

**Summary of Key Changes to 2018 Stormwater Management Manual for Eastern Washington (SWMMEW)
Executive Summary, Chapter 1, and Chapter 2**

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Executive Summary	Not applicable	<ul style="list-style-type: none"> Renamed (formerly “Foreword”) and updated with 2018 revision process, Steering Committee members, and Ecology reviewers
Chapter 1 Introduction	Section 1.1.2 More Stringent Measures and Retrofitting	<ul style="list-style-type: none"> Minor clarifying edits
	Section 1.1.4 Comparison of the Stormwater Management Manuals for Eastern and Western Washington	<ul style="list-style-type: none"> Minor clarifying edits, including edit regarding special considerations for arid, semi-arid, and cold climates that are included in the SWMMEW, but not the Stormwater Management Manual for Western Washington (SWMMWW)
	Section 1.3.1 Water Quality Changes	<ul style="list-style-type: none"> Deleted Table 1.3 (Mean Concentrations of Selected Pollutants in Highway Stormwater Runoff in the State of California) and replaced with WSDOT website link for latest available data.
	Section 1.4.2 NPDES and State Waste Discharge Stormwater Permits for Municipalities	<ul style="list-style-type: none"> Minor streamlining and clarifying edits
	Section 1.4.3 Industrial Stormwater General Permit	<ul style="list-style-type: none"> Edited for consistency with the SWMMWW
	Sections 1.4.4 and 1.4.5	<ul style="list-style-type: none"> Updated discussion of applicability
	Section 1.4.6 New and Emerging BMPs	<ul style="list-style-type: none"> Updated for consistency with updated Section 5.6
	Section 1.4.7 Section 401 Water Quality Certifications and Section 404 Permits	<ul style="list-style-type: none"> Added Section 404 Permits
	Section 1.4.8, 1.4.9, and 1.4.10	<ul style="list-style-type: none"> Edited for consistency with the SWMMWW
	Section 1.4.11 and Section 1.4.12	<ul style="list-style-type: none"> Added new sections based on the SWMMWW
	Sections 1.5.1, 1.5.2, and 1.5.3	<ul style="list-style-type: none"> Edited for consistency with the SWMMWW
	Section 1.5.4 Flow Control BMPs	<ul style="list-style-type: none"> Streamlined and clarified
	Section 1.5.5 Construction Stormwater BMPs	<ul style="list-style-type: none"> Added new section based on the SWMMWW



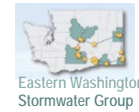
Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 2 Core Elements for New Development and Redevelopment	Global	<ul style="list-style-type: none"> Updated header from “Responsibilities of Local Jurisdictions” to “Recommendations for Local Jurisdictions”
	Section 2.1 Introduction	<ul style="list-style-type: none"> Deleted Table 2.1.1 (Purpose and applicability of the Core Elements)
	Section 2.2 Exemptions	<ul style="list-style-type: none"> Shifted Exemptions forward from Section 2.1.3 in the 2004 SWMMEW Added Oil and Gas Field Activities or Operations exemption for consistency with the Phase II Eastern WA Municipal Stormwater Permit (permit) Minor updates to clarify road and parking area preservation/maintenance exemptions
	Section 2.3 Partial Exemptions	<ul style="list-style-type: none"> Shifted Partial Exemptions forward from Section 2.1.3 in the 2004 SWMMEW Minor updates to clarify road and parking area preservation/maintenance-related partial exemptions
	Section 2.4 Local Exceptions/Variences	<ul style="list-style-type: none"> Shifted Local Exceptions/Variences forward from Section 2.1.5 in the 2004 SWMMEW
	Section 2.5 New Development	<ul style="list-style-type: none"> Added a new figure (Figure 2.5.1) for determining the applicable Core Elements for New Development Projects Updated guidelines for new development and redevelopment
	Section 2.6 Redevelopment	<ul style="list-style-type: none"> Provided clarification on the guidelines for new impervious surfaces (Section 2.6.3) and replaced impervious surfaces (Section 2.6.4) Added a new figure (Figure 2.6.1) for determining the applicable Core Elements for Redevelopment Projects Minor updates to clarify guidance on local retrofit programs Minor updates to clarify supplemental guidelines for redevelopment (Section 2.6.5)
	Section 2.7 Core Elements	<ul style="list-style-type: none"> Minor streamlining and clarifying edits
	Section 2.7.1 Core Element #1: Preparation of a Stormwater Site Plan	<ul style="list-style-type: none"> Updated section on applicability to UIC wells

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 2 Core Elements for New Development and Redevelopment (cont.)	Section 2.7.2 Core Element #2: Construction Stormwater Pollution Prevention	<ul style="list-style-type: none"> Updated guidelines for obtaining a Construction Stormwater General Permit (CSWGP) Added Element #13 – Protect Low Impact Development (LID) BMPs (Infiltration BMPs)
	Section 2.7.3 Core Element #3: Source Control of Pollution	<ul style="list-style-type: none"> Minor updates to clarify the difference between source control BMPs for Core Element #3 and construction BMPs for Core Element #2
	Section 2.7.4 Core Element #4: Preservation of Natural Drainage Systems	<ul style="list-style-type: none"> Added reference to new Appendix 3D for LID site planning information
	Section 2.7.5 Core Element #5: Runoff Treatment	<ul style="list-style-type: none"> Shifted Guidelines up to below the Objective subsection Added a new figure (Figure 2.7.1) for determining applicable requirements for Core Element #5 Shifted Definitions to the Glossary Minor updates to clarify Metals Treatment Exemptions and Oil Control Exemptions Updated Applicability to UIC Wells for clarity and consistency with updated Section 5.6 Incorporated errata from the 2004 SWMMEW in the Oil Control Requirements and Water Quality Design Flow Rate subsections
	Section 2.7.8 Core Element #8: Local Requirements	<ul style="list-style-type: none"> Expanded the bulleted list of recommendations
Bibliography	Chapters 1 and 2	<ul style="list-style-type: none"> Incorporated minor revisions



**Summary of Key Changes to 2018 Stormwater Management Manual for Eastern Washington (SWMMEW)
Chapter 3 and Chapter 4**

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 3 Preparation of Stormwater Site Plans	Section 3.2 Stormwater Site Plans: Step-By-Step	<ul style="list-style-type: none"> • Added the following steps: <ul style="list-style-type: none"> ○ Step 2 – Prepare Preliminary Development Layout ○ Step 3 – Perform Off-site Analysis ○ Step 7 – Complete the Stormwater Site Plan (SSP) ○ Step 8 – Check Compliance with All Applicable Core Elements • Added guidelines for Small Project Construction Stormwater Pollution Prevention (moved from BMP C180 in Chapter 7)
	Appendix 3A Off-Site Analysis	<ul style="list-style-type: none"> • Relabeled “Downstream Analysis” to “Off-Site Analysis” • Minor updates for alignment with the SWMMWW
	Appendix 3D Optional Guidance for on-Site Planning Principles and Design Strategies	<ul style="list-style-type: none"> • Added new appendix for on-site stormwater management planning principles and design strategies from the Low Impact Development (LID) Guidance Manual for Eastern Washington (EWA LID Manual)
Chapter 4 Hydrologic Analysis and Design	Table 4.2.1 Comparison of Hydrologic Analysis Methods for Runoff Treatment and Flow Control BMP Design	<ul style="list-style-type: none"> • Replaced the previous Table 4.1.1 with new table to compare the advantages, disadvantages, and applicability of hydrologic analysis methods
	Table 4.3.1 Climate Region Summary	<ul style="list-style-type: none"> • Added new table summarizing the average annual precipitation range and boundaries in each of the four climate regions
	Table 4.3.2 Comparison of Design Storm Distributions	<ul style="list-style-type: none"> • Added new table comparing the advantages, disadvantages, and applicability of the design storm distributions
	Section 4.3.3 Short-Duration and Regional Design Storms	<ul style="list-style-type: none"> • Edited to clarify differences between thunderstorms (short duration storms) and general storms (regional storms)
	Sections 4.3.4 and 4.3.5	<ul style="list-style-type: none"> • Reorganized; shifted significant content to Table 4.2.1
	Appendix 4D Design Storm Hyetographs	<ul style="list-style-type: none"> • Shifted Tables 4.2.2 through 4.2.8 from Section 4.2.3 in the 2004 SWMMEW to a new appendix
	Appendix 4E Example SBUH Runoff Hydrograph	<ul style="list-style-type: none"> • Shifted Figure 4.4.1 from Section 4.4.4 in the 2004 SWMMEW to a new appendix
Bibliography	Chapter 3	<ul style="list-style-type: none"> • Incorporated minor revisions
	Chapter 4	<ul style="list-style-type: none"> • Updated references

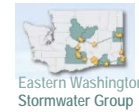


**Summary of Key Changes to 2018 Stormwater Management Manual for Eastern Washington (SWMM EW)
Chapter 5 and Chapter 6**

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 5 Runoff Treatment BMP Design	Global	<ul style="list-style-type: none"> • Updated BMP template: <ul style="list-style-type: none"> ○ Added tables to summarize BMP applicability for the various types of runoff treatment ○ Streamlined the stepwise procedure for BMP design ○ Shifted BMP sizing methods/assumptions to tabular format ○ Added cold weather considerations ○ Added arid/semiarid climate considerations
	Section 5.1.2 Runoff Treatment Methods and BMPs	<ul style="list-style-type: none"> • Integrated content from Section 5.11 (Phosphorus Treatment and Metals Treatment) in the 2004 SWMM EW • Edited Table 5.1.2 (Treatment Trains for Dissolved Metals Removal) to remove “Media Filter” from the second treatment BMP. Instead, Emerging Technologies targeted for dissolved metals removal is discussed in the bulleted text above the table as a stand-alone option for metals treatment.
	Section 5.2.1 Step-by-Step Selection Process for Runoff Treatment BMPs	<ul style="list-style-type: none"> • Incorporated errata for oil control guidance • Clarified metals treatment requirements
	Section 5.4 Surface Infiltration and Bioinfiltration Treatment BMPs	<ul style="list-style-type: none"> • Added screening criteria for infiltration BMPs • Updated general criteria for BMP T5.30: Bioinfiltration Swales • Changed average infiltration rate of the treatment soil layer from ≤ 1 in/hr to ≤ 3 in/hr • Updated Site Suitability Criteria (SSC) <ul style="list-style-type: none"> ○ SSC-4: Soil Infiltration Rate/Drawdown Time <ul style="list-style-type: none"> ▪ Updated for consistency with the SWMM WW. ▪ Criteria added for infiltration used for treatment purposes: <ul style="list-style-type: none"> • Measured (initial) soil infiltration rate: ≤ 9 inches per hour (in/hr) • Design (long-term) infiltration rate ≤ 3 in/hr can be considered if recommended by licensed professional ○ SSC-6: Soil Physical and Chemical Suitability for Treatment <ul style="list-style-type: none"> ▪ Deleted the term “engineered soil” and added guidance for minimum depth of 6 inches of sand meeting the sand filter specification for bioinfiltration swales.

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Chapter 5 Runoff Treatment BMP Design (cont.)	Section 5.4 Surface Infiltration and Bioinfiltration Treatment BMPs	<ul style="list-style-type: none"> • Updated SSC (cont.) <ul style="list-style-type: none"> ○ SSC-7: Seepage Analysis and Control <ul style="list-style-type: none"> ▪ Changed from SSC-7: Construction Monitoring in the 2004 SWMMEW, because construction monitoring was considered out of context with site suitability criteria. The former text was moved to the “Verification of Performance” section. ○ SSC-8: Cold Climate and Impact of Roadway Deicing Chemicals <ul style="list-style-type: none"> ▪ Updated name and text for consistency with SWMMWW ○ SSC-9: Previously Contaminated Soils or Unstable Soils <ul style="list-style-type: none"> ▪ Updated text and integrated related SSC text from Chapter 6 of the 2004 SWMMEW
	Section 5.5 Biofiltration BMPs	<ul style="list-style-type: none"> • Added BMP T5.31: Bioretention from the EWA LID Manual • Added BMP T5.32: Permeable Pavement • Added BMP T5.60: Compost-Amended Vegetated Filter Strip (CAVFS)
	Section 5.6 Subsurface Infiltration (UICs)	<ul style="list-style-type: none"> • Significant update to incorporate updated UIC guidance • Added Deep Drywells (Section 5.6.7) • Table 5.6.4 (Treatment Required for Solids, Oil, and Metals) <ul style="list-style-type: none"> ○ Updated treatment requirements for “insignificant”, “low”, and “medium” pollutant loading categories.
	Section 5.8 Filtration Treatment Facilities	<ul style="list-style-type: none"> • Added BMP T5.84: Media Filter Drain
	Section 5.10.5: BMPs for Oil and Water Separation	<ul style="list-style-type: none"> • Significant update and correction of design criteria for BMP T5.100: API Separator Bay. Updates conform with the SWMMWW.
	Section 5.11 (formerly Section 5.12) Emerging Technologies	<ul style="list-style-type: none"> • Updated text for consistency with the SWMMWW • Removed list of BMPs and replaced with text regarding the Technology Assessment Protocol – Ecology (TAPE) process
	Appendix 5A Recommended Maintenance Criteria for Runoff Treatment Facilities	<ul style="list-style-type: none"> • Added maintenance standards for Bioretention, Media Filter Drains, and CAVFS
	Appendix 5B Planting Recommendations	<ul style="list-style-type: none"> • Added new appendix with consolidated and updated planting recommendations for vegetated BMPs

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Chapter 6 Flow Control BMP Design	Global	<ul style="list-style-type: none"> • Updated BMP template: <ul style="list-style-type: none"> ○ Added tables to summarize BMP applicability ○ Streamlined the stepwise procedure for BMP design ○ Shifted BMP sizing methods/assumptions to tabular format ○ Added cold weather considerations • Added arid/semiarid climate considerations
	Section 6.2 Detention BMPs	<ul style="list-style-type: none"> • Added BMP F6.13: Rain Water Harvesting
	Section 6.3 Infiltration BMPs	<ul style="list-style-type: none"> • Added BMP F6.23: Bioretention (references BMP T5.31) • Added BMP F6.24: Permeable Pavement • Deleted Site Suitability Criteria and added reference to Section 5.4.3 for updated, consolidated criteria • Significant edits to clarify determination of infiltration rates
	Section 6.5 Dispersion BMPs	<ul style="list-style-type: none"> • Significant edits to incorporate design guidance from WSDOT Highway Runoff Manual (HRM)
	Section 6.6 Additional Flow Control BMPs	<ul style="list-style-type: none"> • Added this new section to incorporate the following BMPs from the EWA LID Manual: <ul style="list-style-type: none"> ○ BMP F6.61: Amending Construction Site Soils ○ BMP F6.62: Trees ○ BMP F6.63: Vegetated Roofs ○ BMP F6.64: Minimal Excavation Foundations
	Appendix 6A Recommended Maintenance Criteria for Flow Control BMPs and Facilities	<ul style="list-style-type: none"> • Added maintenance standards for Rain Water Harvesting, Permeable Pavement, Amending Construction Site Soils, and Vegetated Roofs
	Appendix 6B Storm Drainage Design Guideline for Site Characterization	<ul style="list-style-type: none"> • Updated 6B.1 Storm Drainage Design Guideline for Site Characterization for consistency with Section 6.3.3 and the SWMMWW • Updated 6B.3: Recommended Field Test Procedures: <ul style="list-style-type: none"> ○ Replaced “Estimating Field Permeability of Soil-in-Place Using Test Pit Methods” with “Small-Scale Pilot Infiltration Test (PIT)” ○ Added Large-Scale PIT • Added 6B.4: Recommended Laboratory Test Procedures
Bibliography	Chapters 5 and 6	<ul style="list-style-type: none"> • Added applicable references for runoff treatment and flow control BMPs from the SWMMWW, EWA LID Manual, and WSDOT HRM



**Summary of Key Changes to 2018 Stormwater Management Manual for Eastern Washington (SWMMEW)
Chapter 7, Chapter 8, and Glossary**

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 7 Construction Stormwater Pollution Prevention	Global	<ul style="list-style-type: none"> • Updated text for consistency with the SWMMWW • Flagged BMPs with an “E” if they differed from the SWMMWW
	Section 7.1.4 Thirteen Elements of Construction Stormwater Pollution Prevention	<ul style="list-style-type: none"> • Added element #13
	Section 7.2.2 Step-by-Step Procedure	<ul style="list-style-type: none"> • Incorporated text from the EWA Phase II permit and the Construction Stormwater General Permit (CSWGP)
	Section 7.3.1 Source Control BMPs	<ul style="list-style-type: none"> • Incorporated text from the EWA LID Manual into BMP C125E Topsoiling/Composting • Updated application rates in BMP C126: Polyacrylamide (PAM) for Soil Erosion Protection for consistency with the SWMMWW • Added the following BMPs from the SWMMWW: <ul style="list-style-type: none"> ○ BMP C153E: Material Delivery, Storage, and Containment ○ BMP C154: Concrete Washout Area • Removed the following BMPs: <ul style="list-style-type: none"> ○ BMP C104: Stake and Wire Fence ○ BMP C161: Payment of Erosion Control Work
	Section 7.3.2 Runoff Conveyance and Treatment BMPs	<ul style="list-style-type: none"> • Incorporated errata from the 2004 SWMMEW for the following BMPs: <ul style="list-style-type: none"> ○ BMP C250E: Construction Stormwater Chemical Treatment ○ BMP C251E: Construction Stormwater Filtration • Integrated content from Appendix 7C (Background Information on Chemical Treatment) in the 2004 SWMMEW into BMP C250E • Added the following BMPs from the SWMMWW: <ul style="list-style-type: none"> ○ BMP C236: Vegetative Filtration ○ BMP C252: Treating and Disposing of High pH Water • Added new figures from the SWMMWW: <ul style="list-style-type: none"> ○ BMP C203: Water Bars ○ BMP C231: Brush Barrier ○ BMP C232: Gravel Filter Berm • Removed the following BMPs: <ul style="list-style-type: none"> ○ BMP C230: Straw Bale Barrier

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Chapter 7 Construction Stormwater Pollution Prevention (cont.)	Appendix 7A Recommended Standard Notes for Construction SWPPP Drawings	<ul style="list-style-type: none"> • Updated text for consistency with the SWMMWW
Chapter 8 Source Control	General	<ul style="list-style-type: none"> • Added BMP numbering • Updated text for consistency with the SWMMWW • Flagged BMPs with an “E” if they differed from the SWMMWW
	Section 8.2.1 Source Control BMPs Applicable to All Sites	<ul style="list-style-type: none"> • Added new BMPs from the SWMMWW: <ul style="list-style-type: none"> ○ S101: BMPs for Formation of a Pollution Prevention Team ○ S102: BMPs for Preventative Maintenance/Good Housekeeping
	Section 8.2.2 Pollutant Source-Specific BMPs	<ul style="list-style-type: none"> • Integrated text related to the Uniform Fire Code and the On-site Storage, Collection, and Transportation Standards • Added new BMPs from the SWMMWW: <ul style="list-style-type: none"> ○ S433: BMPs for Pools, Spas, Hot Tubs, and Fountains ○ S434E: BMPs for Dock Washing ○ S436: BMPs for Color Events ○ S438: BMPs for Construction Demolition ○ S439E: BMPs for In-Water and Over-Water Fueling ○ S440: BMPs for Pet Waste ○ S441: BMPs for Potable Water Line Flushing, Water Tank Maintenance, and Hydrant Testing ○ S442E: BMPs for Labeling Storm Drain Inlets On Your Property ○ S445: BMPs for Temporary Fruit Storage ○ S446: BMPs for Well, Utility, Directional and Geotechnical Drilling ○ S447: BMPs for Roof Vents ○ S449: BMPs for Nurseries and Greenhouses ○ S451: BMPs for Building, Repair, Remodeling, Painting, and Construction ○ S452: BMPs for Goose Waste

Chapter Number/Name	Section Number/Name	Summary of Revisions (Public Review Draft; May 25, 2018)
Chapter 8 Source Control (cont.)	Section 8.2.2 Pollutant Source-Specific BMPs (cont.)	<ul style="list-style-type: none"> • Divided Landscaping and Lawn/Vegetation Management into several BMPs: <ul style="list-style-type: none"> ○ S411E: BMPs for Landscaping and Lawn/Vegetation Management ○ S435: BMPs for Pesticides and an Integrated Pest Management Program ○ S443: BMPs for Fertilizer Application ○ S444: BMPs for the Storage of Dry Pesticides and Fertilizers ○ S450E: BMPs for Irrigation
	Appendix 8A Urban Land Uses and Pollution-Generating Sources	<ul style="list-style-type: none"> • Updated Standard Industrial Classification (SIC) codes to the North American Industry Classification System (NAICS) codes
	Appendix 8B Best Management Practices for Managing Street Wastes	<ul style="list-style-type: none"> • Updated text for consistency with the SWMMWW
	Appendix 8C Stormwater Pollutants and Their Adverse Impact	<ul style="list-style-type: none"> • Added a new appendix with content from Section 8.2 in the 2004 SWMMEW
Bibliography	Chapters 7 and 8	<ul style="list-style-type: none"> • Added applicable references from the SWMMWW • Updated references
Glossary	All	<ul style="list-style-type: none"> • Deleted terms that are not used in the SWMMEW • Updated definitions for consistency with the EWA Phase II Permit • Updated definitions based on the errata for the 2004 SWMMEW • Added abbreviations • Added applicable terms from the SWMMWW • Added applicable terms from the EWA LID Manual • Streamlined definitions that were too long for the online manual format (e.g., high-use sites, hydrologic soil groups)