outreach_resources.html

- Using Outreach and Public Involvement to Meet Your Stormwater Phase II Goals **Webcast -** http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=292&schedule_id=933

4 – PUBLIC INVOLVEMENT AND PARTICIPATION

4.1 PERMIT REQUIREMENTS

Permit Section S5.C.2 requires that the Public Involvement and Participation effort be initiated by February 2008.

4.2 PROGRAM ACTIVITY

Public involvement is one of the fundamental elements of a Stormwater Management Plan (SWMP) as it takes the education elements and brings them into practice and use in the lives of the residents and businesses within the community. This thread of activity secures the support of the public and business sectors in that it coalesces the many viewpoints involved into a system of compromise and positive actions.

The City of Fircrest has been involved in a Public Involvement and Participation Program since 1988 when the City's Stormwater Utility was established and fee collection was initiated. The existing program is rather informal and does not satisfy the very specific and targeted aspect of the Permit required program. However, public response to City's program has been modest with demonstrated participation in the form of funding the utility.

The public in Fircrest was formally advised of the requirements of the NPDES program in 2009 during the adoption process of the original Stormwater Management Program. The City Mayor and Council Members have been appraised of the NPDES program and are aware of the general scope of the effort.

The work effort in 2015 will be to fully engage the Mayor and Council and continue to build momentum for the program with the general public and the business community.

Each year the SWMP will be updated, and the public will have an opportunity for a meaningful input and involvement in the programs further development and implementation.

4.3 PUBLIC INVOLVEMENT WORK PLAN

It is proposed that the City organize at least one public meetings or workshop during 2015 as an ongoing effort of the Public Involvement Effort. It is proposed that the City undertake the following:

- Public Involvement Opportunities on the City Website
    - Assign staff responsible for Public Involvement coordination
    - Establish budget for the first year Public Involvement Program
    - Coordinate with the City of Tacoma and the Friends of Leach Creek participants in this effort and incorporate input from the Education and Outreach Program

    - Develop a public involvement bulletin board on the new stormwater web page
    - Update website data biweekly
    - List activities and opportunities on the web page, including storm drain stenciling, Adopt-A-Stream, volunteer monitoring, etc.
    - List media events related to stormwater management, such as WSDOE Seminars and Workshops, nearby community workshops, Federal EPA Webcasts, adjacent community Streamteam and Adopt-A-Stream programs, etc.
    - Track website hits, response comments and report in annual report
- Stormwater Management Program Meetings
    - Organize stormwater management meetings and described above with public notices in local newspapers, radio and television.
    - Develop email list of residents (utilize list developed under the Education and Out Reach Program) and send email flyers announcing meetings
    - Include other local stakeholders, i.e. City of Tacoma, Pierce County, University Place, Lakewood, Peach Acres and Pierce County.
    - Track meeting attendance and report in annual report
- Support, Coordinate and Advertise Streamteam and Adopt-A-Stream programs
    - Coordinate with Friends of Leach Creek in an effort to formalize a Streamteam and Adopt-A-Stream program. Provide support information and facilitate meetings, assist with printed materials and meeting locations
    - Track group progress and report in annual report
- Cleanups and Storm Drain Stenciling
    - Identify target areas and streets to be included in the cleanup and stenciling program
    - Develop stencils for Citywide use
    - Organize stream, drainway and street cleanup days
    - List and invite target groups to participate
    - Schedule neighborhood and Citywide clean up days and drain stenciling days
    - Provide materials for cleanup program and drain stenciling, plus goodie bags of Stormwater related materials
    - Track attendance and report in annual report
- Volunteer Monitoring
    - All outfalls in Fircrest release into the City of Tacoma Holding Basin and are monitored by the City of Tacoma. Therefore, volunteer monitoring will not be required.
- Community Hotline
    - Setup a City specific stormwater hotline telephone number and website reporting point with designated contact person to receive reports on stormwater issues, activities and adverse impact conditions throughout the community
    - Distribute the contact information via utility bill flyers and advertise on City owned utility vehicles

- Record the number and types of comments, and inspections performed in response to public calls

5 ILLICIT DISCHARGE DETECTION AND ELIMINATION

5.1 PERMIT REQUIREMENTS

Permit Section S5.C.3 involves two main activities, facilities mapping and an illicit discharge ordinance. More specifically, this aspect of the permit includes:

- Continue the ongoing program to detect and remove illicit connections, discharges and improper disposal within the municipal stormwater system, including spills prior to August 2011
- Update the municipal storm sewer map that identifies outfalls, receiving waters and structural BMP's owned and operated or maintained by the City by February 2014 (this work has been completed).
- Update the more specific mapping of tributary conveyances (type, material and size) and tributary areas with land-use designations for all outfalls having the equivalent in pipe size or cross-sectional area of a 24 inch diameter pipeline or greater by February 2014 (this work has been completed).
- Update the base map of all connections to the municipal separate storm sewer system (this work has been completed).
- Update the base map of geographic areas within the City that do not discharge stormwater to surface waters (this work has been completed).
- Implement the ordinance to prohibit non-stormwater discharges and dumping into the stormwater system (this work has been completed).
- Implement an ongoing program to detect and address non-stormwater discharges, spills, illicit connections and illegal dumping into the municipal stormwater system
- Incorporating information program into Public Education and Outreach program that will inform the City employees, businesses and the general public of hazards associated with illegal discharges and improper disposal of waste, and publicize a hotline telephone number and website location for public reporting of spills, illegal dumping, and illicit discharges (this work has been completed).
- Adopting and implementing procedures for program evaluation and assessment
- Providing training for municipal field staff relating to the identification and reporting of illicit discharges
- Summarizing activities for inclusion in Annual Report

5.2 PROGRAM ACTIVITY

5.2.1 Illicit Discharge Program – The City is in the process of updating an illicit discharge program at this time. The program is scheduled to include each of the items/areas listed above. City activities to date relating to illicit discharges include internal education and facilities mapping.

5.2.2 Mapping

City Storm Baseline Map – The City of Fircrest is at about 98% of full build out and is an older community with the majority of its development having been completed prior to the publication of the 1992 WSDOE Stormwater Manual. As such, the City's system is relatively simple, consisting mainly of conveyances and outfalls with no structural BMP's.

The City has recently updated the full mapping of the City's Sanitary Sewer System. Storm water facilities mapping has been included as a continuation of the Sanitary Mapping. All major outfalls have been located and identified with respect to size and receiving waters. Figure 5-1 shows the three major outfalls serving the City and the Basins tributary to these outfalls (Figure 5-1 – 11"x17" copy at rear of report.)
Specifically:

- Basin 1 is tributary to a 24 inch diameter outfall that releases into the City of Tacoma Holding Basin
- Basin 2 is tributary to a 60 inch diameter outfall that conveys a combination of Fircrest runoff and Tacoma runoff to the City of Tacoma Holding Basin
- Basin 3 is tributary to a 30 inch diameter outfall that conveys a combination of Fircrest runoff and Tacoma runoff to the City of Tacoma Holding Basin

Stormwater receiving waters include Leach Creek and Chambers Creek. Upon completion of the mapping program, a delineation will be made between the areas directly tributary to each system of receiving water. The City of Tacoma Holding Basin is tributary by gravity to Leach Creek and also has a pump by-pass to the Thea Foss Waterway via the Nalley Valley Storm Drain System for the purpose of shunting excess flows from the Leach Creek Basin during major rainfall events.

5.2.2.1 Tributary Conveyance Map – As described above and based on recently collected data, there are three major outfalls within the City of Fircrest. Two of the three outfalls are operated and maintained by the City of Tacoma, the 60 inch and 30 inch diameter outfalls. The remaining 24 inch diameter outfall is owned and operated by the City of Fircrest.

It is planned that the City of Tacoma outfalls be consolidated into a single inflow structure into the City of Tacoma Holding Basin.

The 24 inch conveyance will remain the responsibility of the City of Fircrest.

The tributary areas for each of these outfalls have been delineated based on available topographic mapping and facilities mapping (see Figure 5-1 – 11"x17" copy at rear of report):

- **Subbasin 1 –** serves approximately 233 acres and outfalls via a 36 inch pipeline
- **Subbasin 2 –** serves approximately 132 acres and outfalls via a 60 inch pipeline
- **Subbasin 3 –** serves approximately 119 acres and outfalls via a 30 inch pipeline

More precise mapping is being developed as part of the ongoing system survey and mapping program. It is noted that the basin limits may be modified as more information becomes available.

Survey work is presently underway to map the characteristics (pipe size, inverts, lengths, and material type) of the pipelines that are tributary to these outfalls and other outfalls within the City.

Upon completion of this mapping effort, the delineated basins will be overlayed with the associated land use designations.

5.2.2.2 System Connection Mapping – The present survey and mapping program is tasked with locating all non-Fircrest connections to the existing municipal separate storm sewer system. This effort has be completed. It is noted that there are both private connections and City of Tacoma connections to the City of Fircrest system. The City of Tacoma connections are being evaluated and characterized as part of the ongoing mapping program. Figure 5-2 shows a preliminary summary of the existing non-municipal connections.

To date 5 system connections have been identified. Performance data specific to these systems is being assembled and filed with the City's stormwater facilities operation and maintenance information and will be incorporated into a City-wide stormwater computer model using XPSWMM.

Non-Surface Flow Areas Mapping – Upon completion of the update of system mapping for the entire City in 2013, areas that are not tributary to the identified receiving waters will be defined and shown on a separate map along with their tributary areas. At present two areas have been identified as being isolated with runoff disposal via infiltration (see Figure 5-3).

5.2.2.3 Final Mapping – It is noted that 12 subbasins have been identified within the City of Fircrest (see Figure 5-1). These subbasins, plus the above described mapping elements will be assembled into individual map layers using AUTOCADD and will be organized and assembled into the GIS mapping format defined in the WSDOE Guidelines for GIS mapping by the City's GIS mapping consultant.

Figure 5-2
Rev10Aug09

5.2.3 Illicit Discharge Ordinance – At present the City does not have a specific illicit discharge ordinance, but relies on the generalized language and criteria contained in the 2012 WSDOE Stormwater Manual. A draft ordinance will be prepared for circulation among City Staff, to the City Attorney and to the mayor and council. The final ordinance should be available by the end of 2015.

The ordinance will prohibit the following categories of non-stormwater discharges unless the stated conditions are met:

Figure 5-3

- Discharge from potable water sources, including water line flushing, hyperchlorinated water line flushing, fire hydrant system flushing, and pipeline hydrostatic test water. Planned discharges shall be de-chlorinated to a concentration of 0.1 ppm or less, pH adjusted if necessary, and volumetrically and velocity controlled to prevent re-suspension of sediments in the Municipal Separate Storm Sewer System (MS4).
- Discharges from lawn watering and other irrigation runoff. These shall be minimized through public education activities (see NPDES Permit - Section S5.C.1).
- Dechlorinated swimming pool and spa discharges that meet the requirements of NPDES Permit – Section S4.A. The discharges shall be dechlorinated to a concentration of 0.1 ppm of less, pH-adjusted and reoxygenized if necessary, and volumetrically and velocity controlled to prevent re-suspension of

sediments in the MS4. Swimming pool cleaning wastewater and filter backwash shall not be discharged to the MS4.

- Street and sidewalk wash water, water used to control dust, and routine external building wash down that does not use detergents. The City will reduce these discharges through, at a minimum, public education activities (see NPDES Permit – Section S5.C.1) and/or water conservation efforts. To avoid washing pollutants into the MS4, the City must minimize the amount of street wash and dust control water used. At active construction sites, street sweeping must be performed prior to washing the street.
- Other non-stormwater discharges – The discharges shall be in compliance with the requirements of a stormwater pollution prevention plan addressing control of construction sit de-watering discharges, which has been reviewed and approved by the City of Fircrest.

The City of Fircrest will further address any category of discharges other that those listed above if the discharges are identified as significant sources of pollutants to waters of the State.

The ordinance will include escalating enforcement procedures and actions. The City will develop the following:

- An enforcement strategy and implement the enforcement provisions of the ordinance.
- An ongoing program to detect and address non-stormwater discharges, spills, illicit connections and illegal dumping into the City's MS4.

5.2.4 Illicit Discharge Detection and Action Program – Fircrest does not have a dedicated program for illicit discharge detection and policing other than normal staff observation during city-wide sanitary and storm system operation and maintenance efforts. During 2015 one staff person will be assigned part-time to detection of illicit discharges and liaison with offending parties. This individual will be scheduled for training in discharge detection. Upon completion of the Illicit Discharge Ordinance, staff will be trained in the application of the ordinance, so as to complement the detection effort.

5.2.4.1 Procedure for Locating Priority Areas - The detection and action program will focus on the following priority areas:

- Land uses and associated business/industrial activities
- Areas of past complaints
- Potential spill areas where large quantities of potentially polluting material are stored

5.2.4.2 Field Assessment of Priority Outfalls – The City operates and maintains one priority outfall as described above, which releases into the City of Tacoma Holding Basin, and which outfalls into Leach Creek with a pumped bypass to Chambers Creek. This outfall will be Field Assessed by the City of Tacoma by

the end of 2015. The water body at the outfall (City of Tacoma Holding Basin) is owned and operated by the City of Tacoma. As such, a Field Assessment may exist as part of the Tacoma NPDES effort. Maximum use will be made of the Tacoma data.

Screening for illicit connections will be performed by City Staff during 2015 and 2016. Screening efforts will be conducted using: Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments, Center for Watershed Protection, October 2004 (see Section 5.3 below).

5.2.4.3 Procedure for Characterizing Illicit Discharges - During 2015 the City will develop procedures for characterizing the nature of, and potential public or environmental threat posed by any illicit discharge found by or reported to City Staff. This procedure will include detailed instructions for establishing the priority for the timing of discharge containment and steps to be taken toward containment.

In complying with the spill characterization procedures; complaints, reports and/or monitoring information obtained or received by the City will be investigated:

- Immediately for spills, discharges or violations determined to be emergencies or otherwise judged to be urgent or severe
- Within 7 days (on the average) for potential illicit discharges, spills or illegal dumping

5.2.4.4 Procedures for Tracking Discharge Sources – During 2015 the City will develop procedures for tracking illicit discharges, including:

- Visual inspections
- Opening manholes
- Using mobile cameras
- Gathering and analyzing water samples
- Other detailed inspection procedures

5.2.4.5 Procedures for Removing Discharge Sources – During 2015 the City will develop procedures for removing discharges sources, which will be enacted within 21 days of the reporting or discovery of a suspected illicit discharge, including:

- Notification of appropriate authorities
- Notification of property owners
- Obtaining technical assistance for eliminating the discharge
- Follow up inspections
- Escalating enforcement and legal actions (if not eliminated)

5.2.5 City and Public Education and Outreach – Upon the initiation of the illicit discharge detection effort, notice will be placed on the City's stormwater web page and other media used by the Outreach effort to notify the general public and business community of the action being taken including the coming ordinance.

During 2015 general information relating to the negative aspects of illicit discharges will be included in the initial education and outreach program to bring forward awareness of target audiences of these potentially hazardous conditions.

During 2015, the City will establish an Illicit Discharge reporting hotline or local telephone number. The hotline will be publicly listed and publicized. The new hotline will provide residents and other individuals involved in the community with a central contact point for reporting spills, other potentially damaging discharges, and conditions that would have an adverse impact on the local stormwater environment.

It is suggested that Hotline information be displayed on City Utility vehicles that frequent neighborhoods throughout the City.

The City will be developing a hotline recording process. The recording effort will include a record of calls received and follow-up actions. The recorded items will be summarized in the annual report.

5.2.6 Program Evaluation & Assessment – During 2015/16, procedures will be developed and implemented for the evaluation and assessment of the program upon completion of the staff training, adoption of the ordinance and initiation of detection efforts. Data developed from the application of the foregoing procedures will be used to assess the effectiveness of this program. A reporting process with record keeping will be created to summarize reports, responses, investigations, findings, actions and iterations and time required to achieve closure.

5.2.7 Training of Municipal Field Staff - During 2015, the City (with the Tacoma/Pierce County Health Department) will continue the training of assigned field staff responsible for identification, investigation, termination, cleanup and reporting of illicit discharges, including spills, improper disposal and illicit connections for these activities.

Initial training will consist of studying available WSDOE training documentation, specifically IDDE-101, Developing Your IDDE Program and IDDE-201 , Conducting Illicit Discharge Detection and Elimination Investigations, along with EPA webcast programs.

Follow-up training will be provided as needed to maintain up to date procedures and techniques, and familiarity with the most recent requirements.

Starting in 2015, the City will provide an ongoing training program for all municipal field staff that as part of their normal job responsibilities might come into contact with or observe illicit discharges or connections to the storm sewer system. Training will include identification of illicit discharges/connections and

the proper procedures for reporting and responding to them. Follow-up training will be provided as needed to address changes in procedures, techniques and requirements.

Permittees will document and maintain records of all staff trained and the training provided.

5.2.8 Annual Report – A portion of the annual report will be dedicated to the Illicit Discharge Program. Specific items that will be presented in this portion of the annual report will include:

- Summary of the Items listed above that have been accomplished
- An overview of the mapping effort and the sub-items that have been completed
- Ordinance development and revision
- Summary of the procedures developed and the application of the procedures
- Summary of the results of applying the procedures and ordinance
  - Illicit discharges detected or reported
  - Action taken
  - Responses
  - Further action required, including fines and legal action
- Summary of public education and outreach
- Review of Hot Line use
- Summary of the staff training effort

5.3 GUIDANCE DOCUMENTS AND WEBCASTS

There are numerous guidance sources that supply support information relating to Illicit Discharge Detection and Elimination within Pierce County, Washington State and the US Environmental Protection Agency. A few readily available sources include:

- Guidance for Cities and Counties - Writing Regulations to Prohibit Illicit Discharges, Dumping and Illicit Connections – WSDOE Publication No. 08-10-061, August 2008
- Developing Your IDDE Program (IDDE 101), http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=301&schedule_id=938
- Conducting Illicit Discharge Detection and Elimination Investigations (IDDE 201), http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=335&schedule_id=990
- Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessment, Center for Watershed Protection, R. Pitt, University of Alabama, 2004 – available in pdf format at http://www.cwp.org/Resource_Library/Controlling_Runoff_and_Discharges/idde.htm

6 CONTROLLING RUNOFF FROM NEW DEVELOPMENT, REDEVELOPMENT AND CONSTRUCTION SITES

6.1 PERMIT REQUIREMENTS

Permit Section S5.C.4 requires that the City:

6.1.1 Stormwater Ordinance

The City has adopted an ordinance that addresses runoff from new development, redevelopment and construction site projects. This ordinance:

- Establish Minimum Development Requirements in accordance with the 2012 WSDOE Stormwater Manual or equivalent/approved WSDOE guidelines
- Organize the site plan development process to provide specific guidance, including selected BMP's and design criteria that will provide protection of water quality and reduce the discharge of pollutants to the greatest degree practicable
- Establish the legal authority, through the approval process for new development, to inspect private stormwater facilities within the City
- Incorporate provisions to allow non-structural preventive actions and source reduction approaches, such as Low Impact Development Techniques (LID) and other measures that will minimize the creation of impervious surfaces and disturbance of native soils and vegetation

6.1.2 Permitting Process

The City has developed a permitting process with plan review, inspection and enforcement capability to insure compliance with ordinance requirements for both private and public projects, using qualified personnel. This includes:

- Review all stormwater site plans
- Inspect all submitted development sites where a high potential for sediment transport exists prior to clearing and construction
- Inspect all know 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
- Inspect 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 BMP's

- Verify that a maintenance plan is completed and responsibility for maintenance has been assigned with enforcement as necessary, based on the inspections
- Insure 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 95% of scheduled inspections
- Develop and implement an enforcement strategy to respond to non-compliance issues

6.1.3 Erosivity Waiver

Consider the value of incorporating an "Erosivity Waiver" into the procedures in accordance with Appendix I of the permit requirements:

6.1.4 Facilities Long-Term Operation & Maintenance

The City has developed provisions to verify adequate long-term operation and maintenance of post-construction stormwater facilities and BMP's that are permitted and constructed pursuant to the ordinance and plan review process described above. These provisions include:

- Adopt an ordinance or other enforceable mechanism that clearly identifies the party responsible for maintenance and required inspections of facilities, and establishes enforcement procedures
- Establish maintenance standards that are as protective or more protective of facilty function than those specified in Chapter 4 of Volume V of the 2012 WSDOE Stormwater Management Manual of Western Washington.
- Develop maintenance standards for facilities that do not have WSDOE Manual maintenance standards
- Use maintenance standards to determine if maintenance is required
- Perform maintenance within:
    - 1 year for wet pool facilities and retention/detention ponds
    - 6 months for typical maintenance
    - 9 months for maintenance requiring re-vegetation
    - 2 years for maintenance that requires capital construction of less than $25,000
    - Perform annual inspections of stormwater treatment and flow control facilities for all facilities that have been reviewed, inspected, approved and permitted in accordance with the above review process unless there are maintenance records to justify a different frequency
    - Inspect at 6 month intervals, all new flow control and water quality treatment facilities, including catch basins, for new residential developments that are a part of a larger common plan of development or sale during the period of heaviest housing construction (1 to 2 years following subdivision approval) to identify and establish maintenance needs and to enforce compliance with maintenance standards as needed

6.1.5 Record Keeping

- The City has developed procedures for keeping records of inspections and enforcement actions by City staff, including inspection reports, warning letters, notices of violations and other enforcement records.
- Maintain facilities maintenance records for all projects and site development activities that involve disturbing more than one acre of surface area and all projects of any size that are part of a common plan of development or sale that is greater than one acre that have been approved after the effective date of this permit
- Make available copies of "Notice of Intent of Construction Activity" and "Notice of Intent for Industrial Activity" to representatives of proposed new development and redevelopment

6.1.6 Enforcement of WSDOE Issued Permits Within City Jurisdiction

Enforce local ordinances controlling runoff from sites that are also covered by stormwater permits issued by WSDOE within the City's jurisdiction

6.1.7 Training

Verify that all staff responsible for implementing the program to control stormwater runoff from new development, redevelopment and construction sites, including permitting, plan review, construction inspections and enforcement, have updated their training to conduct these activities, providing follow-up training as needed to address changes in procedures, techniques and/or staffing with full documentation and records of the training provided and the staff trained by February 2015.

6.2 PROGRAM ACTIVITY

6.2.1 Stormwater Ordinance

The City has an existing program and ordinance for the reduction of pollutants in stormwater runoff from new development, redevelopment and construction site activities, which applies to both public and private projects, including roads and is enforceable under Title 20 of the City of Fircrest Municipal Code, Chapter 20.24 - Stormwater Management.

- The present City ordinances, relating to site development and construction, are brief and there are no separate guidelines for site development. The existing stormwater ordinance (City Code Chapter 20.24) essentially adopts the 2012 WSDOE Stormwater Management Manual for Western Washington as the City's standard for stormwater design and development. The City's site development submittal requirements (City Code Chapter 22.72.009) require a site plan with topographic information and a grading plan with and impervious

surface calculation. Code Chapter 22.58 reiterates the requirement to meet the 2012 WSDOE Stormwater Manual and also states that contaminants releases are a first priority and must be avoided, controlled and cleaned up if they occur. During 2015 these ordinances will be revised to provide more specific language relating to minimum stormwater development requirements for site development, redevelopment and construction site projects. Additionally, in 2014 and 2015 stormwater improvements design guidelines will be developed.

- The City's present ordinance, by incorporation of the 2012 WSDOE Stormwater Manual, provides guidance for selecting BMP's and design criteria for the protection of water quality and reduction of pollutant discharge. This aspect of the ordinance will be strengthened in the 2015 revision. The associated guidelines will list specific source control BMP's.
- The present City Ordinance does include references allowing or incentives for the use of non-structural preventive actions and source reduction approaches via inclusion of the 2012 WSDOE Manual and reductions in the Utility Rate charged. The ordinance does not include or provide incentives for use of Low Impact Development Techniques (LID) and other measures to minimize the creation of impervious surfaces and disturbance of native soils and vegetation. The City ordinance will be revised during 2015 and 2016. Ordinance revisions will include revised language relating to non-structural preventive actions and will include LID Techniques.

6.2.2 Permitting Process

Guidelines are applied to all new development, redevelopment and construction activities for sites where a land surface area of 1 acre or greater is disturbed. These guidelines provide for:

- Review of all site plans
- Inspection of submitted sites prior to commencement of clearing and construction to identify sites with a high potential for sediment transport
- Inspection of permitted sites during construction to verify proper installation and maintenance of required erosion and sediment controls with enforcement as necessary
- Inspection of permitted site 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 BMP's
- Verification that a maintenance/operation plan and agreement has been completed and responsibility for maintenance/operation of stormwater facilities has been assigned
- Insurance of 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 95% or scheduled inspections
- Development and implementation of an enforcement strategy to respond to non-compliance issues

6.2.3 Erosivity Waiver

Erosivity Waivers will not apply within the City of Fircrest. Conditions for the granting of Erosivity Waivers require that the regions rainfall Erosivity Factor (R) be less than 5. The Erosivity Factor for Fircrest as calculated using the Texas A&M rainfall erosivity calculator is in excess of 20, hence the Fircrest area does not qualify for the use of this Waiver.

6.2.4 Facilities Long-Term Operation & Maintenance

At present the City does not have an ordinance that identifies the Director of Public Works/City Engineer as the party responsible for maintenance and required inspections of facilities, and establishes enforcement procedures. However, the City has a very good maintenance and inspection program for facilities within the city that uses the maintenance standards set forth in Chapter 4, Volume V of the 2012 WSDOE Manual.

At this time there are no facilities within the City that do not have maintenance standards that are not included in the 2012 WSDOE Manual. Hence, there are no maintenance standards for such facilities in the City's process files.

The available 2012 WSDOE Maintenance Standards will be used to determine if maintenance is required.

Initial facilities maintenance will be performed within the following time frames:

- 1 year for wet pool facilities and retention/detention ponds
- 6 months for typical maintenance
- 9 months for maintenance requiring re-vegetation
- 2 years for maintenance that requires capital construction of less than $25,000
- Annual inspections of stormwater treatment and flow control facilities that have been reviewed, inspected, approved and permitted in accordance with the above review process unless there are maintenance records that justify a different inspection frequency
- Inspection a 6 month intervals of all new flow control and water quality treatment facilities, including catch basins, for new residential developments that are a part of a larger common plan of development or sale during the period of heaviest housing construction (1 to 2 years following subdivision approval) to identify and establish maintenance needs and to enforce compliance with maintenance standards

Initial inspection information will be used to assess recommended inspection intervals and adjust them as appropriate.

6.2.5 Record Keeping

At present, the City of Fircrest maintains records of all facilities inspections and maintenance, and actions taken are being kept by the Public Works Department, which

include inspection reports, warning letters and enforcement actions for disturbed sites larger than 1 acre or lands sold that are larger than 1 acre.

The remainder of the City is about 98% built out and there are no common plan developments in process, nor is it probable that such developments will occur in the limited vacant land area available at this time.

Records are being maintained under parcel numbers and site development names.

To date, a "Notice of Intent" has been filed for the Backyard Sewer Main Project.. The new permit process guidelines include the requirement to file a "Notice of Intent of Construction Activity" or "Notice of intent for Industrial Activity." Copies of the Notices will be included in the files maintained by the City for each project.

6.2.6 Training

At present the City is using the 2012 WSDOE Stormwater Manual in its site development review process. City staff responsible for site review and inspection are familiar with the 2012 WSDOE Stormwater Manual and its application to residential, commercial and industrial development site. This manual has been in use within the City since 2012.

At present follow-up training is being organized for City staff as it becomes available from WSDOE to maintain current knowledge and address changes in procedures and techniques.

Records of training provided, staff trained and copies of documentation related to the training are being maintained as part of the Permitting records process.

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.

Courses are available from the American General Contractors (AGC) Foundation, the University of Washington and the Building Industry Association of Washington:

AGC of Washington Education Foundation
Stormwater: Construction Best Management Practices (BMPs) Field Training

AGC of WA Education Foundation
1200 Westlake Ave, N. Suite 300
Seattle, WA 98109
Phone: 1-800-562-2868 (206) 284-4500 Fax: (206) 284-4595

Course Information:
http://constructionfoundation.org/ClassCalendar/ENVIRONMENTGREENBUILDING
Erica Peterson: epeterson@agcwa.com

University of Washington - College of Engineering Construction Site Erosion and Pollution Control
Training Instructor: Christopher May, PhD.

Engineering Professional Programs
10303 Meridian Ave. N, Suite 301
Seattle, WA 98133
Phone: (206) 543-5539
Toll free: 1-866-791-1275
Fax: (206) 543-2352

Course Information: Construction Site Erosion & Pollution Control Course Calendar: http://www.engr.washington.edu/epp/cee

Please contact: Melissa Amrhein: mamrhein@EXTN.washington.edu

ACG Courses available between now and January 2009 are listed on the AGC web site, http://constructionfoundation.org/ClassCalendar/ENVIRONMENTGREENBUILDING.

Occasionally, training in the use of the Stormwater Management Manual for Western Washington are offered by WSDOE. The contact for these courses is Mr. Frauzan a-Labib at WSDOE (360-407-6439). At present, there are no manual training sessions scheduled for 2008 or 2009.

BUILDING INDUSTRY ASSOCIATION OF WASHINGTON
Certified Erosion & Sediment Control Lead Training

Building Industry Association of Washington
P.O. Box 1909
111 West 21st Avenue
Olympia, WA 98507
Phone: (360) 352-7800
Toll Free: 1-800-228-4229
Fax: (360) 352-7801

Course Information: http://www.biaw.com/Documents/CESCL.pdf

For questions or scheduling, contact:
Jan Rohila, janr@biaw.com
Amanda Fields, amandaf@biaw.com

6.3 GUIDANCE DOCUMENTS AND WEB CASTS

The Stormwater Management Manual for Western Washington, 2012 Edition is available online at:

http://www.ecy.wa.gov/programs/wq/stormwater/manual.html

Manual copies on CD and in printed form may be ordered from the WSDOE web site.

The above web site also contains a link for Technical Assistance.

There are numerous guidance sources that supply support information relating to Controlling Runoff from New Development and Redevelopment, and Construction Sites

Construction SWPPPs from A to Z: Everything You Ever Wanted to Know and More! at http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=308&schedule_id=962

Stormwater Phase II: Developing an Effective Municipal Stormwater Management Program For Construction Sites (Construction 101) at http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=284&schedule_id=927

7 POLLUTION PREVENTION, AND OPERATION AND MAINTENANCE FOR MUNICIPAL OPERATIONS

7.1 PERMIT REQUIREMENTS

Permit Section S5.C.5 requires that the City develop a Pollution Prevention, and Operation and Maintenance Program, and has the ultimate goal of preventing or reducing pollutant runoff from municipal operations:

7.1.1 Maintenance Standards

- Establish maintenance standards that are as protective or more protective of facilities function than those specified in Chapter 4 of Volume V of the 2012 WSDOE Stormwater Manual for Western Washington, and/or develop maintenance standards for facilities that are not covered by the 2012 Manual.
    - Using the above maintenance standards, perform inspections of municipally owned water quality treatment, collection, conveyance and flow control facilities to determine if maintenance is required and to determine the frequency of maintenance required
    - When inspections identify exceedence of maintenance standards, maintenance shall be performed as follows:
        - Within 1 year for wet pool facilities and retention/detention ponds
        - Within 6 months for typical maintenance
        - Within 9 months of maintenance requiring re-vegetation
        - Within 2 years for maintenance that requires capital construction of less than $25,000
    - For each exceedence of the required timeframe, the Permittee shall document the circumstances and how/why they were beyond their control.

7.1.2 Inspections

- Annually inspect all municipally owned or operated permanent stormwater treatment and flow control facilities, other than catch basins.
- Spot check all potentially damaged permanent treatment and flow control facilities (other than catch basins) after major storm events (greater than 10 YR/24 HR recurrence interval rainfall). If spot checks indicate widespread damage/maintenance needs, inspect all stormwater treatment and flow control facilities that may be affected. Conduct repairs or take appropriate maintenance action in accordance with maintenance standards established above, based on the results of the inspection.
- Inspect all catch basins and inlets owned or operated by the Permittee at least once before the end of the Permit term. Clean catch basins, if the inspection indicates cleaning is needed to comply with maintenance standards established in the WSDOE 2012 Stormwater Management Manual for Western Washington. Decant water shall be disposed of in accordance with Permit Appendix 6, Street Waste Disposal of the Permit.

- Comply with above inspection requirements via an established inspection program designed to inspect all sites and achieve minimum inspection of 95% of all sites.

7.1.3 Reduce Stormwater Impacts

- Continue to implement practices to reduce stormwater impacts associated with runoff from streets, parking lots, roads or highways owned or maintained by the Permittee and road maintenance activities conducted by the Permittee including:
    - Pipe Cleaning
    - Cleaning culverts that convey stormwater in ditch systems
    - 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
- Continue to implement policies and procedures to reduce pollutants in discharges from all lands owned or maintained by the Permittee and subject to this Permit, including parks, open spaces, road rights of way, maintenance yards, stormwater treatment and flow control facilities and other associated facilities, addressing:
    - Application of fertilizer, pesticides, herbicides, fungicides, including the development of nutrient management and integrated pest management plans
    - Sediment and erosion control
    - Landscape maintenance and vegetation disposal
    - Trash management
    - Building exterior cleaning and maintenance

7.1.4 Training

Continue to implement an on-going training program for employees of the Permittee with construction, operation and maintenance job functions that may impact stormwater quality. The training program shall address the importance of protecting water quality, the requirements of this Permit. Operation and maintenance standards, inspection procedures, selecting appropriate BMP's, ways to perform job activities to prevent or minimize impacts to water quality, and procedures for reporting water quality concerns, including illicit discharges. Follow-up training shall be provided as needed to address changes in procedures, techniques or requirements. Permittees shall document and maintain records of training provided.

7.1.5 Stormwater Pollution Prevention Plan (SWPPP)

Continue to 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 Industrial Stormwater General Permit

- Implement non-structural BMP's immediately after the pollution prevention plan is developed
- Include a schedule for implementation of structural BMP's
- Include periodic visual observation of discharges from facilities to assess the effectiveness of the BMP' applied

7.1.6 Records

Maintain records of inspections and maintenance or repair activities conducted by the Permittee in accordance with Permit Section S9 - Reporting Requirements.

7.2 PROGRAM ACTIVITY

The City presently has a limited operation and maintenance effort as related to Pollution Prevention. During the 2015/16 program year the City will be implementing programs to achieve compliance with the above described permit requirements.

7.2.1 Maintenance Standards

As mentioned previously, the City site review staff is familiar with the application of the WSDOE 2012 Stormwater Manual, including Chapter 4 of Volume V including its application to City owned and maintained facilities.

Based on the contents of Chapter 4, an abbreviated booklet of facilities maintenance standards will be assembled. Specially, developed standards for City facilities that are not covered by the published standards found in the WSDOE 2012 Manual will be prepared and added to the booklet.

The abbreviated booklet will cover all municipally owned water quality treatment, collection and flow control facilities.

7.2.2 Inspections

Upon completion of the municipal facilities map required under the Illicit Discharge Elimination portion of the permit, a listing of municipal facilities with written descriptions of the type of facilities, their intended purpose and general operating requirements will be prepared for use as the base document for facilities record keeping. This document will be used to develop an inspection checklist.

Annual Inspections - All municipally owned and operated permanent stormwater facilities, except catch basins will be inspected annually.

Spot Checks – At present there are two City owned stormwater treatment or flow control facilities, however, the City will be installing more stormwater treatment devices upon

the anticipated grant funding cycle in 2015. These treatment devices will be maintained per the manufactures requirements to ensure proper functionality. City owned facilities consist mainly of catch basins, manholes, pipelines and culverts. As such, spot checks will be performed at culvert crossings along Leach Creek after each major storm event (10 YR/24 HR Event).

Inspections – 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 at the rear of this report.

7.2.3 Reduce Stormwater Impacts

Reduction of stormwater impacts within the City of Fircrest will be accomplished by February 2016 through the following:

- Clean existing pipelines in accordance with the findings of the facilities inspection program described above
- Clean existing ditches in accordance with the findings of the facilities inspection program
- Perform roadside ditch maintenance (cleaning, reshaping, regarding and replanting if necessary)
- Perform stream cleaning
- Perform street sweeping on a schedule that will service all of the City streets at least once per month
- 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
- Dust control

7.2.4 Training

As described above, pollution prevention training will be continued by sending appropriate staff to training courses related to the 2012 WSDOE Stormwater Manual during the 2015/16 permit year.

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 BMP's, low impact stormwater designs, and permanent and temporary erosion control over the next 3 years.

Public works operation and maintenance staff have been trained in the preparation of Stormwater Pollution Prevention Plans (SWPPP) for heavy equipment maintenance or storage yards and material storage facilities for all City facilities.

7.2.5 Stormwater Pollution Prevention Plan (SWPPP)

Staff will prepare a SWPPP for the City's main maintenance/storage facility located on Ramsdell Street (see Figure 2) in 2015.

Figure 2

The plan will include:

- Immediate implementation of non-structural BMP's in the form of training and education, good housekeeping through the use of Source Control BMP's, maintenance of native vegetation, and development of buffer as examples.
- Schedule the implementation of the structural BMP's listed under Paragraph 7.2.3 Reduce Stormwater Impacts above.

During 2015, prepare summaries of non-structural BMP's applied and their impacts for inclusion in each annual report.

Immediately, develop a maintenance action checklist from the structural BMP implementation schedule. Prepare records for each action implemented with before and after photographs, plans for improvements, narrative summary of action taken and final results for inclusion in annual reports.

During major rainfalls between 2015 and 2016, observe major outfalls listed above to develop bench mark condition, observations and photo summaries for each location as well as follow up summaries. Record observations for inclusion in the annual report.

7.3 GUIDANCE DOCUMENTS AND WEB CASTS

Support information for Pollution Prevention, Operation and Maintenance for Municipal Operations is available from state and federal sources, specifically:

Tools and Guidance for Developing Your Post-Construction Stormwater Management Program at
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=386&schedule_id=1021

The Art and Science of Stormwater Retrofitting at
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=360&schedule_id=1006

BMP Performance at
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=346&schedule_id=999

Post-Construction Management, Building Green Programs at
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=342&schedule_id=991

Post-Construction Overview and Introduction to Smart Growth and Low Impact Development (Post Construction 101)
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=279&schedule_id=911

Killing Two Birds with One Stone: Building a Local Program to Maintain Your Stormwater Practices and Prevent Pollution from Municipal Operations at
http://cfpub2.epa.gov/npdes/courseinfo.cfm?program_id=0&outreach_id=302&schedule_id=939

International BMP Database
http://www.bmpdatabase.org/