

Proposed Changes to the Stormwater Management Manual for Western Washington (SWMMWW)

Location	Approximate Page Numbers	Change Tied to Permit Language	Change	Reasoning or Comments
General				
Inside cover page	ES-i and ES-ii		Added an Executive Summary	Summarized the reasons for the update, the uses of the manual and provided information on the public involvement process.
Volume I Minimum Technical Requirements and Site Planning				
Volume I Minimum Technical Requirements and Site Planning	1-1 through Glossary-54		Renumbered Tables and Figures	Renumbered all tables and figures in Volume I. The new numbers coordinate tables and figures to the section of Volume I where they are located. (Eg. Figure 2.4.2 is the second figure in Section 2.4).
Chapter 1 - Introduction				
Chapter 1 - Introduction	1-1 through 1-29		Update incorrect or outdated code references.	Revised incorrect or outdated code references, such as the RCW and WAC.
Chapter 1 - Introduction	1-1 through 1-29		Minor language changes.	Revised for clarity and removed outdated language in Sections 1.2, 1.4, 1.5.1, 1.6.10, 1.6.15.
Section 1.5.4 Flow Control BMPs	1-5		Minor language changes.	Revised language for changes made in <i>Appendix I-D Guidelines for Wetlands when Managing Stormwater</i> .
Section 1.5.5 On-site Stormwater Management BMPs	1-6 through 1-7		Additional guidance provided.	Language added to categorize On-site Stormwater Management BMPs, including LID BMPs.
Section 1.6.4 The Puget Sound Action Agenda	1-11 through 1-13		Significant revisions to remove outdated guidance and to add new guidance. Section renamed.	References and guidance related to the Puget Sound Water Quality Management Plan was removed and replaced with guidance on the Puget Sound Action Agenda.
Section 1.6.5 Phase I - NPDES and State Waste Discharge Stormwater Permits for Municipalities	1-15 through 1-16	Yes	Additional guidance provided and outdated guidance removed.	Guidance was added referring Phase I Municipal Stormwater Permittees to Appendix 1 of the permit for more information on the requirements for their stormwater program requirements.
Section 1.6.6 Phase II - NPDES and State Waste Discharge Stormwater Permits for Municipalities	1-16 through 1-17	Yes	Additional guidance provided and outdated guidance removed.	Guidance was added referring Phase II Municipal Stormwater Permittees to Appendix 1 of the permit for more information on the requirements for their stormwater program requirements.
Section 1.6.7 Municipalities Not Subject to the NPDES Stormwater Municipal Permits	1-19		Guidance removed.	Removed outdated references to the Puget Sound Water Quality Management Plan. Section renamed.
Section 1.6.8 Industrial Stormwater General Permit	1-17 through 1-19	Yes	Revised to coordinate with the current Industrial Stormwater General Permit	This section was revised to provide an overview of the requirements of the current Industrial Stormwater General Permit and their relationship to the BMPs in the manual.
Section 1.6.9 Construction Stormwater General Permit	1-19 through 1-20	Yes	Revised to coordinate with the current Construction Stormwater General Permit	This section was revised to provide an overview of the requirements of the current Construction Stormwater General Permit and their relationship to the BMPs in the manual.
Chapter 2 - Minimum Requirements for New Development and Redevelopment				
Chapter 2 - Minimum Requirements for New Development and Redevelopment	2-1 through 2-55		Minor language changes.	Revised for clarity and removed outdated language in the introduction and in Sections 2.1, 2.2, 2.5.3, and 2.5.10.
Chapter 2 - Minimum Requirements for New Development and Redevelopment	2-1 through 2-55	Yes	Revised language.	Revised definitions, requirements, supplemental guidance, etc. to correspond to the changes in the Municipal Stormwater Permits and for new LID requirements.
Section 2.1 Relationship to the Puget Sound Action Agenda	2-2 through 2-3		Added guidance. Section renamed.	Removed outdated references to the Puget Sound Water Quality Management Plan. Section renamed and focuses on relationship of the manual to the municipal stormwater permits.

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Section 2.3 Definitions Related to Minimum Requirements	2-4 through 2-10	Yes	Added and revised definitions.	There are a few terms, used previously but not defined, for which definitions have been added. A handful of other terms have a revised definition or a new definition because of the new low impact development (LID) guidance and requirements in the Municipal Stormwater Permits.
Section 2.4 Applicability of the Minimum Requirements	2-10 through 2-12	Yes	Revised the thresholds for determining which minimum requirements apply to new development and redevelopment. Revised supplemental guidelines.	Changes include: the replacement of "impervious" surfaces with "hard" surfaces, the application of minimum requirements #6 - #9 to replaced hard surfaces at new development sites, the deletion of the word "native" from the land conversion threshold.
Section 2.5.1 Minimum Requirement #1: Preparation of Stormwater Site Plans	2-17	Yes	Revised requirements and objective.	Added a new statement for the site plan to use site-appropriate development principles to retain native vegetation and minimize impervious surfaces to the extent feasible.
Section 2.5.2 Minimum Requirement #2: Construction Stormwater Pollution Prevention (SWPP)	2-18 through 2-32	Yes	Reorganized and revisions to: thresholds, general requirements, construction SWPPP elements, objective, and supplemental guidelines.	Changes include: revisions to the construction SWPPP elements to correspond with the Construction Stormwater General Permit, the addition of element #13 that requires the protection of LID Best Management Practices, and revision of element #12 to include responsibilities for an inspector or CESCL depending on the size of the project.
Section 2.5.5 Minimum Requirement #5: Construction Stormwater Pollution Prevention (SWPP)	2-34 through 2-38	Yes	Multiple revisions for new low impact development (LID) requirements.	Changes include the new LID performance standard and mandatory list options based on project size and location. The mandatory lists are divided into three land use types: lawn and landscaped areas; roofs, and other hard surfaces. Projects implementing the mandatory list option must select the first feasible BMP for each land use type. Some of the BMPs included in the mandatory lists are: rain gardens, permeable pavements, bioretention, and vegetated roofs.
Section 2.5.6 Minimum Requirement #6: Runoff Treatment	2-38 through 2-41	Yes	Revisions to the thresholds, Water Quality Design Flow Rate, and supplemental guidelines.	Revisions made to acknowledge the use of permeable pavements and the related new definitions. The intent is to continue to capture the same size and types of projects as previously.
Section 2.5.7 Minimum Requirement #7: Runoff Treatment	2-41 through 2-46	Yes	Revisions to the thresholds and supplemental guidelines.	Revisions made to acknowledge the use of permeable pavements and the related new definitions. The intent is to continue to capture the same size and types of projects as previously.
Section 2.5.8 Minimum Requirement #8: Wetlands Protection	2-46 through 2-48	Yes	Revisions to the applicability, thresholds, standard requirement, additional requirements, and supplemental guidelines.	Revisions correspond to the significantly revised <i>Appendix I-D Guidelines for Wetlands when Managing Stormwater</i> .
Section 2.8 Exceptions/Variances	2-54 through 2-55	Yes	Additional guidance provided.	Changed and added language to be consistent with the requirements in Appendix 1 of the 2007 municipal stormwater permits.
Chapter 3 - Preparation of Stormwater Site Plans				
Chapter 3 - Preparation of Stormwater Site Plans	3-1 through 3-13		Minor language changes.	Revised for clarity and removed outdate language in the introduction and in section 3.1.7.
Section 3.1.1 Step 1 - Collect and Analyze Information on Existing Conditions	3-2 through 3-4		Additional guidance provided and outdated guidance removed.	Additional guidance details the information necessary for site analysis, and in particular for LID site design.

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Section 3.1.5 Step 5 - Prepare a Permanent Stormwater Control Plan	3-5 through 3-9		Revisions to Developed Site Hydrology, Performance Standards and Goals, LID Features, Flow Control Systems, and Water Quality Systems.	Changes include: revisions made to correspond to the changes in Chapter 2 of this volume, a subsection detailing the information needed for LID features, and guidance for bioretention facilities and permeable pavements.
Section 3.1.6 Step 6 - Prepare a Construction Stormwater Pollution Prevention Plan	3-9 through 3-10		Minor language changes.	Changes for clarification and to remove repetitive language.
Chapter 4 - BMP and Facility Selection Process for Permanent Stormwater Control Plans				
Section 4.2 BMP and Facility Selection Process	4-1 through 4-7		Revised language, proposed replacing the language in <i>Step V: Select Treatment Facilities</i> with a reference to Chapter 2 of Volume V.	Revisions and new language in Step III for guidance on modeling threshold discharge areas. Minor revisions to correspond to the changes in the Municipal Stormwater Permits and for new LID requirements. Ecology proposes replacing the language in <i>Step V: Select Treatment Facilities</i> with a reference to Chapter 2 of Volume V.
Appendix I-A Guidance for Altering the Minimum Requirements Through Basin Planning				
Appendix I-A Guidance for Altering the Minimum Requirements Through Basin Planning	A-1 through A-3		Additional guidance provided.	Added language for clarity.
Appendix I-B Rainfall Amounts and Statistics				
Appendix I-B Rainfall Amounts and Statistics	B-1 through B-12		Removed introductory language and background information on the Water Quality Design Storm and Water Quality Design Flow Rate.	Removed background and outdated information for brevity. Renamed the appendix and retained the rainfall tables.
Appendix I-D Guidelines for Wetlands when Managing Stormwater				
Appendix I-D Guidelines for Wetlands when Managing Stormwater	D-1 through D-21	Yes	Multiple revisions for the use and/or the protection of Wetlands when managing stormwater.	Rewritten to remove outdated information, clarify concepts, and approach the protection and use of wetlands through controlling discharges to wetlands. Total discharges to wetlands must not deviate by more than 20% on a single event basis, and must not deviate by more than 15% on a monthly basis.
Appendix I-E Flow Control-Exempt Surface Waters				
Appendix I-E Flow Control-Exempt Surface Waters	E-1 through E-4		Added and deleted Exempt Surface Waters.	List edited to add additional waters based on specific requests and analyses, and to remove reference to a creek in Eastern WA.
Appendix I-F Feasibility Criteria for Selected Low Impact Development Best Management Practices				
Appendix I-F Feasibility Criteria for Selected Low Impact Development Best Management Practices	F-1 through F-4	Yes	Added Appendix I-Feasibility Criteria for Selected Low Impact Development Best Management Practices.	Added Appendix I-Feasibility Criteria for Selected Low Impact Development Best Management Practices to correspond with new LID requirements and to correspond to the changes in the Municipal Stormwater Permits.
Glossary and Notations				
Glossary and Notations	Glossary-2 through Glossary-54		Added and revised definitions.	There are a few terms, used previously but not defined, for which a definition has been added. A handful of other terms have an revised definition because of the new low impact development (LID) guidance and requirements in the Municipal Stormwater Permits.

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Volume II Construction Stormwater Pollution Prevention				
Chapter 1 - Introduction Construction Stormwater Pollution Prevention				
Chapter 1 - Introduction Construction Stormwater Pollution Prevention	1-1 through 1-9		Multiple revisions for plain language, clarity, and brevity.	Revised this chapter to use simpler and clearer language.
Section 1.3 How to Use This Volume	1-2		This section was removed. The information in this section is now included in Sections 1.2.	Removed this section by combining it with Section 1.2 to eliminate duplicate language.
Section 1.4 Twelve Elements of Construction Stormwater Pollution Prevention	1-3	Yes	Renamed to 1.3 Thirteen Elements of Construction Stormwater Pollution Prevention	Revised to incorporate a new element, Protect Low Impact Development BMPs.
Chapter 2 - Regulatory Requirements				
Chapter 2 - Regulatory Requirements	2-1 through 2-8		Multiple revisions for plain language, clarity, and brevity.	Revised this chapter to use simpler and clearer language. Information covered in Volume I, Section 1.6 Relationship of the Manual to Federal, State, and Local Regulatory Requirements was removed.
Chapter 2 - Regulatory Requirements	2-1 through 2-8	Yes	Multiple revisions to coordinate the manual to the Washington State General Stormwater Permits.	Revised this chapter to update this information for revisions to the Stormwater General Permits (including the Municipal, Construction, and Industrial Permit).
Section 2.1 and Section 2.2	2-2 through 2-6	Yes	Section 2.1 The Construction Stormwater General Permit and Section 2.2 Construction Stormwater Pollution Prevention Plans now replace the previous Sections 2.1 and 2.2.	Replaced these sections to remove invalid information or duplicate information. Sections 2.1 and 2.2 now go into detail about the relationship of Volume II to the Construction Stormwater General Permit and the requirements for a Stormwater Site Pollution Prevention Plan.
Chapter 3 - Planning				
Chapter 3 - Planning	3-1 through 3-21		Multiple revisions for plain language, clarity, and brevity.	Revised this chapter to use simpler and clearer language. Information covered in Volume I, Section 1.6 Relationship of the Manual to Federal, State, and Local Regulatory Requirements was removed.
Section 3.2 and Section 3.3	3-4 through 3-7		Previous Sections 3.2 and 3.3 have been reversed.	Moved The Construction SWPPP Requirements, previously in Section 3.3 to Section 3.2 for clarity. The Step-By-Step Procedure now follows in Section 3.3. Please note that the Construction Stormwater Pollution Prevention Plan Checklist is still located in Section 3.3.
Section 3.3.3 (Previously Section 3.2.3) Step 3 - Construction SWPPP Development and Implementation	3-12 through 3-30	Yes	Multiple revisions to the Construction SWPPP Elements.	Revised The Construction SWPPP Elements, described in Section 3.3.3 to coordinate with the Construction Stormwater General Permit, Municipal Stormwater Permits, and the Construction BMPs in Chapter 4. Each element now contains an Additional Guidance section that has information not required by the permits.

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Chapter 4 - Best Management Practices Standards and Specifications				
Chapter 4 - Best Management Practices Standards and Specifications	4-1 through 4-117		Added approved equivalent BMPs Sections.	Refers to Ecology's website for BMPs that have been approved as equivalent.
Tables in Chapter 4 - Best Management Practices Standards and Specifications	4-1 through 4-118		Renumbered Tables	Renumbered all tables in Chapter 4. The new numbers coordinate tables to either Section 4.1 or 4.2. (Eg. Table 4.1.3 is the third table in Section 4.1).
Section 4.1 Source Control BMPs	4-2	Yes	Added Table 4.1 Source Control BMPs by SWPPP Element	Ecology added Table 4.1 Source Control BMPs by SWPPP Element to show how the BMPs listed in Section 4.1 relate to the SWPPP Elements.
BMP C103: High Visibility Fence	4-7		This BMP now includes high visibility silt fence. Multiple revisions for plain language, clarity, and brevity.	Added high visibility silt fence because it meets the intent of BMP C103. Ecology revised this chapter to use simpler and clearer language.
BMP C104: Stake and Wire Fence	4-8		This BMP was removed.	Removed this BMP because BMP C103: High Visibility Fence meets the intent of this BMP in a safer and more commonly used manner.
BMP C105: Stabilized Construction Entrance / Exit	4-9		Additional guidance provided and outdated guidance removed.	Added and removed guidance for this BMP based on comments received and field experience.
BMP C106: Wheel Wash	4-12		Additional guidance provided and outdated guidance removed.	Added guidance to clarify that wheel wash wastewater shall not discharge to surface or ground water.
BMP C120: Temporary and Permanent Seeding	4-16 through 4-26		Multiple revisions for plain language, clarity, and brevity. Additional guidance provided and removed.	Revised and reorganized this BMP to use simpler and clearer language. Some guidance was moved to BMP C121: Mulching or BMP C125: Top soiling. Ecology added and removed additional guidance for this BMP based on comments received and field experience.
BMP C121: Mulching	4-27 through 4-29		Additional guidance provided.	Added minimum mulch thickness based on field experience and comments. Ecology added guidance previously found in BMP C120: Temporary and Permanent Seeding to this BMP.
BMP C122: Nets and Blankets	4-29 through 4-32		Multiple revisions for plain language, clarity, and brevity.	Revised this BMP to use simpler and clearer language.
BMP C123: Plastic Covering	4-34 through 4-36		Additional guidance provided and outdated guidance removed.	Removed the use of plastic sheeting over seeded areas because other coverings (such as compost and straw) are preferable. Ecology added and removed guidance for this BMP based on comments received and field experience.
BMP C125: Top soiling / Composting	4-30 through 4-42		Additional guidance provided and outdated guidance removed.	Added guidance previously found in BMP C120: Temporary and Permanent Seeding to this BMP. Ecology added and removed guidance for this BMP based on comments received and field experience.
BMP C150: Materials on Hand	4-44		Suggested measures and quantities removed.	Removed measures and quantities because measures and quantities should vary based on the size of the construction site.
BMP C151: Concrete Handling and BMP C152: Sawcutting and Surface Pollution Prevention	4-45 through 4-47	Yes	Additional guidance provided.	Added guidance to coordinate this BMP with the requirements of the Construction Stormwater General Permit and to make it clear that Concrete spillage or concrete discard to surface waters of the State is prohibited.
BMP C154: Concrete Washout Area	4-50 through 4-55		Added this BMP.	Added this BMP to provide additional guidance for concrete washout areas.

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BMP C160: Certified Erosion and Sediment Control Lead	4-56 through 4-57 and C-1 through C-3		Additional guidance provided and outdated guidance removed.	Minimum Requirements for ESC Training and Certification Courses has been moved to Appendix II - C. Ecology revised guidance for this BMP based on comments received.
BMP C180: Small Project Construction Stormwater Pollution Prevention	Previously 4-55	Yes	This BMP was removed.	Removed this BMP because of changes in threshold requirements in both the Municipal Stormwater General Permits and Construction Stormwater General Permit.
Section 4.2 Runoff Conveyance and Treatment BMPs	4-59	Yes	Added Table 4.2 Runoff Conveyance Treatment BMPs by SWPPP Element	Added Table 4.2 Runoff Conveyance Treatment BMPs by SWPPP Element to show how the BMPs listed in Section 4.2 relate to the SWPPP Elements.
BMP C207: Check Dams	4-78 through 4-80		Additional guidance provided.	Added guidance for this BMP based on comments received and field experience.
BMP C220: Storm Drain Inlet Protection	4-86 through 4-90		Additional guidance provided.	Added guidance for inlet protection of lawn and yard drains and based on comment received and field experience.
BMP C230: Straw Bale Barrier	Previously 4-89		This BMP was removed.	Removed this BMP because this BMP has been proven to be ineffective.
BMP C233: Silt Fence	4-95 through 4-100		Multiple revisions for plain language, clarity, and brevity.	Revised and reorganized this BMP to use simpler and clearer language.
BMP C235: Wattles	4-102 through 4-104		Renamed from Straw Wattles.	Renamed this BMP to include wattles made from compost or other materials.
BMP C236: Vegetated Spray Fields	4-114 through 4-116		Added this BMP.	Added this new BMP for dewatering, Construction SWPPP Element #10.
BMP C250: Construction Stormwater Chemical Treatment	4-114 through 4-121		Additional guidance provided.	Added guidance for this BMP, previously available online, to coordinate with the Chemical Technology Assessment Protocol (CTAPE) program.
BMP C251: Construction Stormwater Filtration	4-122 through 4-126		Additional guidance provided.	Added sizing criteria for this BMP, previously available online.
BMP C252: High pH Neutralization Using CO ₂	4-127 through 4-130		Added this BMP.	Added this BMP, previously available online, to provide guidance on neutralizing high pH through the use of CO ₂ .
BMP C253: pH Control for High pH Water	4-131 through 4-132		Added this BMP.	Added this BMP, previously available online, to provide additional guidance for neutralizing high pH.
Appendix II-B Background Information on Chemical Treatment	B-2 through B-4		Multiple revisions to coordinate with BMP C252 and BMP C53.	Revised this appendix to coordinate with the new information provided in BMP C252 and in BMP C253.
Appendix II-C Minimum Requirements for ESC Training and Certification Courses	C-1 through C-3		Added this appendix.	Moved guidance from BMP C160: Certified Erosion and Sediment Control Lead to this appendix.

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Volume III Hydrologic Analysis and Flow Control Design / BMPs				
Chapter 2 - Hydrologic Analysis				
Section 2.2 Western Washington Hydrology Model	2-7 through 2-12		Section 2.2 split into multiple subsections.	Section 2.2 split into multiple subsections for clarity and for referencing purposes.
Section 2.2 Western Washington Hydrology Model	2-7		Additional guidance provided.	Added guidance on possible Western Washington Hydrology Model (WVHM) changes.
Section 2.2.2 Assumptions made in creating the WVHM	2-7 through 2-11		Additional guidance provided.	Added guidance on precipitation data and possible WVHM changes.
Section 2.2.3 Guidance for flow-related standards	2-11 through 2-12	Yes	Additional guidance provided and outdated guidance removed for Minimum Requirements (MR).	Added guidance for MR #5 which now includes an LID Performance Standard. Revised the guidance for MR#8 to reflect the changes made in Volume I, Appendix 1-D.
Chapter 3 - Flow Control Design				
Section 3.1.2 Downspout Dispersion Systems	3-11		Additional guidance provided and outdated guidance removed.	Added guidance on entering flow credit into WVHM and deleted outdated instructions. Added guidance for design criteria for dispersion trenches and splashblocks.
Section 3.2 Landscaping	3-28		Additional guidance provided.	Added specificity regarding use of trees in stormwater facilities. To improve guidance on how to avoid problems associated with leaf drop.
Section 3.3.2 Description	3-65		Additional guidance provided.	Made clarifications and added language for complying with MR#5. Added guidance for oil control and pre-treatment facilities.
Section 3.3.3 Applications	3-65		Additional guidance provided.	Made clarifications and added language for complying with the LID Performance Standard.
Section 3.3.4 Steps for Design of Infiltration Facilities	3-68 through 3-71	Yes	Revised several steps for new infiltration rate guidance and the new LID performance standard.	Revised Step 2 to include guidance for meeting MR#5. Significantly revised Step 5 for the new guidance provided in section 3.3.6. Revised Step 6 for clarity and for meeting MR#5. Revised Step 7 for clarity.
Section 3.35 Site Characterization Criteria	3-72 through 3-77		Revised guidance on subsurface characterization, infiltration rate determination and soil testing. Removed suggestion for hydrogeologic investigation and figure 3.27, USDA Textural Triangle.	Multiple changes to subsurface characterization include added guidance on groundwater monitoring wells and the use of grain size analysis method for estimating infiltration rates. Revisions to the infiltration rate determination section include additional guidance for calculating the saturated hydraulic conductivity using Pilot Infiltration Tests (PIT) or grain size analysis.
Section 3.3.6 Design Saturated Hydraulic Conductivity - Guidelines and Criteria	3-78 through 3-93		Revisions for determining the saturated hydraulic conductivity (infiltration rate). Section renamed.	Replaced "Infiltration Rate" with "Saturated Hydraulic Conductivity" throughout section. Updated the guidelines and criteria for determining saturated hydraulic conductivity. Added guidance on pilot infiltration testing (PIT), and soil grain size analysis. Revised correction factors for PIT results and soil grain size method. Removed options based on USDA Soil Texture Classification and D10 grain size.
Section 3.3.7 Site Suitability Criteria (SSC)	3-90 through 3-94		Additional guidance provided and outdated guidance removed.	Updated references, removed unneeded guidance, revised limits on infiltration rates, and added a limit on organic content.

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Section 3.3.8 Steps for Designing Infiltration Facilities - Detailed Approach	3-94 through 3-103		Multiple revisions. Previous steps 1-4 removed. Multiple steps revised. Added groundwater mounding analysis step.	Removed steps to select location, estimate volume of stormwater, develop a trial infiltration facility geometry, conduct a geotechnical investigation, and determine the saturated hydraulic conductivity; instead refers to steps 1-5 in section 3.3.4. Revised Figure 3.27 for updated guidance. Revised guidance for adjusting the preliminary design infiltration rate. Added a step for groundwater mounding analysis. Added guidance for conducting performance testing.
Section 3.3.9 General Design, Maintenance, and Construction Criteria for Infiltration Facilities	3-104 and 3-107		Additional guidance provided and outdated guidance removed.	Added guidance for using the Simplified Approach and made minor clarifications to guidance.
Section 3.4 Site Procedures for Bioretention and Permeable Pavement Use	3-116 through 3-118	Yes	Added new section for bioretention and permeable pavement.	Added guidance re field tests, computer modeling, and implementation for bioretention / rain gardens and permeable pavement.
Appendix III-B Western Washington Hydrology Model - Information, Assumptions, and Computation Steps				
Appendix III-B Western Washington Hydrology Model - Information, Assumptions, and Computation Steps	B-1 through B-20	Yes	Additional guidance provided and outdated guidance removed.	Added guidance on possible WWHM changes. Added guidance for the modeling on LID elements and wetlands. Removed outdated computation steps.
Appendix III-C Washington State Department of Ecology Low Impact Development Design and Flow Modeling Guidance				
Appendix III-C Washington State Department of Ecology Low Impact Development Design and Flow Modeling Guidance	C-1 through C-25	Yes	Additional guidance provided and outdated guidance removed.	Multiple revisions for permeable pavement, dispersion, vegetated roofs, soil quality and depth, and bioretention areas. Added tree retention and planting, and soil quality and depth.
Appendix III-D Procedure for Conducting a Pilot Infiltration Test				
Appendix III-D Procedure for Conducting a Pilot Infiltration Test	D-1 through D-2		Appendix removed.	Procedures for conducting the PIT have been included within the proposed text on "Design Infiltration Rate Determination" in sections 3.3.6 and 3.3.8.

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Volume IV Source Control BMPs				
Chapter 1 - Introduction				
Chapter 1 - Introduction	1-1 through 1-5		Minor language changes.	Revised for clarity and removed outdated language in Sections 1.1, 1.2, 1.4, and 1.7.
Section 1.3 How to Use this Volume	1-2		Additional guidance provided and outdated guidance removed.	Added new guidance regarding the Industrial Stormwater General Permit (ISWGP) and the inclusion of "applicable" BMPs from this volume in Industrial Stormwater Pollution Prevention Plans (Industrial SWPPPs).
Section 1.5 Treatment BMPs for Specific Pollutant Sources	1-3 through 1-4	Yes	Additional guidance provided and outdated guidance removed.	Added new guidance clarifying the requirements regarding treatment BMPs for industries covered under the ISWGP.
Section 1.6.1 Applicable (Mandatory) BMPs	1-4		Additional guidance provided and outdated guidance removed.	Added new guidance regarding the ISWGP and the inclusion of "applicable" BMPs. Section renamed to make it clearer that applicable BMPs are Mandatory for permittees under the ISWGP.
Section 1.6.2 Recommended BMPs	1-5	Yes	Additional guidance provided.	Added guidance regarding facilities covered under the ISWGP that trigger a corrective action.
Chapter 2 - Selection of Operational and Structural Source Control BMPs				
Chapter 2 - Selection of Operational and Structural Source Control BMPs	2-1 through 2-7		Additional guidance provided and outdated guidance removed.	Added guidance regarding the ISWGP and the inclusion of "applicable" BMPs from this volume in Industrial SWPPPs. Added guidance regarding facilities covered under the ISWGP that trigger a Level 1 or 2 corrective action.
Chapter 2 - Selection of Operational and Structural Source Control BMPs	2-14 through 2-74		Minor revisions for plain language, clarity, and brevity.	Revised BMPs to use simpler and clearer language and removed outdated references.
Section 2.1 Applicable (Mandatory) Operational Source Control BMPs	2-2 through 2-7		Additional guidance provided and outdated guidance removed.	Revised several BMPs for clarity and to coordinate with the ISWGP. Significant changes include: the addition of a pressure washing BMP, additional guidance for spill prevention and cleanup, additional guidance for visual inspections / record keeping.
Section 2.2 Pollutant Source Specific BMPs			Additional guidance provided and outdated guidance removed.	Added new text on ISWGP requirements.
BMPs for the Building, Repair, and Maintenance of Boats and Ships	2-8 through 2-10		Additional guidance provided and several BMPs clarified.	Clarified guidance describing which NPDES permit(s) regulate boatyard activities. Revised BMPs to use simpler and clearer language.
BMPs for Commercial Animal Handling Areas	2-11		Minor revisions for plain language, clarity, and brevity.	Revised BMPs to use simpler and clearer language.
BMPs for Commercial Composting	2-12 through 2-13		Additional guidance provided and outdated guidance removed.	Revised language because solid waste regulations prohibit discharge of compost leachate. Revised BMPs to use simpler and clearer language, and removed outdated references.
BMPs for Spills of Oil and Hazardous Substances	2-57 through 2-58		Additional guidance provided and outdated guidance removed.	Revised several BMPs for clarity and to coordinate with the ISWGP.
BMPs for Washing and Steam Cleaning Vehicles / Equipment / Building Structures	2-70 through 2-72	Yes	Additional guidance provided and outdated guidance removed.	Added guidance to clarify that the ISWGP prohibits the discharge of process wastewater to ground water or surface water.
BMPs for Wood Treatment Areas	2-73 through 2-74		Additional guidance provided and several BMPs clarified.	Clarified guidance describing which NPDES permit(s) regulate wood treatment areas. Revised BMPs to use simpler and clearer language.

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Appendix IV-A Urban Land Uses and Pollutant Generating Sources				
Appendix IV-A Urban Land Uses and Pollutant Generating Sources	A-1 through A-24		Minor language changes.	Edits for clarity and to replace and revise guidance documents and WAC references.
Appendix IV-B Stormwater Pollutants and Their Adverse Impact				
Appendix IV-B Stormwater Pollutants and Their Adverse Impact	B-1		Minor language changes.	Minor language changes for clarity.
Appendix IV-C Recycling/Disposal of Vehicle Fluids/Other Wastes				
Appendix IV-C Recycling/Disposal of Vehicle Fluids/Other Wastes	C-1		Minor language changes.	Minor language changes for clarity.
Appendix IV-D Regulatory Requirements That Impact Stormwater Programs				
Appendix IV-D Regulatory Requirements That Impact Stormwater Programs	D-1 through D-9		Minor language changes.	Edits for clarity and to replace and revise guidance documents and WAC references.
Appendix IV-E NPDES Stormwater Discharge Permits				
Appendix IV-E NPDES Stormwater Discharge Permits	E-1 through E-8	Yes	Additional guidance provided and outdated guidance removed.	Edits to make guidance consistent with the most recent industrial and municipal stormwater permits.
Appendix IV-G Recommendations for Management of Street Wastes				
Appendix IV-G Recommendations for Management of Street Wastes	G-1 through G-23		Multiple revisions for plain language, clarity, and brevity. Additional guidance provided and outdated guidance removed.	Removed outdated guidance and added new guidance in the contamination in Street Waste Solids subsection. Reorganized the disposal of street waste liquids subsection, no major content changes. Minor revisions to the Site Evaluation subsection.

Proposed Changes to the Stormwater Management Manual for Western Washington (SWMMWW)

Location	Approximate Page Numbers	Change Tied to Permit Language	Change	Reasoning or Comments
Volume V Runoff Treatment BMPs				
Chapter 1 - Introduction				
Section 1.4.3 Treatment Methods	1-2 through 1-5		Additional guidance provided and outdated guidance removed.	Revised guidance for oil/water separation, pretreatment, infiltration, filtration, emerging technologies, and on-line systems. Added Bioinfiltration as a treatment method.
Chapter 2 - Treatment Facility Selection Process				
Chapter 2 - Treatment Facility Selection Process	2-1		Additional guidance provided.	Added paragraph on emerging technology options.
Section 2.1 Step-by-Step Selection Process for Treatment Facilities	2-1 through 2-9		Minor revisions to the steps.	Revised selection process steps for clarity and to remove outdated information. Revised the Treatment Facility Selection Flow Chart for revised guidance throughout Volume V.
Section 2.2 Other Treatment Facility Selection Factors	2-9 through 2-12		Removed the subsection on Pollutants of Concern, the Suggested Treatment Options Table, and Ability of Treatment Facilities Table.	Removed the Suggested Treatment Options Table and Ability of Treatment Facilities Table because they provided limited usefulness and removed the associated subsection, Pollutants of Concern.
Chapter 3 - Treatment Facility Menus				
Section 3.2 Oil Control Menu	3-2 through 3-3		Revised list of options.	Removed catch basin inserts and added emerging stormwater treatment technologies. To date, no catch basin inserts have been approved though the TAPE process but Ecology has approved one emerging technology.
Section 3.3 Phosphorous Treatment Menu	3-4 through 3-5		Revised list of options.	Removed amended sand filter (no design criteria have been developed for this treatment), and media filter, added emerging stormwater treatment technologies.
Section 3.4 Enhanced Treatment Menu	3-6 through 3-9		Multiple revisions to remove outdated guidance and to provide new guidance. Revised list of options.	Revised the performance goal for dissolved metals. Removed Amended Sand Filter. Added "vegetated" to "Compost Amended Vegetated" Filter Strip. Removed "raingarden" for consistency with proposal to distinguish between "bioretention" and "rain gardens." Replaced "Ecology Embankment" with "Media Filter Drain." Added emerging technologies.
Section 3.5 Basic Treatment Menu	3-9 through 3-11		Minor language changes for clarity. Revised list of options.	Removed "raingarden" for consistency with proposal to distinguish between "bioretention" and "rain gardens." Replaced "Ecology Embankment" with "Media Filter Drain". Added Compost-amended Vegetated Filter Strip. Removed Bio-infiltration Swale. Added emerging technologies.
Chapter 4 - General Requirements for Stormwater Facilities				
Section 4.1.2 Water Quality Design Flow Rate	4-1 through 4-2		Minor language changes for clarity.	Revised language for clarity.
Section 4.6 Maintenance Standards for Drainage Facilities	4-50	Yes	Text box indicating intent to add standards for new treatment options and permeable pavement.	To use recent documents as basis for translation into the format of the existing maintenance standard tables.
Chapter 5 - On-Site Stormwater Management				
Section 5.1 Purpose	5-1		Additional guidance provided.	Add reference to expanded BMP options and LID Manual to acknowledge the expansion of Chapter 5 and source of additional design details (LID Manual).
Section 5.2 Application	5-1		Additional guidance provided.	Revised application to refer to Minimum Requirement #5 (LID Requirements).

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Location	Approximate Page Numbers	Change Tied to Permit Language	Change	Reasoning or Comments
Section 5.3 Best Management Practices for On-Site Stormwater Management	5-1 through 5-2		Additional guidance provided.	Revised the list of BMPs in sections 5.3.1 and 5.3.2 revised language and references for clarity.
Section 5.3.1 Dispersion and Soil Quality BMPs (Required for Manual Equivalency)	5-3 to 5-22		Amend existing BMP's add new BMP's	Revised dispersion options. Added reference to LID Manual for design details for rain gardens and permeable pavements. Added and slightly revised BMP T5.30 Full Dispersion, previously found in section 5.3.3.
Section 5.3.3 Other Practices	5-28 through 5-31		Deleted Full Dispersion and section 5.3.3 <i>Other Practices</i>	Moved Full Dispersion into previous section because the municipal stormwater permits make it a necessary option in MR #5.
Chapter 6 - Pretreatment				
Section 6.1 Purpose	6-1		Minor language changes.	Removed "and media filtration" in first bullet for clarity.
Section 6.3 Best Management Practices (BMPs) for Pretreatment	6-1		Additional guidance provided.	Added reference to Chapter 12.
Chapter 7 - Infiltration and Bio-infiltration Treatment Facilities				
Chapter 7 - Infiltration and Bio-infiltration Treatment Facilities	7-1 through 7-6		Minor language changes for clarity.	Updated listed BMPs and made minor revisions throughout the chapter for clarity.
BMP T 7.10 Bioretention Cells, Swales, and Planter Boxes	7-7 through 7-25		Replaced Bio-infiltration Swale with Bioretention Cells, Swales, and Planter Boxes.	Added guidance and design criteria for Bioretention Cells, Swales, and Planter Boxes.
BMP T7.40 Compost-amended Vegetated Filter Strips (CAVFS)	7-26 through 7-29		Added this BMP.	Added guidance and design criteria for Compost-amended Vegetated Filter Strips.
Chapter 8 - Sand Filtration Treatment Facilities				
Chapter 8 - Sand Filtration Treatment Facilities	8-1 through 8-36		Minor language changes for clarity.	Added references for Media Filter Drain to description and Performance Objectives. Clarified objective for sand filters.
Section 8.4 Sand Filter Basin and Vault Applications and Limitations	8-13		Changed title	Restricted this section to be applicable to Sand filters only
Section 8.5 Best Management Practices / BMP T8.10 Sand Filter Basin	8-14 to 8-20		Renamed and reorganized section. Additional guidance provided.	Added design criteria for sand filter basins. reorganized section so that previous sections 8.5, 8.6, 8.7, & 8.8 become subsections under BMP T8.10.
BMP T8.20 Sand Filter Vault	8-21 through 8-22		Additional guidance provided.	Added design criteria, construction criteria, and maintenance criteria for sand filter vault.
BMP T8.30 Linear Sand Filter	8-22 through 8-23		Additional guidance provided.	Added reference to section 8.6.
BMP T8.40 Media Filter Drain	8-24 through 8-36		Added this BMP.	Added design criteria for new Media Filter Drain (MFD) option (previously referred to as Ecology Embankment).
Chapter 9 - Biofiltration Treatment Facilities				
Chapter 9 - Biofiltration Treatment Facilities	9-1 through 9-28		Minor language changes for clarity.	Minor language changes for clarity throughout the chapter.
Section 9.4 Best Management Practices	9-2 through 9-20		Additional guidance provided and outdated guidance removed.	Revised list of BMPs. Revised Sizing Criteria table for clarity.
BMP T9.50 Narrow Area Filter Strip	9-27 through 9-28		Removed this BMP.	No design criteria exists for this BMP to validate basic treatment. Designers should refer to Basic Filter Strip.
Chapter 10- Wetpool Facilities				

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Location	Approximate Page Numbers	Change Tied to Permit Language	Change	Reasoning or Comments
BMP T10.10 Wet Pond	10-6 through 10-17		Minor language changes for clarity.	First cell must be lined to be consistent with liner requirements in Chapter 4. Added cell requirements for consistency with design criteria for 2-cell ponds.
Chapter 11 - Oil and Water Separators				
BMP T11.10 API (Baffle type) Separator Bay	11-8 through 11-19		Corrected formula.	Corrected Stokes Law equation for rise rate.
BMP T11.11 Coalescing Plate (CP) Separator Bay	11-11 through 11-12		Corrected formula.	Corrected the equation to calculate the projected (horizontal) surface area of plates.
Chapter 12 - Emerging Technologies				
Chapter 12 - Emerging Technologies	12-1 through 12-9		Replaced sections 12.1 through 12.5 with new guidance.	Replaced sections 12.1 through 12.5 to provide new guidance on the Technology Assessment Protocol (TAPE) review and approval process.
Section 12.6 Examples of Emerging Technologies for Stormwater Treatment and Control	12-9 through 12-8		Removed examples of emerging technologies.	Removed examples of emerging technologies. Added some examples previously listed throughout this volume.
Appendix V-B Recommended Procedures for ASTM D 2434				
Appendix V-B Recommended Procedures for ASTM D 2434	B-1 through B-2		Proposed addition of Procedures for ASTM D 2434	The results of this test for saturated hydraulic conductivity can be influenced by how the general procedures in the ASTM method are implemented. This appendix will layout more specific procedures to help with consistency in evaluating soils used for bioretention.
Appendix V-E Recommended Bioretention Plant Species				
Appendix V-E Recommended Bioretention Plant Species	E-1		Proposed appendix.	Details for Bioretention plant species will be added from the Low Impact Development Technical Guidance Manual.