Supplemental Manual to the Ecology Stormwater Management Manual for Western Washington

Volume I Minimum Technical Requirements and Site Planning

City of Auburn Community Development and Public Works Department

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Chapter 1 – Introduction

1.1 Objective

Volume I of the City of Auburn (COA) Supplemental Manual to the Department of Ecology's (Ecology) Stormwater Management Manual for Western Washington (SWMMWW) provides additional guidance for applying the Minimum Requirements for stormwater management to all new development and redevelopment projects, developing Stormwater Site Plan (SSP) reports, and selecting Best Management Practices (BMPs) for stormwater management.

The Ecology SWMMWW is available online at the link below:

2014 SWMMWW

1.3 Organization of this Manual

The COA Supplemental Manual Volume I is organized to correspond to the SWMMWW Volume I. This Volume should be used in conjunction with the SWMMWW to comply with the Minimum Requirements and to develop SSP reports. Important additions and changes to the SWMMWW Volume I are summarized in Section 1.3.1 below.

1.3.1 Overview of Manual Content

Important additions and changes contained in the COA Supplemental Manual for this Volume include:

- **Chapter 2: Minimum Requirements for New Development and Redevelopment** contains clarifications, additional information regarding exceptions/exemptions to the Minimum Requirements, and additions to the Minimum Requirements:
    - **Section 2.2** provides additional definitions and clarifications for projects exempt from all or part of the Minimum Requirements.
    - **Sections 2.5.1 – 2.5.9** provide additional City requirements and guidance for meeting Minimum Requirements #1 through #9.
    - **Section 2.5.10** includes the additional Minimum Requirement #10 – Off-Site Analysis and Mitigation, applicable to projects meeting the thresholds for Minimum Requirements #1 - #5 and #1 - #9.
    - **Section 2.6** clarifies the existing City of Auburn policies that are related to the Optional Guidance contained in that Section of the SWMMWW.
    - **Section 2.8** contains information on Exceptions to the Minimum Requirements within the City of Auburn.
- **Chapter 3: Preparation of Stormwater Site Plans** provides guidance for meeting Minimum Requirement #1 – Stormwater Site Plans.
- **Appendix I-F: Basins with 40% or more total impervious area as of 1985** clarifies the pre-existing condition within the City of Auburn for the modeling of projects to meet Minimum Requirements #5 – On-Site Stormwater Management and #7 – Flow Control.

- **Appendix I-G: Glossary and Notations -** contains additional definitions of terms used throughout the SWMMWW and the COA Supplemental Manual.
- **Additional Appendices** contained in the COA Supplemental Manual include:
    - **Supplemental Appendix I-H: City of Auburn Areas with Special Development Requirements** identifies geographic areas within the City of Auburn and the requirements specific to those areas.
    - **Supplemental Appendix I-I: On – Site Stormwater Management BMP List Option Infeasibility Criteria** provides infeasibility criteria for use in evaluating BMPs to meet Minimum Requirement #5: On-Site Stormwater Management using the List Option.
    - **Supplemental Appendix I-J: Stormwater Site Plan Report Submittal Requirements Checklist** is presented to assist with meeting the City of Auburn submittal requirements for Stormwater Site Plan Reports.
    - **Supplemental Appendix I-K: Stormwater Facility Access Requirements** provides City of Auburn access and easement requirements for stormwater facility design.

Omitted Sections

Several chapters and sections in Volume I of the SWMMWW do not require any additional clarification in the COA Supplemental Manual. Refer to the SWMMWW for the following chapters and sections:

- **Chapter 1: Introduction**
    - **Section 1.2**
    - **Sections 1.3.2 and 1.3.3**
    - **Sections 1.4 and 1.5 (all subsections)**
    - **Sections 1.6.2 – 1.6.16**
    - **Section 1.7 (all subsections)**
- **Chapter 2: Minimum Requirements for New Development and Redevelopment**
    - **Section 2.1**
    - **Sections 3.1 and 3.2 (all subsections)**
- **Chapter 4: BMP and Facility Selection Process for Permanent Stormwater Control Plans (all sections and subsections)**
- **Appendices I-A – I-E**

1.6 Relationship of this Manual to Federal, State, and Local Regulatory Requirements

1.6.1 The Manual's Role as Technical Guidance

The COA Supplemental Manual to the SWMMWW is intended to provide additional technical guidance for meeting the regulatory requirements outlined in the SWMMWW. The COA Supplemental Manual assists developers, contractors, residents, and other project proponents in development of stormwater management strategies that meet City of Auburn, State, and Federal requirements.

Chapter 2 – Minimum Requirements for New Development and Redevelopment

This Chapter identifies the minimum requirements for stormwater management applicable to new development and redevelopment sites. These requirements are codified in Chapter 13.48 of the Auburn City Code (ACC). New development and redevelopment projects may also be subject to other City code requirements, depending on the nature and location of the project. These code requirements may include, but are not limited to:

- **Chapter 12.20 ACC –** Driveways
- **Title 14 ACC –** Project Review, Land Adjustments and Divisions
- **Chapter 15.74 ACC –** Land Clearing, Filling, and Grading
- **Chapter 16.08 ACC –** Shoreline Management, Administrative, and Permitting Procedures
- **Chapter 16.10 ACC –** Critical Areas
- **Title 17 ACC –** Land Adjustments and Divisions

These requirements are intended to provide for and promote the health, safety and welfare of the general public, and are not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the provisions of this chapter.

2.2 Exemptions

Additional Exemptions to the Minimum Requirements for the City of Auburn:

Oil and Gas Field Activities or Operations

Per Appendix I of the Ecology Western Washington Phase II Municipal Stormwater Permit, construction of drilling sites, waste management pits, and access roads, as well as construction of transportation and treatment infrastructure such as pipelines, natural gas treatment plants, natural gas pipeline compressor stations, and crude oil pumping stations are exempt. Operators are encouraged to implement and maintain BMPs to minimize erosion and control sediment during and after construction activities to help ensure protection of surface water quality during storm events.

Minor Clearing and Grading

The following minor clearing and grading activities are exempt from all the Minimum Requirements except for Minimum Requirement #2 – Construction Stormwater Pollution Prevention, unless located within a critical or sensitive area governed by the City's Critical Areas Ordinance, found in Chapter 16.10 of the ACC. Information on Critical Areas is available through Community Development Services in the Community Development and Public Works Department at (253) 931-3090.

- Excavation for wells and exploratory excavations under the direction of soil engineers or engineering geologists licensed in Washington State; fill made with the material from these

excavation activities remains subject to the Minimum Requirements and the City's Land Clearing, Filling and Grading requirements per Chapter 15.74 of the ACC;

- Removal of hazardous trees;
- Removal of trees or other vegetation which cause sight distance obstructions at intersections;
- Minor clearing and grading associated with cemetery graves;
- Land clearing associated with routine maintenance by public utility agencies, as long as appropriate vegetation management practices are followed as described in the Best Management Practices of the Regional Road Maintenance Endangered Species Act Program Guidelines located at http://www.wsdot.wa.gov/maintenance/roadside/esa.htm

Emergencies

Emergency projects which, if not performed immediately would substantially endanger life or property, are exempt only to the extent necessary to meet the emergency. Emergency activities may include but are not limited to: sandbagging, diking, ditching, filling, or similar work during or after periods of extreme weather; and road reconstruction to restore damage from a flood, earthquake, landslide, or volcanic activity. Permits authorizing the emergency work may be required after completion of the emergency project.

2.3 Definitions Related to Minimum Requirements

Refer to the Glossary in Appendix G, Volume I of the SWMMWW for definitions of terms used throughout this manual. Additional definitions of terms not defined in the SWMMWW and acronyms are included in Appendix G, Volume I of the COA Supplemental Manual.

2.4 Applicability of the Minimum Requirements

2.4.1 New Development

Additional Requirements for the City of Auburn

All New Development projects in the City of Auburn that meet the thresholds for Minimum Requirements #1-#5 or #1-#9 are also required to meet Minimum Requirement #10 – Off-Site Analysis and Mitigation. See Section 2.5.10, Volume I of the COA Supplemental Manual for information regarding Minimum Requirement #10.

2.4.2 Redevelopment

Additional Requirements for the City of Auburn

All Redevelopment projects in the City of Auburn that meet the thresholds for Minimum Requirements #1-#5 or #1-#9 are also required to meet Minimum Requirement #10 – Off-Site Analysis and Mitigation. See Section 2.5.10, Volume I of the COA Supplemental Manual for information regarding Minimum Requirement #10.

2.5 Minimum Requirements

Guidelines and requirements for applying the Minimum Requirements to projects within the City of Auburn are provided in each section, where applicable.

2.5.1 Minimum Requirement #1: Preparation of Stormwater Site Plans

Additional Guidelines for the City of Auburn

To assist with meeting the submittal requirements of the SSP report, a SSP report outline and checklist is provided in Appendix J, Volume I of the COA Supplemental Manual.

2.5.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention (SWPP)

Additional Requirements for the City of Auburn

A complete Construction Stormwater Pollution Prevention Plan (SWPPP) is required for projects that:

- Add or replace 5000 square feet or greater of hard surface, or
- Disturb greater than 1 acre, or
- Grade/Fill greater than 500 cubic yards of material, or
- Disturb critical areas or buffers.

Projects that are required to submit a complete Construction SWPPP must use the most current version of Ecology's Construction SWPPP Template, available at:

http://www.ecy.wa.gov/programs/wq/stormwater/construction/

A Construction SWPPP Short Form is located in Appendix C, Volume II of the COA Supplemental Manual. The Construction SWPPP Short Form may be used for projects that meet the thresholds found in that Appendix.

For more information on SWPPP submittal requirements refer to Chapter 3.2, Volume II of the COA Supplemental Manual.

2.5.3 Minimum Requirement #3: Source Control of Pollution

Additional Requirements for the City of Auburn

Source Control BMPs are used to control long-term pollutant sources from many practices in commercial, industrial, and residential settings. Volume IV of both the SWMMWW and the COA Supplemental Manual contain long-term Source Control BMPs for these practices. The BMP resources available in Volume IV shall be used to develop a comprehensive SSP report by including these BMPs in the Permanent Stormwater Control Plan section of that report (see Sections 2.5.1 and 3.1.5, Volume I of the SWMMWW). Including and implementing the Source Control BMPs found in Volume IV is a required component of the SSP report that will be submitted to the City for review and approval. It is also

required to include these Source Control BMPs in the Operations and Maintenance Manual that is prepared in compliance with Minimum Requirement #9 – Operation and Maintenance and included in the SSP report.

Additional Source Control BMPs are found in Volume II of both the SWMMWW and the COA Supplemental Manual. These BMPs are specific to source control of pollution during the construction process. Source Control BMPs for construction shall be included as part of the Construction SWPPP that is prepared in compliance with Minimum Requirement #2 – Construction Stormwater Pollution Prevention. Refer to Volume II of the SWMMWW and COA Supplemental Manual for complete information on construction Source Control BMPs and the Construction SWPPP.

2.5.4 Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls

No Additional Guidelines or Requirements

2.5.5 Minimum Requirement #5: On-Site Stormwater Management

Additional Requirements for the City of Auburn

Flow Control Exemption

Flow Control Exemption in accordance with Section 2.5.7 of Volume I of the SWMMWW, as it relates to Minimum Requirement #5, requires approval from the City Engineer per the Exemption process. Refer to Section 2.8, Volume I of the COA Supplemental Manual for information on the Exemption application process. Projects that have received approval from the City Engineer for Flow Control Exemption may meet Minimum Requirement #5 as described in Section 2.5.5, Volume I of the SWMMWW.

Additional Guidelines for the City of Auburn

All land within the City of Auburn is located within the Urban Growth Area (UGA); therefore, the second and fourth requirements in Table 2.5.1 on page 2-24, Volume I, of the SWMMWW do not apply.

Figure 2.5.1 A Flow Chart for Determining LID MR #5 Requirements in the City of Auburn below provides guidance in considering the options available for complying with Minimum Requirement #5.

Project proponents that must satisfy Minimum Requirement #5 can choose to employ the On-Site Stormwater Management BMPs from Lists #1 or #2, as required by the project size, <u>or</u> meet the Low Impact Development (LID) Performance Standard.

Applying the List Option

When choosing the List option, each On-Site Stormwater Management BMP must be considered for each surface in the order they are given for the appropriate List. A BMP must be determined to be infeasible prior to continuing to the next BMP for that surface on the List. Per Minimum Requirement #1 and Chapter 3, Volume I of the SWMMWW, any BMPs from the list that have been determined to be

infeasible for the project must include documentation of the infeasibility within the SSP report. Where appropriate the infeasibility documentation should include citations of site conditions identified in a geotechnical report. Refer to Appendix I, Volume I of the COA Supplemental Manual for more information on List Option LID BMP infeasibility.

Once an On-Site Stormwater Management BMP from List #1 or #2 is considered feasible, this BMP is applied to the project. On-Site Stormwater Management BMPs must be applied in accordance with the design criteria presented in the SWMMWW and COA Supplemental Manual. No further consideration of BMPs on the List is required for that surface, and the remaining BMPs for that surface on the List that are below the applied BMP do not require documentation of infeasibility. The BMPs for each surface type must be evaluated for feasibility. If all BMPs from the List have been found to be infeasible, Minimum Requirement #5 has been met and no further action is required. Projects that have satisfied Minimum Requirement #5 through the List option are not required to meet the LID Performance Standard, even if all LID BMPs have been determined to be infeasible.

Applying the LID Performance Standard Option

Project proponents must demonstrate compliance with the LID Performance Standard using any facility or combination of facilities that are approved by the City. Facilities are not limited to the On-Site Stormwater Management BMPs from the List Option. Rain Gardens cannot be used when selecting this option. Compliance with the LID Performance Standard must be shown using the most current version of the Western Washington Hydraulic Model (WWHM). Model results must be included in the appropriate section of the SSP report and submitted to the City. Refer to Chapter 2, Volume III of the SWMMWW and COA Supplemental Manual for more information on hydrologic modeling requirements.

Projects that must apply only Minimum Requirements #1 - #5 and #10 <u>are not</u> required to implement BMP T5.13 Post – Construction Soil Quality and Depth when the LID Performance Standard option is applied. Projects that must apply Minimum Requirements #1 - #9 and #10 <u>are</u> required to implement BMP T5.13 if feasible when the LID Performance Standard option is applied.

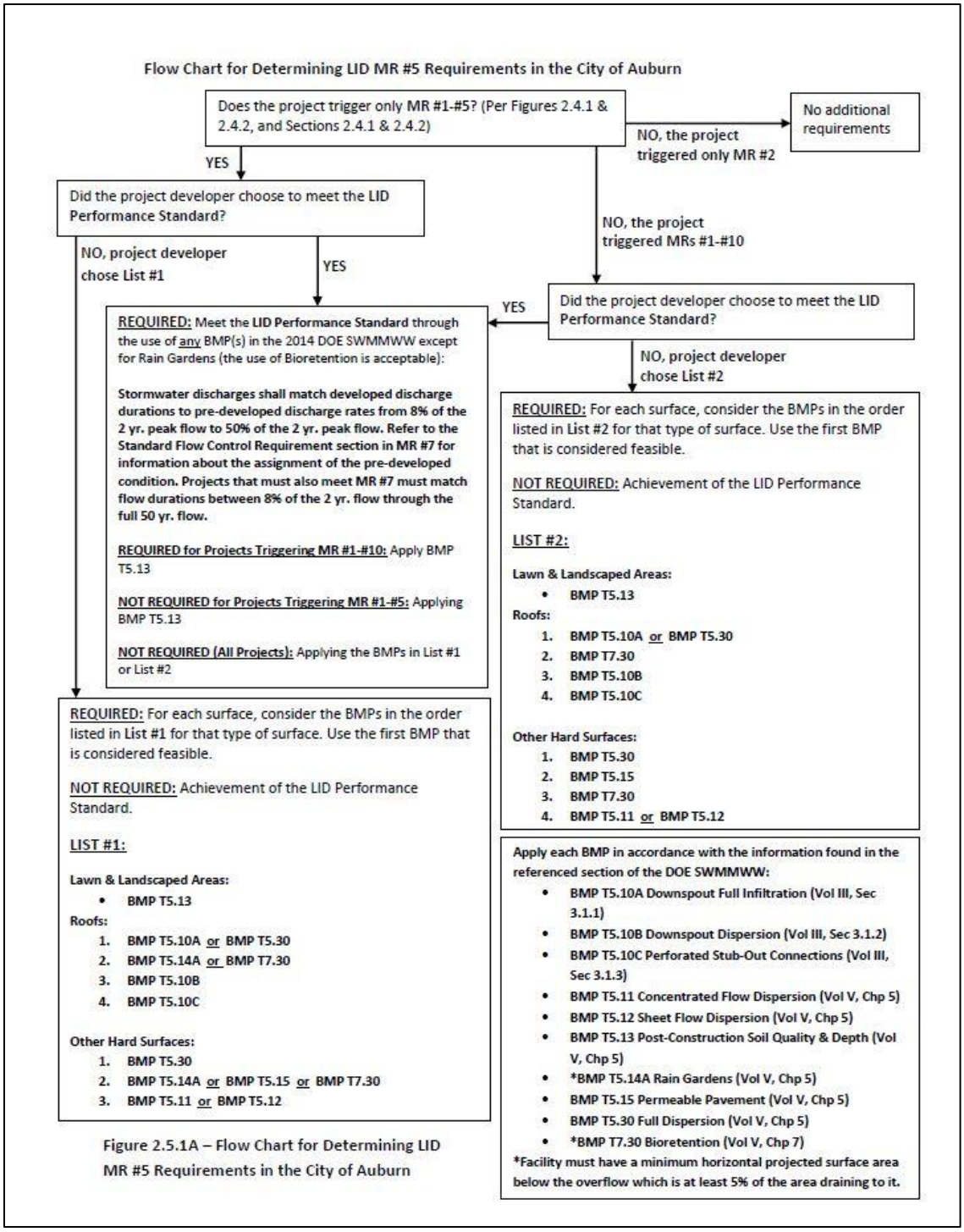

Figure 2.5.1 A Flow Chart for Determining LID MR #5 Requirements in the City of Auburn

2.5.6 Minimum Requirement #6: Runoff Treatment

Additional Requirements for the City of Auburn

Infiltration of any amount of runoff from a Pollution Generating Surface (PGS) is not allowed within Groundwater Protection Zones 1 and 2 unless approved by the City Engineer per the General Deviation requirements in Chapter 1 of the Engineering Design Standards. To receive approval, a PGS must not be classified as a "high-use site" per Appendix G, Volume I of the SWMMWW and runoff from the PGS must undergo Enhanced Treatment per Chapter 3, Volume V of the SWMMWW.

2.5.7 Minimum Requirement #7: Flow Control

Additional Requirements for the City of Auburn

Infrastructure Protection Requirement

The infrastructure protection requirement is intended to mitigate stormwater impacts from projects that are not required to provide flow control, but that discharge to a system with downstream capacity limitations.

Applicant may resolve the downstream capacity problem or may provide on-site detention. Where detention is provided, stormwater discharges for the developed condition shall match the discharges under pre-existing conditions.

Flow Control Exemption

Flow Control Exemption in accordance with Section 2.5.7, Volume I of the SWMMWW requires approval from the City Engineer per the Exemption process. Refer to Section 2.8, Volume I of the COA Supplemental Manual for information on the Exemption application process.

2.5.8 Minimum Requirement #8: Wetlands Protection

Additional Requirements for the City of Auburn

Stormwater discharges to wetlands are regulated under the City's Critical Areas Ordinance. See Chapter 16.10 of the ACC.

The requirements in Section 2.5.8, Volume I of the SWMMWW are in addition to requirements given in Chapter 16.10 of the ACC and apply only to projects whose stormwater discharges into a wetland, either directly or indirectly through a conveyance system. These requirements must be met <u>in addition</u> to meeting Minimum Requirement #6 – Runoff Treatment. All pollution generating surfaces discharging to wetlands shall require water quality treatment prior to discharge to the wetlands. Streams may also be regulated under this requirement as part of the wetland permit.

Additional Guidelines for the City of Auburn

For more information about wetlands, wetland permits and development close to wetlands, please contact Community Development Services in the Community Development and Public Works Department at (253) 931-3090.

2.5.9 Minimum Requirement #9: Operation and Maintenance

Additional Requirements for the City of Auburn

The Operations and Maintenance Manual is a component of the SSP report but it should be prepared as a stand-alone document. The Operations and Maintenance Manual for privately maintained facilities shall be retained on-site and transferred with the ownership of the property with the Stormwater Easement and Maintenance Agreement per Section 13.48.435 of the ACC. The Operations and Maintenance Manual for public facilities shall be provided to the City and retained within the appropriate department. Guidance for developing the Operations and Maintenance Manual is available in multiple locations within the SWMMWW. Important sections of the SWMMWW include:

- **Volume V, Section 4.6** contains maintenance standards for drainage facilities
- **Volumes II, III, and IV** contain sections on maintenance in the description of each BMP
- **Volume IV** contains source control BMPs that can be included in the operations and maintenance manual where applicable
- **Volume I, Section 3.1.7** contains an overview of operations and maintenance manual requirements

Additionally, the Stormwater Site Plan Submittal Requirements Checklist in Appendix J, Volume I of the COA Supplemental Manual provides key components on completing the Operations and Maintenance Manual for submittal.

2.5.10 Minimum Requirement #10: Off-Site Analysis and Mitigation

Additional Requirements for the City of Auburn

The City of Auburn requires Off-Site Analysis and Mitigation in addition to Minimum Requirements #1-5 and #1-9. Minimum Requirement #10 is required for all projects meeting the project thresholds and criteria for Minimum Requirements #1-5 and #1-#9.

Development projects that discharge stormwater off-site shall submit as part of their SSP report an off-site analysis that assesses the potential off-site impacts of stormwater discharge.

All projects shall perform a *qualitative* analysis downstream from the site.

The City may require a *quantitative* analysis for any project deemed to need additional downstream information.

Qualitative Analysis

Project applicants shall submit a *qualitative* analysis of each upstream system entering a site (run-on) and each downstream system leaving a site (run-off). The qualitative analysis shall extend downstream for the entire flow path, from the project site to the receiving water, or up to one-quarter mile, whichever is less. The upstream analysis shall identify and describe points where water enters the site and the tributary area. A basin map defining the on-site and off-site basins tributary to the site shall be provided. The basin map shall be to a defined scale.

Upon review of this analysis, the City may require a qualitative analysis further downstream, mitigation measures deemed adequate to address the problems, or a quantitative analysis, depending upon the presence of existing or predicted flooding, erosion, or water quality problems, and on the proposed design of the on-site drainage facilities. Details on how to perform this analysis are located in Chapter 3, Volume I the SWMMWW and submittal requirements are found in Appendix J, Volume I of the COA Supplemental Manual.

Quantitative Analysis

The City may require a *quantitative* analysis for any project deemed to need additional downstream information. Details on how to perform this analysis are located in Appendix D, Volume III of the COA Supplemental Manual.

Objective

To identify and evaluate off-site water quality, erosion, slope stability, and drainage impacts that may be caused or aggravated by a proposed project, and to determine measures for preventing impacts and for not aggravating existing impacts. Aggravating shall mean increasing the frequency of occurrence and/or severity of a problem. Some of the most common and potentially destructive impacts of land development are erosion of downgradient properties, localized flooding, and slope failures. These are caused by increased surface water volumes and changed runoff patterns. Off-site analysis could prevent substantial property damage and public safety risks. In addition the applicant will evaluate types and locations of surface run-on to the project site. These must be safely conveyed across the project site.

2.6 Optional Guidance

2.6.1 Optional Guidance #1: Financial Liability

Additional Requirements for the City of Auburn

The following information regarding Financial Liability and bonding shall supersede the Optional Guidance #1 in Section 2.6.1, Volume I of the SWMMWW:

Per Auburn City Code, performance and maintenance bonding is required for public stormwater facilities within the City of Auburn.

2.6.2 Optional Guidance #2: Off Site Analysis and Mitigation

Additional Requirements for the City of Auburn

The off-site analysis and mitigation requirements described in Section 2.5.10, Volume I of the COA Supplemental Manual shall supersede the Optional Guidance #2 in Section 2.6.2, Volume I of the SWMMWW. Minimum Requirement #10 – Off Site Analysis and Mitigation is required in the City of Auburn for projects that meet the thresholds for Minimum Requirements #1-#5 and #1-#9.

2.8 Exceptions/Variances

Additional Requirements for the City of Auburn

Exceptions from the Minimum Requirements

Deviations from the Minimum Requirements may be requested in writing, in accordance with Chapter 13.48 of the ACC.

Exceptions from Engineering Design Standards

Deviations from any City of Auburn engineering design standards requires approval by the City Engineer through the General Deviation request process outlined in Chapter 1 of the Engineering Design Standards.

All Deviation Requests

The decision to grant a deviation is within the sole discretion of the City, and the City Engineer shall only approve a deviation to the extent it is necessary. The City Engineer may impose new or additional requirements to offset or mitigate harm that may be caused by approving the deviation. The City Engineer may require the applicant to submit a report or analysis by a civil engineer licensed in Washington State, along with a request in writing for a deviation. Deviations are intended to maintain necessary flexible working relationship between the City and applicants.

The approval of a deviation shall not be construed to be an approval of any violation of any of the other provisions of the City's Municipal Code, or of any other valid law of any governmental entity having jurisdiction.

Chapter 3 - Preparation of Stormwater Site Plans

Additional Requirements for the City of Auburn

The SSP report encompasses the entire submittal to the City for drainage review. The SWMMWW provides detailed guidance in Section 3.1, Volume I on performing site analysis for stormwater management through an eight step process. Project proponents who are unfamiliar with performing this analysis and preparing SSP reports are encouraged to refer to Sections 3.1, Volume I in the SWMMWW for assistance. All SSP reports must conform to the format outlined in the SSP Submittal Requirements Checklist found in Appendix J, Volume I of the COA Supplemental Manual. The SSP report outline is

provided in a checklist format to assist project proponents in meeting the submittal requirements of the City. All items in the checklist must be addressed in the SSP report.

Appendix I-F Basins with 40% or more total impervious area as of 1985

Additional Requirements for the City of Auburn

The City of Auburn does not contain any areas that are recognized by the Department of Ecology as a basin with 40% or more of total impervious area as of 1985. Pre-existing site conditions shall be modeled using Forested conditions unless reasonable, historic evidence exists showing that the area should be modeled as Prairie.

Appendix I-G Glossary and Notations

The following terms and acronyms are provided as reference for use in the SWMMWW and COA Supplemental Manual in addition to those available in the SWMMWW.

ACC	Auburn City Code
Base course	The layer or layers of specified or selected material of designed thickness placed on a subbase or subgrade to support a surface course.
COA	The City of Auburn.
SWMMWW	The most current version of the Washington State Department of Ecology Stormwater Management Manual for Western Washington.
"Chip Seal"	Also known as bituminous surface treatment; one or more layers of asphalt applied to compacted subgrade, topped with one or more layers of fine aggregate.
Pollution Generating Surface (PGS)	Any combination of Pollution Generating Hard Surfaces (PGHS), Pollution Generating Impervious Surfaces (PGIS), and/or Pollution Generating Pervious Surfaces (PGPS).
SSP	The Stormwater Site Plan report as defined in Appendix G, Volume I of the SWMMWW.
Urban Growth Area (UGA)	Areas designated by a county pursuant to RCW 36.70A.110, within which urban growth is encouraged. Unincorporated Urban Growth Areas that are within or adjacent to Auburn City Limits that are not yet annexed to the City are within Auburn's Potential Annexation Areas (PAA).

Appendix I-H City of Auburn Areas with Special Development Requirements

Additional Requirements for the City of Auburn

This Appendix identifies geographic areas within the City of Auburn and the requirements specific to those areas. These requirements shall be in addition to the Minimum Requirements found in Chapter 2 of this volume of the SWMMWW and the COA Supplemental Manual unless the text in this chapter specifically indicates that the area-specific requirement supersedes or replaces a Minimum Requirement.

Groundwater Protection Areas 1 and 2

In 2005, the City of Auburn adopted the Critical Areas Ordinance, Chapter 16.10 of the ACC, which formally designates Groundwater Protection Areas (Zones) within the City of Auburn. Groundwater Protection Zones 1 and 2 represent the land area in the central part of the City beneath which the principal aquifer used by the City for water supply is overlain by highly permeable sand and gravel deposits. These geologic conditions provide a direct pathway for contaminants that may be released to the soil to reach the aquifer.

Private infiltration systems used in Groundwater Protection Zones 1 and 2 that receive stormwater from any pollution-generating surfaces (PGS) including streets, parking areas, or galvanized roofs are prohibited unless approved by the City Engineer or his/her designee per the General Deviation requirements in Chapter 1 of the Engineering Design Standards. To receive approval, a PGS must not be classified as a "high-use site" per Appendix G, Volume I of the SWMMWW and runoff from the PGS must undergo Enhanced Treatment per Chapter 3, Volume V of the SWMMWW. In such case a private disposal system may be approved.

Impaired Water Bodies

Section 305(b) of the Clean Water Act (CWA) requires the Department of Ecology to prepare a report every two years on the status of the overall condition of the state's waters. Section 303(d) of the CWA requires Ecology to prepare a list every two years containing water bodies not expected to meet state surface water quality standards after implementation of technology-based controls. The State is then required to complete a Total Maximum Daily Load (TMDL) for all water on that list. The existing list and other related information is available on Ecology's water quality website:

http://www.ecy.wa.gov/programs/wq/links/wq_assessments.html

If a project site discharges to one of these listed water bodies, additional treatment or flow control requirements may apply.

Floodplains

Floodplains are not regulated through the SWMMWW and COA Supplemental Manual. However, stormwater facilities proposed within floodplains will be reviewed on a case-by-case basis to determine if the facilities are acceptable. Additional analysis and requirements may be needed for stormwater facilities located within floodplains.

Appendix I-I On – Site Stormwater Management BMP List Option Infeasibility Criteria

Additional Requirements for the City of Auburn

This Appendix summarizes infeasibility criteria provided in the SWMMWW for evaluating BMPs when applying the List Option to meet Minimum Requirement #5 – On-Site Stormwater Management. Projects that chose to meet the LID Performance Standard may use any BMP or facility in the SWMMWW to achieve that standard except Rain Gardens. Projects that chose the List #1 or #2 option to comply with Minimum Requirement #5 must select On-Site Stormwater Management BMPs from the applicable list and consider them in the order given. If a BMP is found to be infeasible based on the criteria presented below or in the SWMMWW, consider the next BMP on the applicable list. Refer to Section 2.5.5, Volume I of the SWMMWW and COA Supplemental Manual to determine which On-Site Stormwater Management BMPs require evaluation for a project. Evaluation is based on project type, discharge location, and other criteria.

Prior to evaluating On-Site Stormwater Management BMPs, review the site design considerations in Chapter 3, Volume I of the SWMMWW to conserve natural areas, retain native vegetation, reduce impervious surfaces, and integrate stormwater controls into the existing site layout to the extent feasible. Also consider the design criteria for individual BMPs as given in the SWMMWW and amended in the COA Supplemental Manual.

The Infeasibility Criteria summarized below apply to BMPs when selecting the List Option if the area proposed for the BMP is the only available area for the BMP, after all reasonable efforts to regrade the site and allow for alternative placement of the BMP have been made.

When using the On-Site Stormwater Management List Option, an On-Site BMP is considered infeasible if any one infeasibility criteria for that BMP is met. Citation of infeasibility when using the List Option is a component of the SSP report. Refer to Chapter 3, Volume I of the DOE SWMWW and Appendix J, Volume I of the COA Supplemental Manual for more information on the SSP report and documenting infeasibility criteria.

Through historical data and existing topography, the City of Auburn has defined specific areas where On – Site Stormwater Management BMPs that require infiltration are restricted or limited, illustrated in *Figure I- 1 Map of Infiltration Restriction Areas* below. Projects located in Groundwater Protection Zones 1 and 2 require Enhanced Treatment and approval from the City Engineer to use infiltrative BMPs for managing stormwater from pollution generating surfaces. Other areas are identified as infeasible for infiltrative List Option On-Site Stormwater Management BMPs based on slope proximity, typical groundwater elevations, proximity to critical areas, and other site-specific criteria. Contact the

Community Development and Public Works Department at (253)-931-3010 for more information and assistance in identifying areas where List Option On-Site Stormwater Management Infiltration BMPs are restricted.

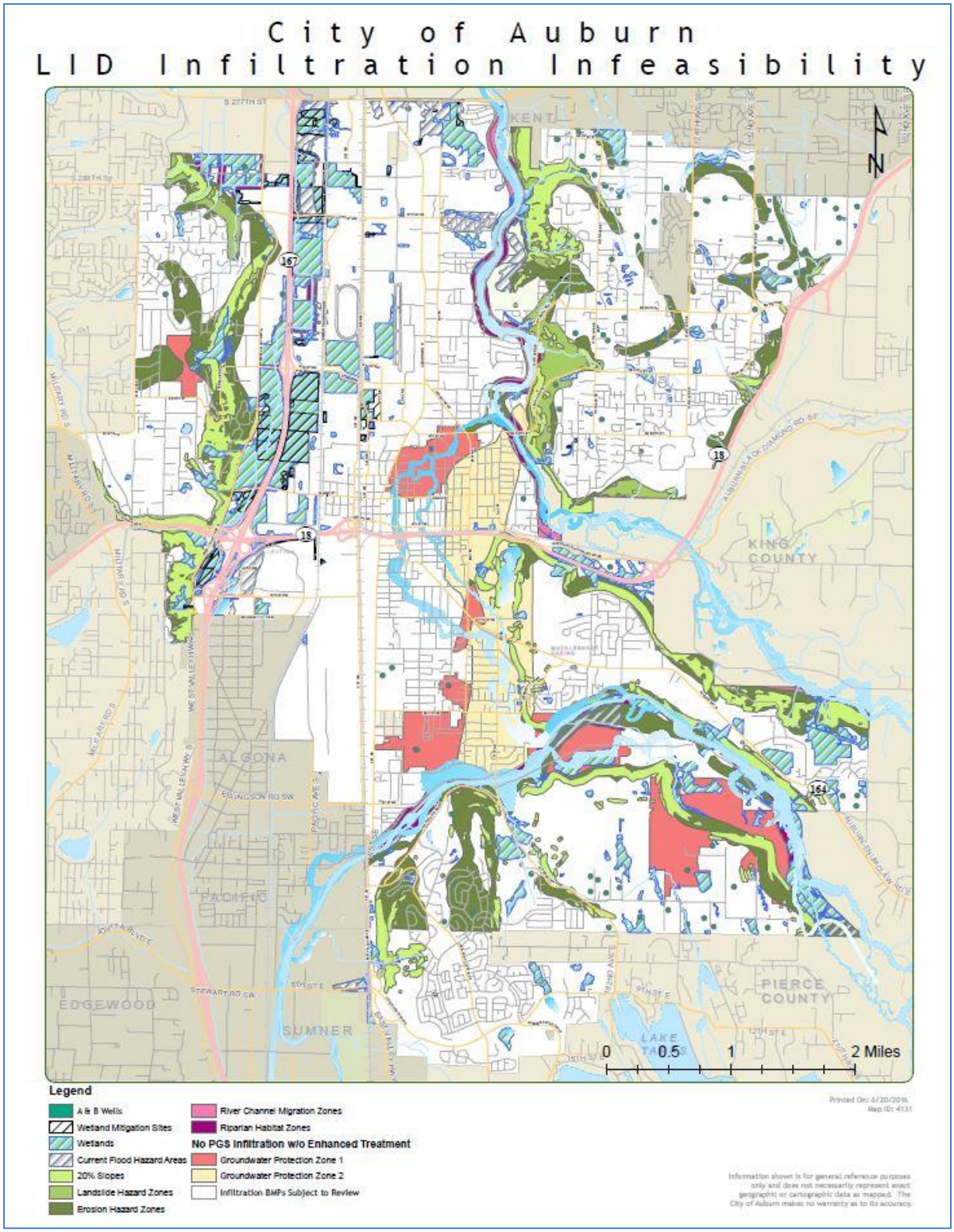

Figure I- 1 Map of Infiltration Restriction Areas

On-Site Stormwater Management BMP Infeasibility Summary

BMP T5.13 Post-Construction Soil Quality and Depth

- When the site is located on till soil slopes greater than 33%.

All Dispersion BMPs (includes T5.30, T5.10B, T5.11, T5.12)

- In areas where BMP installation creates a reasonable risk of erosion, slope failure, or flooding, as determined by a licensed engineer, geologist, or hydrogeologist registered in the State of Washington.
- On project sites where the dispersion flowpath area is within 10 feet of a proposed or existing septic system or drainfield.
- On project sites where the dispersion flowpath area is within a Critical Area Buffer. For more information on identifying Critical Area Buffers within the City of Auburn, contact Community Development Services in the Community Development and Public Works Department at (253) 931-3090.
- On project sites where the dispersion flowpath area is on a slope greater than 20%.
- The flowpath does not meet minimum horizontal setback requirements to property lines, structures, and other flow paths.

All Infiltration BMPs (includes T5.10A, T7.30, T5.14A, T5.15, T5.10C)

- A licensed engineer, geologist, or hydrogeologist registered in the State of Washington has determined that the area available for installing the infiltration BMP:
    - Would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage facilities, pre-existing structures, or pre-existing road or parking lot surfaces or subgrades.
    - Would threaten flood control structures such as levees.
    - Is within a steep slope area or a landslide prone area or setback.
    - Would create a risk of erosion, slope failure, or flooding.
- The area available for installing the infiltration BMP does not meet the minimum horizontal and/or vertical setback requirements.
- Infiltration is restricted due to known contaminated soil or groundwater.
- Infiltration is restricted due to Seasonal High Groundwater limitations as determined through analysis by a licensed engineer, geologist, hydrogeologist, or engineering geologist registered in the State of Washington (see individual BMPs for Seasonal High Groundwater depth requirements).

T5.30 Full Dispersion

- Where any of the Infeasibility Criteria listed for All Dispersion BMPs above apply.

- Where the site has less than a 65 to 10 ratio of native vegetation area to impervious area.
- The minimum native vegetation flowpath is less than 100 feet.
- The flowpath is steeper than 15% for any 20 ft. reach of flowpath.

T5.10A Downspout Full Infiltration

- Where any of the Infeasibility Criteria listed for All Infiltration BMPs above apply.
- There are no downspouts.
- The Seasonal High Groundwater elevation has been determined by a licensed professional engineer, geologist, hydrogeologist, or engineering geologist registered in the State of Washington, and:
    - There is less than 3 feet of permeable soil from the proposed final grade to the Seasonal High Groundwater elevation.
    - There is less than 1 foot of clearance from the expected bottom elevation of the infiltration trench or dry well to the Seasonal High Groundwater elevation.
- The area available for installation of dry wells and infiltration trenches is on or discharges to a slope greater than 25%.

T7.30 Bioretention <u>and</u> T5.14A Rain Gardens

- Where any of the Infeasibility Criteria listed for All Infiltration BMPs above apply.
- Where the City Engineer has determined that the only area available for installing the bioretention or rain garden facility does not allow for a safe overflow pathway to the municipal separate storm water system or private storm water system.
- Where there is a lack of usable space for bioretention or rain garden facilities at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects.
- Where bioretention or rain garden facilities are not compatible with surrounding drainage system as determined by the City Engineer (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention facility).
- Where the site cannot be reasonably designed to locate bioretention or rain garden facilities on slopes less than 8%.
- Within 50 feet from the top of slopes that are greater than 20% and over 10 feet of vertical relief.
- Within 100 ft of a closed or active landfill.
- Within 100 ft of a drinking water well, aquifer, or a spring used for drinking water supply.
- Within 10 ft of any known underground storage tank and connecting underground pipes, when tank and pipe system capacity is 1100 gallons or less.

- Within 100 ft of any known underground storage tank and connecting underground pipes, when tank and pipe system capacity is 1100 gallons or greater.
- Where the minimum vertical separation of 1 foot to the seasonal high water table, bedrock, or other impervious layer would not be achieved below bioretention or rain garden facilities that would serve a drainage area that is: 1) less than 5,000 sq. ft. of pollution- generating impervious surface, and 2) less than 10,000 sq. ft. of impervious surface; and, 3) less than ¾ acres of pervious surface.
- Where the minimum vertical separation of 3 feet to the seasonal high water table, bedrock or other impervious layer would not be achieved below bioretention facilities that: 1) would serve a drainage area that meets or exceeds: a) 5,000 sq. ft. of pollution generating impervious surface, or b) 10,000 sq. ft. of impervious surface, or c) 3/4 acres of pervious surfaces; and 2) cannot reasonably be broken down into amounts smaller than indicated in (1).
- Where field testing indicates soils have a measured native soil saturated hydraulic conductivity less than 0.3 in/hr. Minimum requirements for field testing are found in the Small-Scale Pilot Infiltration Test (PIT Test) section in Section 3.3.6, Volume III of the SWMMWW.
- Within geographic areas that the City of Auburn has determined that bioretention or rain gardens are designated as infeasible due to year-round, seasonal or periodic high groundwater conditions, or due to inadequate infiltration rates.
- The minimum bottom width of the infiltrating bioretention facility cannot be met due to, but not limited to: encroachment within the critical root zone of an existing tree(s) or minimum setback to structures, utilities, or property lines.

T5.15 Permeable Pavement

- Where any of the Infeasibility Criteria listed for All Infiltration BMPs above apply.
- Roads that receive more than very low traffic volumes and more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads; very low truck traffic roads are not subject to through truck traffic but may receive up to weekly use by utility trucks, buses, etc.
- Where infiltrating and ponded water below new permeable pavement area would compromise adjacent impervious pavements.
- Down slope of steep, erosion prone areas that are likely to deliver sediment.
- Where fill soils area used that can become unstable when saturated.
- Excessively steep slopes where water within aggregate base layer or at sub-grade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface.
- Where permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities.
- Within 50 ft from the top of slopes that are greater than 20%.

- Within 100 ft of an area known to have deep soil contamination.
- Within 10 ft of any known underground storage tank and connecting underground pipes, regardless of tank size.
- Within 100 ft of a closed or active landfill.
- Within 100 ft of a drinking water well, aquifer, or a spring used for drinking water supply.
- The pavement is over a structure, such as, but not limited to: parking garages and over culverts and bridges.
- In areas likely to have long-term excessive sediment deposition after construction.
- Where site cannot be designed to have porous AC at less than a 5 % slope, pervious concrete at less than a 10% slope, or permeable pavers at less than 12% slope. Use of permeable pavers is limited to walkways, private parking lots, and private driveways.
- Where seasonal high ground water or an underlying impermeable/low permeability layer would create saturated conditions within one foot of the bottom of the lowest gravel base course.
- Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils with a California Bearing Ratio of less than 5% are considered unsuitable for residential access roads.
- Where field testing indicates soils have a measured native soil saturated hydraulic conductivity less than 0.3 in/hr. Minimum requirements for field testing are found in the Small-Scale Pilot Infiltration Test (PIT Test) section in Section 3.3.6, Volume III of the SWMMWW. May be built with an underdrain if flow control benefits to meet Minimum Requirement #7 are desired, but this will not meet Minimum Requirement #5.
- Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of 4 in/hr or more.
- Where the risk of concentrated pollutant spills is more likely (gas stations, truck stops, industrial chemical storage sites, etc.).
- Where routine, heavy applications of sand occur in frequent snow zones.
- Within geographic areas that the City of Auburn has determined that permeable pavements are designated as infeasible due to year-round, seasonal or periodic high groundwater conditions, or due to inadequate infiltration rates
- Where the site is considered “high use” due to one of the following criteria being met:
    - The site is a commercial or industrial site subject to an expected ADT count equal to or greater than 100 vehicles per 1,000 SF of gross building area.
    - The site is a commercial or industrial site subject to petroleum storage and transfer in excess of 1,500 gal/yr, not including routinely delivered heating oil.
    - The site is a commercial or industrial site subject to parking, storage, or maintenance of 25 or more vehicles that are over 10 tons gross weight.
    - The site is a road intersection with a measured ADT count of 25,000 vehicles or more on the main roadway and 15,000 vehicles or more on any intersecting roadway, excluding projects proposing primarily pedestrian or bicycle use improvements.

T5.10B Downspout Dispersion Systems

- Where any of the Infeasibility Criteria listed for All Dispersion BMPs above apply.
- There are no downspouts.
- The vegetated flow path is less than 25 feet between the trench outlet and any property line, structure, stream, wetland, or impervious surface.
- The vegetated flow path is less than 50 feet between the trench outlet and any slope steeper than 15%.
- The surface area draining to the dispersion trench is greater than 700 SF.
- The dispersion area is flat and would result in ground saturation.

T5.11 Concentrated Flow Dispersion

- Where any of the Infeasibility Criteria listed for All Dispersion BMPs above apply.
- There are no concentrated flows to disperse.
- The vegetated flow path is less than 50 feet between the trench outlet and any property line, structure, stream, wetland, or impervious surface.
- The surface area draining to the dispersion trench is greater than 700 SF.
- The vegetated flow path is less than 50 feet between the trench outlet and any slope steeper than 15%.

T5.12 Sheet Flow Dispersion

- Where any of the Infeasibility Criteria listed for All Dispersion BMPs above apply.
- The area to be dispersed has a slope greater than 15%.
- The minimum vegetated flow path for sheet flow dispersion cannot be met. Note: A 10 foot flow is required to disperse runoff from a contributing flow length of up to 20 feet. An additional 10 feet of flow path is required for each additional 20 feet of contributing flow path or fraction thereof. Refer to SWMMWW Vol V Pg. 5-6.

T5.10C Perforated Stub-Out Connections

- There are no downspouts.
- The location for the perforated pipe portion of the system is under impervious or heavily compacted surfaces.
- The minimum perforated stub-out length of 10 feet per 5,000 SF of contributing roof area cannot be met.
- Where the site cannot be reasonably designed to locate a catch basin between the perforated stub-out and point of connection to the public storm drainage system.

Appendix I-J Stormwater Site Plan (SSP) Report Submittal Requirements Checklist

The Submittal Requirements Checklist is intended to aid the design engineer in preparing a SSP report. All items included in the following checklist must be addressed as part of any SSP report. The City requires the design engineer follow the order and structure of the checklist to facilitate review, which in turn will expedite permit issuance.

Title Page and Formatting

- ☐ Provide a title page with applicant, permit number, engineer, and property owner information including name, address, telephone number and email address for all parties.
- ☐ Provide date of document preparation on the title page.
- ☐ Include a Table of Contents.
- ☐ Include List of Figures.
- ☐ Number all pages, figures, maps and attachments.

Chapter 1 – Project Overview

The project overview is intended to be a summary of detailed information describing the project. Information that is provided in detail in following chapters should be summarized here.

- ☐ Identify type of City of Auburn permit requested and permit number
- ☐ Identify all permits and approvals required by other regulatory agencies.
- ☐ Identify the project location, including address, legal description, and parcel number.
- ☐ Provide a brief narrative description of the project, including a summary of site constraints.

Chapter 2 – Existing Condition Summary

The Existing Condition Summary is intended to provide a complete understanding of the project site and must be based on thorough site research and investigation. Analyze this data to determine site constraints, including but not limited to:

- *Areas with high potential for erosion and sediment deposition based on soil properties, slope, etc.; and*
- *Locations of sensitive and critical areas; and*
- *Areas of existing Native Vegetation; and*
- *Points where existing surface water enters and exits the project site.*

Delineate these areas on the vicinity map and/or site map and provide a narrative summary outlining key details. Include all reports and studies used to develop this summary in Attachment D of the SSP report.

- ☐ Describe, discuss and identify the following for the project site:
  - ☐ Topography.
  - ☐ Land use and ground cover.

- ☐ Natural and man-made drainage patterns.
- ☐ Points of entry and exit for existing drainage to and from the site.
- ☐ Any known historical drainage problems such as flooding, erosion, etc. Contact the City of Auburn Storm Utility at 253-931-3010 for more information on historical drainage problems.
- ☐ Existing on-site and adjacent utilities, including stormwater facilities, water, and sewer.
- ☐ Areas with high potential for erosion and sediment deposition.
- ☐ Locations of sensitive and critical areas (e.g., vegetative buffers, wetlands, steep slopes, floodplains, geologic hazard areas, streams, creeks, ponds, ravines, springs).
- ☐ Existing fuel tanks.
- ☐ Groundwater wells on-site and within 100 feet of site.
- ☐ Septic systems on-site and/or within 100 feet of the site.

☐ State whether the project is located in an aquifer recharge area or wellhead protection area as defined by the Washington State Health Department, the Environmental Protection Agency or by the City. For information on the City's wellhead protection areas (Groundwater Protection Zones 1-4), contact the City of Auburn Water Utility at 253-931-3010.

☐ Identify any Superfund areas in the vicinity, and state whether they are tributary to, or receive drainage from, the project site.

☐ Identify any specific requirements included in a basin plan for the area.

☐ Include references to relevant reports such as basin plans, flood studies, groundwater studies, wetland designations, sensitive area designations, environmental impact statements, environmental checklists, lake restoration plans, or water quality reports. Where such reports impose additional conditions on the Proponent, state these conditions, and describe any proposed mitigation measures.

☐ A brief summary of a geotechnical report prepared and stamped by a geotechnical engineer licensed in Washington State.

☐ Describe the 100-year flood hazard zone, if applicable.

Chapter 3 – Off-Site Analysis (Minimum Requirement #10)

The City requires a qualitative discussion of the off-site upstream and downstream system for all projects. The City may require a quantitative analysis for any project deemed to need additional downstream information. If a quantitative analysis is required, detailed calculations shall be contained in Attachment C of the SSP report. The COA Supplemental Manual Volume I, Chapter 2.5.10 describes the Off-site Analysis. In addition, a list of elements to be included is provided below.

Qualitative Analysis

☐ Investigate the drainage system ¼ mile downstream from the project by site visit and plan review, and discuss the following items:

- ☐ Problems reported or observed during the plan review and site visit.
- ☐ Existing/potential constrictions or capacity deficiencies in the drainage system.
- ☐ Existing/potential flooding problems.
- ☐ Existing/potential overtopping, scouring, bank sloughing, or sedimentation.
- ☐ Significant destruction of aquatic habitat (e.g., siltation, stream incision).
- ☐ Existing public and private easements downstream of the project site and their corresponding widths.
- ☐ Qualitative data on features such as land use, impervious surface, topography, soils, presence of streams, and wetlands.
- ☐ Information on pipe sizes, channel characteristics and drainage structures.
- ☐ Verification of tributary drainage areas.

- ☐ Date and weather at the time of the site visit.
- ☐ Describe the drainage system and its existing and predicted problems through observations and reports.
- ☐ A map of each basin showing the drainage system and all existing and predicted problems.
- ☐ Site visit photographs illustrating the existing system and conditions.
- ☐ Complete the following table for each basin/subbasin:

Off Site Analysis Drainage System Table

Basin:		Subbasin Name:		Subbasin Number:		Date:	

Symbol	Drainage Component Type, Size, and Name	Description	Slope	Distance from Site Discharge	Existing Problems	Potential Problems	Observations
See Map	Type: sheet flow, swale, channel, pipe, pond, flow control/water quality BMP Size: diameter, surface area	Drainage basin, vegetation, cover, depth, type of sensitive area, volume	%	¼ mile = 1,320 ft.	Constrictions, under capacity, ponding, overtopping, flooding, habitat or organism destruction, scouring, bank sloughing, sedimentation, incision, other erosion		Tributary area, likelihood of problem, overflow pathways, potential impacts

Quantitative Analysis (see Volume III, Appendix D of the COA Supplemental Manual)

- ☐ Clearly describe tail water assumptions.
- ☐ Summarize the hydraulic modeling of the City-specified design storm event described in Chapter 2, Volume III of the COA Supplemental Manual.
- ☐ Include downstream system capacity calculations in Attachment E of the SSP report.
- ☐ Discuss potential fixes for capacity problems.
- ☐ Include off-site areas in drainage calculations.
- ☐ Provide storm system pipe profiles where appropriate.

Chapter 4 – Permanent Stormwater Control Plan

Chapter 4 will contain the information used to select, size and locate permanent stormwater control BMPs for the project site in its developed condition.

A preliminary design of the BMPs and facilities is necessary to determine how they will fit within and serve the entire preliminary development layout. After a preliminary design is developed, the designer may want to reconsider the site layout to reduce the need for construction of facilities, or the size of the facilities by reducing the amount of impervious surfaces created and increasing the areas to be left undisturbed. After the designer is satisfied with the BMP and facilities selections the information must be presented within the Permanent Stormwater Control Plan.

Refer to Chapter 5, Volume V of the SWMMWW for on-site stormwater management BMP selection and feasibility analysis related to Minimum Requirement #5 – On-Site Stormwater Management.

Refer to Chapter 2, Volume V of the SWMMWW for treatment facility selection related to Minimum Requirement #6 – Runoff Treatment.

Refer to Chapter 3, Volume III of the SWMMWW and COA Supplemental Manual for flow control facility design related to Minimum Requirement #7 – Flow Control.

The City requires that model files to be provided electronically. Hydrologic modeling must conform to the City of Auburn requirements presented in Chapter 2, Volume III of the COA Supplemental Manual.

The Permanent Stormwater Control Plan shall contain the following sections:

Threshold Discharge Areas

- ☐ Complete all applicable portions of the following table for each threshold discharge area:

Threshold Discharge Area (TDA) Table

Basin:		**TDA Name:**		**TDA Number:**		**Date:**	

Description[a]	On-site	Off-site	Total
Existing Conditions			
Total Project Area[b] (ft^2)			
Existing hard surface (ft^2)			
Existing Native Vegetation area (ft^2)			
Existing lawn/landscaped area (ft^2)			
Proposed Conditions			
Total Project Area[b] (ft^2)			
Amount of new hard surface (ft^2)			
Amount of new pollution generating hard surface (PGHS)[c] (ft^2)			
Amount of replaced hard surface (ft^2)			
Amount of replaced PGHS[d] (ft^2)			
Amount of new + replaced hard surface (ft^2)			
Amount of new + replaced PGHS (ft^2)			
Amount of existing hard surfaces converted to vegetation (ft^2)			
Amount of Land Disturbed (ft^2)			
Amount of native vegetation converted to lawn/landscaped areas (ft^2)			
Amount of native vegetation converted to pasture (ft^2)			
Existing native vegetation area to remain (ft^2)			
Existing hard surface to remain unaltered (ft^2)			
Value of proposed improvements ($)			
Assessed value of existing site improvements ($)			
Amount to be graded/filled (Cubic Feet)			

a. All terms are defined in the glossary found in Appendix G of the SWMMWW
b. The total project area in the existing conditions should typically match the total project area in the proposed condition
c. The "amount of new PGHS" should be part of or all of "amount of new hard surfaces"
d. The "amount of replaced PGHS" should be part of or all of "amount of replaced hard surfaces"

Pre-Developed Site Hydrology

This section describes the pre-development characteristics of the site. This includes the acreage, soil types, and land covers used to determine the pre-development flow characteristics.

When developing the hydrologic model in Western Washing Hydrology Model (WWHM), the pre-developed condition shall be a forested land cover. This applies unless reasonable, historic information is provided that indicates the site was prairie prior to settlement.

- ☐ Provide justification for land uses other than forest.
- ☐ Summarize Pre-Developed Site Hydrology model input. Include complete WWHM reports in Attachment C.

Developed Site Hydrology

Project Summary

- ☐ Provide a list of assumptions and site parameters for the developed condition.
- ☐ Describe Low Impact Development (LID) principles used in developing the site, and steps taken to preserve native vegetation, minimize impervious areas, and reduce stormwater runoff.
- ☐ Identify all developed sub-basins within, or flowing through, the site. Use consistent labeling for all sub-basins throughout figures, calculations, and text.
- ☐ Summarize WWHM input/output data from the developed condition.
- ☐ Include the WWHM report "Formatted Report With Charts" in Attachment C. Include the WWHM reports "LID Duration Standard" and "Wetland Fluctuation" in Attachment C, where applicable.
- ☐ State conclusions from decision and flow charts (Figure 2.4.1, Figure 2.4.2 from Volume I of the DOE SWMWW, and Figure 2.5.1A from Volume I of the COA Supplemental Manual). Include the flow charts in Chapter 5 of the SSP report.

On-Site Stormwater Management System – Minimum Requirement #5

- ☐ Include total area of Native Vegetation retained.
- ☐ Indicate if using the LID Performance Standard or List Option to comply with Minimum Requirement #5 – On-Site Stormwater Management.
- ☐ If using the LID Performance Standard to meet Minimum Requirement #5, summarize model results showing that the Performance Standard has been met. Provide complete WWHM reports in Attachment C.

- ☐ If using the LID List Option, describe the On-Site Stormwater Management BMPs that are infeasible and provide documentation of the infeasibility criteria that apply. Summarize associated geotechnical reports and other documentation of feasibility/infeasibility. Refer to Appendix I, Volume I of the COA Supplemental Manual.
- ☐ Provide drawings of the on-site stormwater management facilities and appurtenances, including:
  - ☐ Dimensions.
  - ☐ Location of inflow, outflow, and overflow, where applicable.
  - ☐ Location of each facility on the project site.
  - ☐ Pipe material and diameter.
  - ☐ Other design details, including infiltration rates, Bioretention Soil Media and/or permeable pavement specifications, plant lists, subgrade compaction, and base materials.
- ☐ Include a summary of proposed public or private ownership and maintenance responsibilities of On-Site Stormwater Management BMPs and any areas serving a stormwater function.
- ☐ Provided areas of disturbed soils to be amended per BMP T5.13 Post-Construction Soil Quality and Depth.

Water Quality System – Minimum Requirement #6 (where required)

- ☐ Identify the sizing method used.
- ☐ Where appropriate summarize model results related to Minimum Requirement #6 – Runoff Treatment. Provide complete WWHM reports in Attachment C.
- ☐ Calculations for the water quality design storm and facility sizing calculations must be included in Attachment C of the SSP report.
- ☐ Identify treatment methods used, including size, type, and characteristics of treatment facility and appurtenances.
- ☐ Identify proposed distributed bioretention facilities and/or infiltration below pollution-generating hard surfaces used to meet water quality requirements.
- ☐ Provide drawings of the treatment facilities, including:
  - ☐ Dimensions.
  - ☐ Inlet/outlet sizes and elevations.
  - ☐ Location of the facilities on the project site.
  - ☐ Appurtenances/fittings.
- ☐ Where appropriate, include manufacturer's specifications as an additional Attachment of the SSP report.
- ☐ Proposed proprietary treatment devices that have not received GULD approval through Ecology's TAPE process must be accompanied with documentation showing how the device meets the runoff treatment requirements of Minimum Requirement #6.

Flow Control System – Minimum Requirement #7 (where required)

- ☐ Identify sizing system used.
- ☐ Describe proposed flow control system and appurtenances, including size, type, and characteristics of storage facility and control structure.
- ☐ Identify proposed distributed bioretention facilities, storage below permeable pavement, and any other on-site stormwater management facilities used to meet flow control requirements.

- ☐ Provide drawings of the flow control facilities, including:
  - ☐ Dimensions.
  - ☐ Inlet/outlet sizes and elevations.
  - ☐ Location of the facilities on the project site.
  - ☐ Appurtenances/fittings.
- ☐ Summarize model results showing that Minimum Requirement #7 – Flow Control has been met. Provide complete WWHM reports in Attachment C of the SSP report.

Conventional Conveyance System Analysis and Design

- ☐ Provide complete pipe system plan and profile drawings. See Required Drawings section below.
- ☐ Identify pipe sizes, types, and slopes.
- ☐ Describe capacities, design flows, and velocities for each reach.
- ☐ Include conveyance calculations in Attachment C of the SSP report.

Chapter 5 – Discussion of Minimum Requirements

Chapter 5 is intended as a checklist for the applicant and reviewer to verify that the applicable Minimum Requirements have been met and documented in the SSP report.

- ☐ Include applicable flowcharts for determining Minimum Requirements (Figure 2.4.1, Figure 2.4.2 from the DOE SWMWW, and Figure 2.5.1A from the COA Supplemental Manual) with decision paths clearly marked.
- ☐ List the Minimum Requirements that apply to the project.
- ☐ Briefly discuss how the project satisfies each Minimum Requirement.
- ☐ Indicate where in the SSP report documentation can be found that shows how the Minimum Requirements are satisfied.

SSP Report Attachments

Attachments A and B are components of the SSP report that are also intended as stand-alone documents for the project during and after construction. This section also contains all background data, calculations, reports, and other documents that support the information summarized in the SSP report. Additional Attachments should be labeled clearly and included in the SSP report Table of Contents.

- ☐ SSP Attachment A – Operations and Maintenance Manual, when required to satisfy Minimum Requirement #9. **Note:** The Operations and Maintenance Manual shall be written as a stand-alone document for the project owner when the project is complete.
  - ☐ A narrative description of the on-site storm system.
  - ☐ An 11 x 17 inch map of the site, with the locations of the **treatment/detention/infiltration/on-site stormwater management/source control/etc**. facilities prominently noted. This is needed to enable the Operations and Maintenance Manual to be a stand-alone document.

- ☐ The person or organization responsible for maintenance of the on-site storm system, including the phone number and current responsible party.
- ☐ Where the Operations and Maintenance Manual is to be kept. Note that it must be made available to the City for inspection.
- ☐ A description of each stormwater facility, including what it does and how it works. Include any manufacturer's documentation.
- ☐ A description of all maintenance tasks and the frequency of each task for each stormwater facility. Include all applicable Maintenance Standards for Drainage Facilities per Chapter 4, Volume V of the SWMMWW, and any manufacturer's recommendations.
- ☐ A sample maintenance activity log indicating emergency and routine actions to be taken.

☐ SSP Attachment B – Construction Stormwater Pollution Prevention Plan (SWPPP)

- ☐ SWPPP Long Form – Use the most current version of the Department of Ecology's SWPPP Template, available at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/
- ☐ SWPPP Short Form – See COA Supplemental Manual Vol II, Appendix C.

☐ SSP Attachment C – Hydraulic /Hydrologic Analysis and Modeling Results.

- ☐ WWHM "Formatted Report With Charts" report shall be included.
- ☐ WWHM "LID Duration Standard" report shall be included when applicable.
- ☐ WWHM "Wetland Fluctuation" report shall be included when applicable.
- ☐ Include all other hydraulic and hydrologic calculations related to the project.
- ☐ Basin Maps used in Off-Site Analyses (See Chapter 3 above).

☐ SSP Attachment D – Other Special Reports – See Engineering Design Standards Chapter 4 for report preparation requirements.

- ☐ Geotechnical Soils Report.
- ☐ Critical Area Report.
- ☐ Other reports related to historical site conditions, proposed project impacts, Low Impact Development feasibility analysis, and stormwater management.

☐ SSP Attachment E – Declaration of Covenant for Privately Maintained Facilities (Final SSP report following completion and acceptance of construction only).

Required Drawings

Include the following project drawings:

- ☐ Vicinity Map
- ☐ Existing Conditions Summary Site Map
- ☐ Site Map and Grading Plan
- ☐ Basin Map
- ☐ Site Plan showing all stormwater facilities, including on-site stormwater management facilities, treatment facilities, flow control facilities, conveyance systems, and mitigated impervious surfaces
- ☐ Storm System Plan and Profile
- ☐ Erosion Control Plan
- ☐ Detail Sheets

Appendix I-K Stormwater Facility Access Requirements

Additional Requirements for the City of Auburn

All publicly owned, manmade stormwater facilities and conveyances and all natural channels on the project site used for conveyance of altered flows due to development (including swales, ditches, stream channels, lake shores, wetlands, potholes, estuaries, gullies, ravines, etc.) shall be located within easements as required by the City.

Maintenance Access Easements

A minimum 15-foot wide maintenance access easement shall be provided to drainage facilities from a public street or right-of-way.

Maintenance access must be provided for all manholes, catch basins, vaults, detention ponds, or underground drainage facilities operated by the City. Maintenance access shall be through a public easement.

Maintenance access to privately maintained facilities shall also be required.

Access roads/ramps must meet the following requirements:

- Access roads shall be constructed with an asphalt, gravel surface, or other approved surface.
- Access roads that have a slope greater than 7% shall be asphalt paved.
- Maximum grade shall be 12%.
- The beginning and end of the access road shall have a slope less than 7% for a minimum distance of 50 feet.
- Inside turning radius shall be a minimum of 45 feet.
- Access roads shall be a minimum of 15 feet in width on curves and 12 feet in width on straight sections.
- A paved driveway connection meeting City design standards must be provided where access roads connect to paved public roadways.
- Access to the site shall be limited by a double-posted gate, or other approved equal.
- To reduce the length of unimpeded slope and to collect and reduce the probable impacts of sheet flow on the slope face, install benches at least 10 feet wide into the slopes adjacent to the access road, with 30 feet maximum vertical spacing between benches.

Public Stormwater Facility Easements

A stormwater easement is required for the placement, operation and maintenance of facilities upon private property.

Public stormwater easements shall meet the following requirements:

- Public stormwater easements shall extend a minimum of seven and one-half feet (7 ½') to each side of the centerline of the storm pipe and seven and one-half feet (7 ½') beyond the outside extremity of a storm facility. Additional width may be required depending upon the depth and site topography.
- Public stormwater easements shall be provided on the City's standard easement form. Legal description of the easement and the property that the easement encumbers, along with a sketch showing both, shall be sealed by a Land Surveyor licensed in Washington State and incorporated into the easement form as exhibits. The legal descriptions and sketch shall be on plain bond paper with margins acceptable to the County recording.
- Public stormwater easements shall be reviewed by the City and then recorded in the appropriate County prior to acceptance of the public storm system.

All pipes and channels must be located within the easement so that each pipe face or top edge of channel is no closer than 5 feet from its adjacent easement boundary. Pipes greater than 5 feet in diameter and channels with top widths greater than 5 feet shall be placed in easements adjusted accordingly, so as to meet the required dimensions from the easement boundaries.

The depth or proximity of steep slopes to the public system may necessitate a larger easement requirement for future excavation and maintenance purposes. See *Table K- 1 Additional Storm Drain Easement Widths* for appropriate widths based on depth of pipe.

INVERT DEPTH	**WIDTH**
< 10'	15'
10' - 15'	25'
15' - 20'	30'
> 20'	40'

Notes:

1. Greater width may be required for large diameter pipe or unfavorable site conditions.
2. Pipe shall be installed in center of easement.
3. If two pipes are to be installed in an easement, add 10 feet to the easement widths listed above. Use the deeper of the two pipes in selecting the easement width from this table. Install pipes with 10 feet of horizontal clearance between them.

Table K- 1 Additional Storm Drain Easement Widths

Private Stormwater Facility Easements

Privately owned facilities shall be located in separate easements outside of dedicated public road right-of-way areas. **Private systems serving multiple lots require prior City approval.**

- A separate storm drainage detention or retention system is required for each commercial or industrial lot unless a combined storm drainage system is used for more than one lot. In such cases, a private cross drainage easement and maintenance agreement is required for each lot, unless cross drainage requirements are set up as a condition of the recorded final plat. Copies of the recorded easements or plat condition, including the stormwater pollution prevention plan must be provided to the City prior to civil plan approval.

- All projects shall execute with the City a standard Stormwater Easement and Maintenance Agreement for the site's private storm drainage facilities. The easement shall be approved by the City and executed by the owner prior to issuance of occupancy permits for the development.

Detention Ponds

The following access shall be provided for public detention ponds:

- Maintenance access road(s) shall be provided to the control structure and other drainage structures associated with the pond (e.g., inlet or bypass structures). See access road criteria above.
- An access ramp is required for pond cleaning and maintenance. The ramp must extend to the pond bottom with a maximum slope of 7H:1V. See access road criteria above.
- Where a portion of the pond is constructed within a fill slope, an access road shall be provided adjacent to the detention pond along the entire length of the fill. See access road criteria above.
- Additional easements or modification to proposed lot boundaries, fencing, and/or gates may be required to provide adequate access to detention facilities. Right-of-way may be needed for detention pond maintenance. Any tract not abutting public right-of-way shall have a 15-foot wide easement or extension of the tract to an acceptable access location.