

Summary of Changes to Kitsap County’s Stormwater Design Manual
(final 2016 SDM to proposed 2020 SDM + Title 12)

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
Global	<ul style="list-style-type: none"> • Inconsistent terminology • Broken weblinks • References appearing in multiple sections of the Stormwater Design Manual (SDM) 	<ul style="list-style-type: none"> • Final Kitsap SDM will be available in an online format (similar to the Ecology Manual) to improve user experience • Reviewed and updated terminology for clarity and consistency (e.g., best management practice [BMP] instead of facility, runoff treatment instead of water quality treatment) • Updated references to the Stormwater Management Manual for Western Washington (Ecology Manual) and other guidance documents • Updated weblinks • Created consolidated References section at the end of the SDM (Volume I and Volume II) • Updated modeling requirements where needed for consistency with the Ecology Manual (described in more detail in the applicable sections of this table) 	Removed the word “Section” from all code chapter references.
Volume I – Project Minimum Requirements and Site Planning			
Chapter 1 – Introduction			
1.1 – Purpose of this manual		Referred to 2013 – 2018 permit instead of 2019 – 2024 permit.	Updated to new permit date range.

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1.2 – How to Use This Manual	Stated that the Kitsap SDM should be used in conjunction with external references such as the Ecology Manual and LID Technical Guidance Manual.	Added clarification that the guidance provided in the Kitsap SDM supersedes other referenced manuals in the event of conflicting guidelines or standards.	No changes.
Chapter 3 – Determining Minimum Requirements			
3.2 – Step 2 – Identify the Receiving Water and Downstream Conveyance	Discussed identifying the receiving water or point of discharge for the stormwater runoff from the project site (e.g., wetland, lake, creek, or salt water).	Added reference to Underground Injection Control (UIC) wells.	No changes.
Chapter 4 – Minimum Requirements for New and Redevelopment			
4.1 – Project Applicability	No edits to Figure 4.1 – Flow Chart for Determining Minimum Requirements for New Development Projects		Added in omitted bullet points in Figure 4.2.
4.1 – Project Applicability (cont.)	Figure 4.2 – Flow Chart for Determining Minimum Requirements for Redevelopment Projects	Updated Figure 4.2 to reflect updates in the Ecology Manual (updated minimum requirement thresholds for non-road related commercial or industrial redevelopment projects to require comparison of the value of the proposed improvements to the value of the Project Site improvements, rather than the Site).	See above.

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4.1.1 – New Development	NA	Added a reference to a new requirement for determining the minimum design assumption for hard surfaces and developed pervious surfaces for residential plats (detailed in Volume II, Section 1.2.5).	No changes.
4.1.2 – Redevelopment	Provided criteria for the valuation of proposed improvements	Updated text for consistency with changes in minimum requirement thresholds for non-road related commercial or industrial redevelopment projects (see Section 4.1).	No changes.
4.1.3 – Regional Facilities	NA	Added new section on regional facilities that refers to Volume I, Appendix I-D of the Ecology Manual.	No changes.
4.2.1 – Minimum Requirement #1: Preparation of Stormwater Site Plans	No changes have been proposed to MR #1		No changes.
4.2.2 – Minimum Requirement #2: Construction Stormwater Pollution Prevention Plan (SWPPP)	No changes to the following elements: <ul style="list-style-type: none"> • Element 1: Preserve Vegetation/Mark Clearing Limits • Element 2: Establish Construction Access 		No changes.
	Element 3: Control Flow Rates per previous Construction Stormwater General Permit (CSGP)	Minor text updates for consistency with 2015-2020 CSGP.	No changes.
	Element 4: Install Sediment Controls per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Updated reference to Element 3 • Added bullet on maintaining natural buffers and directing stormwater to vegetated areas 	No changes.

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	Element 5: Stabilize Soils per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Deleted Bonded Fiber Matrix (BFM) 	No changes.
	Element 6: Protect Slopes per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Added sizing methods for temporary pipe slope drains: Single Event Hydrograph or Continuous Simulation (15-minute time step) 	No changes.
	Element 7: Protect Drain Inlets per previous CSGP	Minor text updates for consistency with 2015-2020 CSGP.	No changes.
	Element 8: Stabilize Channels and Outlets per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Updated sizing methods for channels: Single Event Hydrograph Method or Continuous Simulation Method (15-minute time step) 	No changes.

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4.2.2 – Minimum Requirement #2: Construction SWPPP (cont.)	Element 9: Control Pollutants per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Removed “closed-loop recirculation or upland application” option for discharging wheel wash wastewater • Added “recycled concrete stockpiles” as an example source that modifies pH • Updated washout area requirements related to formed areas and ground water • Added requirements for washout of concrete handling equipment • Added “food grade vinegar” as an option for adjusting pH (with written approval from Ecology) • Added bullet regarding uncontaminated water from water-only based shaft drilling 	No changes.
	Element 10: Control De-Watering per previous CSGP	Updated for consistency with 2015-2020 CSGP: <ul style="list-style-type: none"> • Minor clarification that other treatment options are specific to “dewatering” (no changes to requirements) 	No changes.
	No changes to Element 11: Maintain BMPs		No changes.
	Element 12: Manage the Project per previous CSGP	Updated terminology from “stormwater discharge points” to “stormwater discharge locations”	No changes.

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	<p>Element 13: Protect Low Impact Development BMPs per previous CSGP</p>	<p>Updated for consistency with 2015-2020 CSGP:</p> <ul style="list-style-type: none"> • Added introductory paragraph related to purpose of Onsite Stormwater Management • Expanded to “all LID BMPs” (not limited to bioretention, rain gardens, and permeable pavements) • Clarified that protecting against compaction is to maintain infiltration capabilities • Clarified that permeable pavement must be cleaned if fouled or no longer passing infiltration test 	<p>No changes.</p>
<p>4.2.3 – Minimum Requirement #3: Source Control of Pollution</p>	<p>No changes have been proposed to MR #3</p>		<p>No changes.</p>
<p>4.2.4 – Minimum Requirement #4: Preservation of Natural Drainage Systems and Outfalls</p>	<p>Inconsistent terminology</p>	<p>Minor terminology revisions:</p> <ul style="list-style-type: none"> • “Stormwater discharge points” updated to “stormwater discharge locations” • “Should” updated to “shall” • “Facilities” updated to “systems” 	<p>No changes.</p>

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4.2.5 – Minimum Requirement #5: Onsite Stormwater Management	<ul style="list-style-type: none"> • List #1 – Projects Triggering MR #1-5 • List #2 – Projects Triggering MR #1-9 – Inside UGA or Inside UA on Parcel Less Than 5 Acres • List #3 – Projects Triggering MR #1-9 – Outside UA and UGA 	<ul style="list-style-type: none"> • Added subsection for Flow Control Exempt Projects to provide clarification (no change to requirements) • Added new paragraph to describe the LID Performance Standard and the List Approach (no change to requirements) • Shifted the List Approach into a tabular format and relabeled lists (List #2 is now List #2A, List #2B is now List #3) since the Ecology Manual added a List #3 for flow control exempt projects. • No changes were made to the BMPs included on any of the Lists 	<p>Added clarification in The List Approach section that user should refer to Table 4.3 for evaluating BMPs.</p>
4.2.6 – Minimum Requirement #6: Runoff Treatment	<p>NA</p>	<ul style="list-style-type: none"> • Clarified that Threshold Discharge Areas (TDAs) in the Ecology Manual are not applicable to the implementation of MR #6 in Kitsap County • Supplemental Guidelines <ul style="list-style-type: none"> ○ Streamlined text and added references to applicable SWMMWW sections ○ Added clarification regarding bypass of runoff from non-pollution generating surfaces ○ Added text regarding not mixing drainage from native vegetation areas with untreated runoff 	<p>Corrected erroneous reference to Volume I.</p>

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<p>4.2.7 – Minimum Requirement #7: Flow Control</p>	<p>Allowed an hourly or 15-minute time step when evaluating the increase in the 100-year flow frequency.</p>	<ul style="list-style-type: none"> • Clarified text under Exemptions <ul style="list-style-type: none"> ○ Flow control not required for projects that discharge directly or indirectly through an MS4 to a water listed in Ecology Appendix I-A (now includes “All Salt Waterbodies”) ○ Terminology: “flow splitting devices” updated to “flow splitters” • Updated to require a 15-minute time step for evaluating the increase in the 100-year flow frequency • Clarified that TDAs in the Ecology Manual are not applicable to the implementation of MR #7 in Kitsap County • Streamlined Supplemental Guidelines for readability (no change to requirements). 	<p>No changes.</p>

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4.2.8 – Minimum Requirement #8: Wetlands Protection	Referred to Guide Sheets #1 through #3 in Volume I, Appendix I-D of the Ecology Manual.	<ul style="list-style-type: none"> • Clarified that TDAs in the Ecology Manual are not applicable to the implementation of MR #8 in Kitsap County • Updated reference to Ecology Manual (wetland protection guidance is now in Volume I, Appendix I-C of the Ecology Manual) and KCC Critical Areas Ordinance • Supplemental Guidelines: <ul style="list-style-type: none"> ○ Streamlined text for readability ○ Added KCC 19.200.220 reference for fencing and planting requirements for wetland buffers 	No changes.
4.2.9 – Minimum Requirement #9: Operation and Maintenance	NA	<ul style="list-style-type: none"> • Terminology: “stormwater facilities” updated to “runoff treatment and flow control BMPs” • Updated reference to Ecology Manual (Appendix V-A) • No change to requirements 	No changes.

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Volume II – Design Standards and Requirements			
Chapter 1 – Plans and Reports			
1.2 – Drainage Review	Listed Sewage Disposal Permit and Well Permits as example permits or approval from the Kitsap Public Health District in Table 1.2.	<ul style="list-style-type: none"> • Added links to the Kitsap Public Health District forms web page (in Table 1.2, for Sewage Disposal Permit and Well Permit) • Added guidance for Single Family Residential Subdivision Design (Section 1.2.5 – Drainage Design Beyond Minimum Requirements) <ul style="list-style-type: none"> ○ Minimum hard surfaces and developed pervious surface shall be determined for drainage design ○ Standards for usage of surplus stormwater mitigation, if provided 	Made grammatical edits to clarify section 1.2.2.4.

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<p>1.4 – Submittal Documents</p>	<p>Required plan views of on-site stormwater management BMPs, flow control BMPs, and water quality treatment BMPs in <i>Simplified Drainage Review – Engineered</i> submittals.</p>	<ul style="list-style-type: none"> • Added text to clarify print formatting for online submittals • <i>Simplified Drainage Review – Engineered</i> submittals <ul style="list-style-type: none"> ○ Corrected notation for quantities of cut and fill from CF to CY (applies to other sections in this chapter) ○ Added BMP “cross-section” as a requirement • Added e-mail addresses to required CSWPPP contact information • Added new section (Section 1.4.6) for Single Family Residential Subdivision Design Submittals <ul style="list-style-type: none"> ○ Minimum design assumptions per SFR subdivision lot must be stated on face of SDAP plans and on face of final plat ○ Minimum design assumptions include minimum allotment of hard surface, minimum allotment of developed pervious surface, and surplus available for individual lot design 	<p>No changes.</p>

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1.5 – Permit Issuance	Mylar record drawings required for Final Project Approval	<ul style="list-style-type: none"> • Removed submittal requirement for mylar record drawings in Final Project Approval • Added a new section on Changes to a Previously Approved Stormwater Site Plan in Section 1.5.2, referring to KCC Section 12.10.100 • Clarified that in no event shall a performance surety be accepted in lieu of construction completion for subdivisions with private roads or for completion of safety items (i.e., guardrails, pond fencing) (Section 1.5.3) • Transfer of Engineering Responsibilities: added exception for stopping all work other than erosion control if the engineer or record is changed (Section 1.5.4) • Added a new section (Section 1.5.6) on Permit Extensions and Renewals 	No changes.
Chapter 2 – Construction Stormwater Pollution Prevention			
2.1 - Introduction	NA	<ul style="list-style-type: none"> • Streamlined introduction text for readability • Updated references • Clarified location of available materials 	No changes.

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2.2 – Construction Stormwater BMPs	Listed local amendments to Volume II of the Ecology Manual to reflect the 13 required elements in the Construction Stormwater Pollution Prevention Plan (SWPPP).	<ul style="list-style-type: none"> • Added overview text (new Section 2.2) for Construction Stormwater BMPs; refers to Ecology manual • Removed local amendments section; no longer needed due to updates in the Ecology Manual, now including Element 13 • No change to requirements 	No changes.
Chapter 3 – Source Control of Pollution			
3.2 – Project Submittal Requirements	Provided background information on MR #3	Deleted duplication of Volume I, Section 4.2.3 text	No changes.
3.4 – Selection of Operational and Structural Source Control BMPs	Provided a description of Treatment BMPs for Specific Pollutant Sources	<ul style="list-style-type: none"> • Deleted text describing Treatment BMPs for Specific Pollutant Sources; this content is included with the Structural BMPs and does not need to be called out separately • Added language from the Ecology Manual to describe when source control BMPs are required • Added language from the Ecology Manual on how to determine which source control BMPs are appropriate for a site 	No changes.
3.5 – Local Amendments to Operational and Structural Source Control BMPs	No local amendments for: <ul style="list-style-type: none"> • S427: BMPs for Storage of Liquid, Food Waste, or Dangerous Waste Containers 	<ul style="list-style-type: none"> • Clarified that the County requires dumpsters to be covered (the County does not allow a lean-to structure for dumpsters) • Added figures to show a typical covered, bermed, and plumbed area 	No changes.

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	No local amendments for: <ul style="list-style-type: none"> • S429: BMPs for Storage or Transfer (Outside) of Solid Raw Materials, Byproducts, or Finished Products 	Added additional County-specific requirements for site access	No changes.
	No local amendments for: <ul style="list-style-type: none"> • S431: BMPs for Washing and Steam Cleaning Vehicles/ Equipment/Building Structures 	Clarified that the County does not allow washwater to be discharged to the ground and that facilities that want to discharge to the storm sewer must meet Kitsap County stormwater requirements.	No changes.
	No local amendments for: <ul style="list-style-type: none"> • S449: BMPs for Nurseries and Greenhouses 	Added additional County-specific requirements for site access	No changes.
Chapter 4 – Conveyance System Analysis and Design			
4.2 – Conveyance System Design Flow	Listed both WWHM and MGSFlood, but WWHM was not listed as an approved continuous simulation model.	<ul style="list-style-type: none"> • Updated to clarify that WWHM is an approved continuous simulation model. • Clarified that MGSFlood is currently not approved by Ecology for modeling bioretention (Section 4.2.4). 	No changes.
4.3 – Route Design and Easement Requirements	Allowed an hourly or 15-minute time step when evaluating the increase in the 100-year peak discharge.	Updated to require a 15-minute time step for evaluating the increase in the 100-year peak discharge	No changes.

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<p>4.4 – Pipes, Outfalls, and Pumps</p>	<p>Provided the following figures:</p> <ul style="list-style-type: none"> • Pipe compaction design and backfill (Figure 4.2) • Debris barrier (off road right-of-way) (Figure 4.6) • Debris barrier (in road right-of-way) (Figure 4.7) 	<ul style="list-style-type: none"> • Replaced lined corrugated polyethylene (LCPE) pipe with corrugated polyethylene pipe (CPEP) in <i>Allowable Pipe Materials</i> • Clarified that “(latest edition)” of <i>Kitsap County Road Standards</i> should be used • Added a through-curb inlet figure (Figure 4.3) • Added standards from the 1997 Kitsap SDM for <i>Pipe Design between Structures</i> (e.g., minimum velocity, maximum velocity, inlet spacing, etc.) • Removed pipe compaction design and backfill figure; added reference to WSDOT Standard Plan for Pipe Bedding • Removed one of the debris barrier figures (off road right-of-way) • Updated references and clarified design criteria language for outfall features (Section 4.1.1.1) and tightline systems (Section 4.1.1.2); no changes to design requirements 	<ul style="list-style-type: none"> • Added clarification that the minimum slope for <i>installed</i> pipes shall be 0.50%. • Added clarification that structures with solid lids shall have a maximum spacing of 300 feet.
<p>4.5 - Culverts</p>	<p>NA</p>	<ul style="list-style-type: none"> • Added text under <i>Inlets and Outlets</i> regarding concrete end protection from the 1997 Kitsap SDM • Added a concrete end protection figure (Figure 4.10) • Moved conditions of inlet/outlet control figure to Appendix F 	<p>No changes.</p>

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4.7 – Downstream Analysis	Provided a short description of a Level 2 Analysis, but not a stepped approach.	<ul style="list-style-type: none"> • Added steps 1-3 for Level 2 Analysis 	No changes.
4.8 – Hydraulic Structures	NA	<ul style="list-style-type: none"> • Added text from the Ecology Manual to the Flow Spreader design criteria section (Section 4.8.2.1) <ul style="list-style-type: none"> ○ Not for use on slopes greater than 5% ○ Not for use in areas accessible by the public (since walking on them can alter their flow characteristics) 	No changes.
Chapter 5 – Stormwater Management BMPs			
5.2 – Organization of this Chapter	Stated that the Kitsap Stormwater Design Manual (SDM) should be used in conjunction with external references such as the Ecology Manual and LID Technical Guidance Manual.	<ul style="list-style-type: none"> • Added clarification that the guidance provided in the Kitsap SDM supersedes other referenced manuals in the event of conflicting guidelines or standards. • Added note that TDAs are not applicable 	No changes.

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5.3 – BMP Selection			
5.3.1 – Determine Dispersion Feasibility	<ul style="list-style-type: none"> • Provided flowpath requirements for full dispersion, sheet flow dispersion, and concentrated flow dispersion in three bullets. • Defined steep slopes as 15% • Provided minimum horizontal setbacks between stormwater BMPs and on-site sewage systems in Table 5.2 • Provided minimum horizontal setbacks between stormwater BMPs and private/public wells in Table 5.3 	<ul style="list-style-type: none"> • Replaced dispersion flowpath bullets with Table 5.1 (Summary of Minimum Dispersion Flow Path Area and Length Requirements) • Updated site constraints for dispersion BMPs <ul style="list-style-type: none"> ○ Added slope considerations for different dispersion types ○ Added new text for dispersion near drainfield areas ○ Added restriction for Drinking Water Supply Wells or Springs, per Table 5.3 • Updated setback requirements between stormwater BMPs and On-site Sewage System Components per Table 5.2 <ul style="list-style-type: none"> ○ Any changes were generally an increase in required setback distance • Added Infiltration Basins to Table 5.3 (Minimum Horizontal Setback Requirements Between Stormwater BMPs and Private/Public Wells) 	<p>Added clarification that the Kitsap County Board of Health setbacks take precedence.</p>

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<p>5.3.2 – Determine Infiltration Feasibility</p>	<ul style="list-style-type: none"> • Provided setbacks for infiltration BMPs • Allowed a small or large pilot infiltration test (PIT) for sites with ≥ 1 acre impervious area (Table 5.4) 	<ul style="list-style-type: none"> • Added infiltration BMP setbacks for: <ul style="list-style-type: none"> ○ Drinking water wells, septic tanks, and drain fields (100 ft) ○ Open water features and designated landslide hazards (100 ft) ○ Springs and flowing artesian wells used for drinking water supply (200 ft) ○ Within 50 feet from the top of any slope over 15% • Figure 5.1 (Infiltration Feasibility Flow Chart) was updated to reflect infiltration BMP setback updates • Updated requirements for sites with ≥ 1 acre impervious area to a large PIT, no longer allowing small PIT (Table 5.4) • Updated “acceptance testing” terminology to infiltration testing (Step 3 [Conduct Infiltration Testing] and Table 5.4) 	<ul style="list-style-type: none"> • Added clarification to review Appendix G prior to conducting an infiltration feasibility investigation. • Added clarification that the Kitsap County Board of Health setbacks should be reviewed when conducting an infiltration feasibility investigation. • Deleted contradictory language in Figure 5.1.

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	<p>Specified minimum infiltration rates in Table 5.5 (0.6 inches/hour for bioretention without underdrain)</p>	<ul style="list-style-type: none"> • Updated the minimum measured infiltration rate for bioretention without underdrain from 0.5 to 0.3 inches/hour (Table 5.5) • Added language to clarify that infiltration BMPs are generally not appropriate for sites that have a design infiltration rate less than 0.3 inches/hour, but may be approved by the County on a case-by-case basis 	

<p>5.3.4 – Select BMPs for Runoff Treatment</p>	<p>Included Step 3 (Determine if Infiltration for Pollutant Removal is Practicable) in Figure 5.2, but not in the stepped approach in the manual text</p>	<ul style="list-style-type: none"> • Added a reference to the Ecology Manual for Site Suitability Criteria (SSC) and UICs • Updated the Figure 5.2 (Treatment BMP Selection Flow Chart), per Ecology Manual: <ul style="list-style-type: none"> ○ Removed Media Filter from Phosphorus Control BMP menu ○ Clarified process for considering whether Enhanced Treatment BMP is required after selecting a Phosphorus Control BMP ○ Added Permeable Pavement to listed BMPs for Infiltration after pre-treatment • <i>Step 2: Determine if an Oil Control BMP is Required:</i> Added “junkyards and areas with vehicle recycling operations” to the site uses that require oil control treatment • Added <i>Step 3: Determine if it is Practicable to Provide Runoff Treatment by Infiltrating into the Native Soil</i>, per Ecology Manual • <i>Step 5: Determine if an Enhanced Treatment BMP is Required:</i> <ul style="list-style-type: none"> ○ Updated and clarified the Enhanced Treatment BMP requirements for discharge to conveyance systems tributary to fresh waters designated for aquatic life use or that have an existing aquatic life use 	<p>Grammatical edit to Step 2.</p>
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		<ul style="list-style-type: none"> ○ Separated requirements within/outside Urban Growth Areas ● <i>Step 6: Select a Basic Treatment BMP</i> ○ Clarified that additional Basic Treatment BMP is not required if Enhanced or Phosphorus BMPs meet both goals ○ Added Basic Treatment Performance Goal 	
5.3.27 – Detention Tanks		NA	<ul style="list-style-type: none"> ● Added clarification that the design engineer shall provide buoyancy calculations for tanks. ● Added clarification that manufacturer’s recommendations for backfill and bedding shall be followed if they are more stringent than the requirements of this section.
5.4 – BMP Design	NA	<ul style="list-style-type: none"> ● Consolidated introductory text ● Added additional references for design guidelines and requirements ● Added a new section stating requirements for Runoff Treatment Prior to Infiltration BMPs ● Added a new section on BMPs Classified as UICs (reference to Ecology Manual) 	No changes.

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5.4.1 – Post-Construction Soil Quality and Depth	<ul style="list-style-type: none"> • Did not include a reference to the Building Soil manual • Referenced the Western Washington LID O&M Guidance Document 	<ul style="list-style-type: none"> • Added reference to the Building Soil Manual (or website) for details on four options for meeting soil quality design requirements • Added O&M requirements related to mulching, replenishing organic matter, and reducing/adjusting irrigation and fertilizer/herbicide/pesticide use • Removed reference to the Western Washington LID O&M Guidance Document (this guidance has been integrated into the Ecology Manual) 	<p>No changes.</p>

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5.4.4 – Dispersion BMPs	NA	<ul style="list-style-type: none"> • Added language from the Ecology Manual to provide guidance on the following elements of a site that applies Full Dispersion: <ul style="list-style-type: none"> ○ An impervious (or cleared) area ○ A flow spreader ○ A dispersion area ○ A flow path through the dispersion area • Updated <i>Applications and Limitations</i> for Full Dispersion: <ul style="list-style-type: none"> ○ Deleted limitations applying specifically to development sites that protect at least 65% of the site in a forest or native condition ○ Refer to Volume V, Chapter 3 of the Ecology Manual • Updated dispersion area requirements under Site Considerations: minimum dispersion area 6.5 times the area of the impervious surface draining to it 	No changes.
5.4.5 – Rain Gardens	Provided a bulleted list of design components addressed in the Ecology Manual	Added reference to Ecology Manual for O&M	No changes.

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5.4.6 – Bioretention Cells, Swales, and Planter Boxes	<ul style="list-style-type: none"> • Provided a bulleted list of design components addressed in the Ecology Manual • Referenced the Western Washington LID O&M Guidance Document 	<ul style="list-style-type: none"> • Expanded description of bioretention purpose and application (no changes to requirements) • Added: <ul style="list-style-type: none"> ○ Limitations on tree placement ○ Minimum horizontal offsets ○ Reference to bioretention plant list • Removed reference to the Western Washington LID O&M Guidance Document (this guidance has been integrated into the Ecology Manual) 	<p>No changes.</p>
5.4.7 – Perforated Stub-out Connections	<p>NA</p>	<ul style="list-style-type: none"> • Added reference to Kitsap County Board of Health Ordinance 2008A-01 • Added language to clarify that perforated stub-out connection BMPs may not be used for the LID Performance Standard or to provide runoff treatment or flow control 	<p>No changes.</p>

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5.4.8 – Permeable Pavement	Allowed infiltration under impermeable pavements in lieu of permeable pavement.	<ul style="list-style-type: none"> • Deleted language regarding allowing infiltration under impermeable pavements in lieu of permeable pavement • Added language regarding limitations to permeable pavements (no run-on from pervious surfaces, etc.) • Added language regarding allowing permeable pavement to meet basic runoff treatment requirements (Table 5.12 and footnotes) • Updated “acceptance testing” language to infiltration testing and added reference to Ecology Manual Infiltration Test for Permeable Pavement Surface 	No changes.
5.4.9 – Tree Retention and Tree Planting	NA	<ul style="list-style-type: none"> • Added reference to recommended street tree list in Appendix B of the Kitsap County Low Impact Guidance Manual 	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
5.4.10 – Vegetated Roofs	NA	<ul style="list-style-type: none"> • Added text clarifying that Vegetated Roofs can be designed to meet the LID Performance Standard but cannot be used in the List approach (no change to requirements) • Removed design criteria and replaced with a reference to the Ecology Manual (no changes to requirements) • Removed reference to the Western Washington LID O&M Guidance Document (this guidance has been integrated into the Ecology Manual) 	No changes.
5.4.12 – Minimal Excavation Foundations	NA	<ul style="list-style-type: none"> • Added paragraph clarifying Applications and Limitations of tracked equipment (no change to requirements) 	No changes.
5.4.13 – Rainwater Harvesting	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Deleted mechanical equipment and industrial processes from list of uses for harvested water • Added design information and modeling requirements <ul style="list-style-type: none"> ○ Design shall show 100% reuse of the annual average runoff volume ○ Require monthly water balance for interior uses ○ Restrict to 4 homes/acre housing and lower densities when captured water is solely for outdoor use 	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
5.4.14 – Pre-settling Basins	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Added text to Applications and Limitations regarding certain BMPs (e.g., bioretention, sand filters, wet ponds) that have specific pre-settling requirements. Referred to BMP-specific requirements for pre-settling where provided. • Updated Site Considerations with reference to Title 19 KCC and Kitsap County Board of Health Ordinance 2008A-01 • Added criteria for dam safety design and review if the impoundment has an embankment height > 6 feet at the downstream toe 	No changes.
5.4.15 – Infiltration Basins	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Clarified design requirements to emphasize that Site Suitability Criteria in Ecology Manual (formerly Soil Suitability Criteria) must be met if BMP is proposed for Runoff Treatment 	No changes.
5.4.16 – Infiltration Trenches	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Added text: Infiltration trenches that include perforated pipes are UICs • Clarified language in Minimum Construction Requirements for Aggregate Placement and Compaction (no change to requirements) • Added O&M requirement for monitoring sediment buildup 	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
5.4.17 - Drywells	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Clarified that drywells are UICs • Added new Site Considerations for separation from groundwater, sizing, filter fabric depending on soil conditions • Updated Design Information: <ul style="list-style-type: none"> ○ Added requirements for Type 1 vs. Type 2 drywells ○ Added typical minimum diameter (48") ○ Added minimum spacing between drywells (30 feet or twice the depth, whichever is greater) • Updated O&M requirement for removing debris and sediment from the drywell grate 	No changes.
5.4.18 – Compost-amended Vegetated Filter Strips (CAVFS)	NA	<ul style="list-style-type: none"> • Clarified Design Information: <ul style="list-style-type: none"> ○ Compost shall not contain biosolids or manure ○ Goal to create a healthy environment for growth of turf 	No changes.
5.4.20 – Media Filter Drains	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Performance Mechanism: added underdrain trench as an option for hydraulic conveyance of treated stormwater to desired location • Site Considerations: added discussion of consideration for areas of seasonal ground water inundations or basement flooding 	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
5.4.22 – Wet Ponds	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Updated BMP Description, including options for adding a shallow marsh area for additional treatment, or utilizing a “live storage” for peak flow control (no change to requirements) • Added reference to Appendix D of the Kitsap County Stormwater Pond Retrofit Design Guidance Manual (recommended plant list) 	No changes.
5.4.23 – Wet Vaults	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Expanded BMP Description for informational purposes • Added general Design Information (no change to requirements) 	No changes.
5.4.24 – Stormwater Treatment Wetlands	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> • Clarified that stormwater treatment wetlands are not expected to provide phosphorus control as a stand-alone BMP and must be paired per the treatment train approach • Added O&M requirement to coordinate with Kitsap County to develop a monitoring plan 	No changes.
5.4.25 – Oil/Water Separators	NA	<ul style="list-style-type: none"> • Expanded BMP Description for informational purposes • Clarified several bullets under Site Considerations; added details for on-line vs. offline design and determining bypass flows 	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
5.4.26 – Detention Ponds	Provided a bulleted list of design components addressed in the Ecology Manual	<ul style="list-style-type: none"> Added a requirement regarding the minimum bench area at fence line Added note under Design Information regarding how to use results from AutoPond in WWHM Added reference to Ecology Manual regarding handling of standing water or sediment removed during O&M 	No changes.
5.4.27 – Detention Tanks	<ul style="list-style-type: none"> This BMP was called Detention Pipes Provided a bulleted list of design components addressed in the Ecology Manual 	<ul style="list-style-type: none"> Updated BMP name from “Detention Pipes” to Detention Tanks Expanded BMP Description for informational purposes 	No changes.
5.4.28 – Detention Vaults	Provided a bulleted list of design components addressed in the Ecology Manual	Expanded BMP Description for informational purposes	No changes.
5.4.29 – Combined Detention and Wet Pool Facilities	NA	Application and Limitations: Clarified that live storage component of combined BMP shall be provided above the seasonal high water table	No changes.
5.4.30 – Manufactured Treatment Devices as BMPs	This BMP was called Emerging Technologies	<ul style="list-style-type: none"> Updated BMP name to Manufactured Treatment Devices as BMPs Updated references to Ecology TAPE program 	No changes.
Chapter 6 – Wetlands Protection			
6.4 – Standard Requirement	Referred to Guide Sheets #1 through #3 in Volume I, Appendix I-D of the Ecology Manual.	Updated reference to Ecology Manual (wetland protection guidance is now in Volume I, Appendix I-C of the Ecology Manual)	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
6.5 – Coordination with Minimum Requirement #7	NA	Added new section on coordinating with MR #7. If unable to meet both requirements, maintaining the hydroperiod of the wetland is the overriding concern.	No changes.
Chapter 7 – Operation and Maintenance			
7.2 – Operation and Maintenance Requirements	Referred to the Clean Water Kitsap Plant List	<ul style="list-style-type: none"> Replaced <i>Clean Water Kitsap Plant List</i> with reference to Kitsap LID Guidance Manual Appendix C checklists Added KCC reference for privately maintained plats 	No changes.
Chapter 8 – Critical Drainage Areas			
8.3 – Supplemental Requirements	NA	<ul style="list-style-type: none"> Updated Critical Drainage Area figures (Figures 8.1, 8.2, and 8.3) Clarified requirements for closed depressions that are wetlands (Section 8.3.1) Updated modeling guidance for closed depressions (Section 8.3.1) 	Updated CDA maps to remove the Gamblewood, Edgewater, Miller Bay Estates and a portion of Manchester areas.
Chapter 9 – Grading			
9.2 – Review Coordination	Stated that the latest version of the form entitled “Notice of Grading or Filling” shall be used; see Appendix I for a copy of the form	Removed the reference to Appendix I since this form can be found on the County’s website.	No changes.
9.4 – Grading Standards	Stated that the evaluation should be performed by a soils engineer	Updated “soils engineer” to “geotechnical engineer”	No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
Appendices			
Appendix A - Glossary	NA	Added the following definitions: <ul style="list-style-type: none"> • Bioengineering • Steep slopes (30% or greater) • Strahler order • Treatment train • Underground Injection Control well • Vegetated flow path 	No changes.
	NA	Added the following acronyms: <ul style="list-style-type: none"> • BMPs – Best Management Practices • CESCL – Certified Erosion and Sediment Control Lead • CMP – Corrugated metal pipe • CPEP – Corrugated polyethylene pipe • HDPE – High-density polyethylene • HDPP – High-density polyethylene pipe • LID – Low Impact Development • PVC – Polyvinyl chloride • SDAP – Site Development Activity Permit • SWPE – Solid-wall polyethylene • TDA – Threshold discharge area 	No changes.
	NA	Updated conveyance system definition	No changes.
Appendix B – Standard Plan Notes	NA	<ul style="list-style-type: none"> • Updated terminology • Updated references 	No changes.
Appendix C – Site Assessment and Planning Packet	No changes have been proposed to this appendix		No changes.

Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
Appendix D – Determining Construction Site Sediment Damage Potential	NA	<ul style="list-style-type: none"> • Updated terminology • Updated references 	No changes.
Appendix E – Construction Site Sediment Transport Potential Worksheet	NA	Converted text into a tabular format	No changes.
Appendix F – Hydrologic/ Hydraulic Modeling Methods	Tables and figures were missing in the 2016 Kitsap SDM	<ul style="list-style-type: none"> • Added missing tables and figures (from 2010 Kitsap SDM) • Added a new figure (formerly in Volume II, Chapter 4) • Updated equation formatting 	No changes.

<p>Appendix G – Subsurface Investigation and Infiltration Testing for Infiltration BMPs</p>	<p>NA</p>	<ul style="list-style-type: none"> • Updated terminology • Updated references • Added language regarding UIC wells • Updated Small PIT and Large PIT procedures for consistency with the Ecology Manual <ul style="list-style-type: none"> ○ Bottom size should be 12-32 square feet (Small PIT, Step 3) ○ Added sizing for rigid pipe (Small PIT, Step 5) ○ Maintain water level depth between 6-12 inches (Small PIT, Step 7) ○ Added self-logging pressure sensor (Small PIT, Step 8) ○ Soils professional should judge whether mounding is necessary (Small PIT, Step 9) ○ Revised text for Data Analysis approach ○ Expanded procedures for Large PIT • Added new language regarding the calculation of design infiltration rate of the native soils based on the Ecology Manual <ul style="list-style-type: none"> ○ Added new section (G.4.1) for “The Simplified Approach to Calculating the Design Infiltration Rate of the Native Soils” based on the Ecology Manual ○ Deleted text in Section G.4.2 and added a reference to the 	<p>No changes.</p>
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Chapter/Section	2016 Kitsap SDM	Proposed 2020 Kitsap SDM – 1 st Draft	Proposed 2020 Kitsap SDM – 2nd Draft
		<p>Ecology Manual for “The Detailed Approach to Calculating the Design Infiltration Rate of the Native Soils”</p> <ul style="list-style-type: none"> Added text for groundwater mounding analysis in the Characterization of Infiltration Receptor section (Section G.6) 	
Appendix H – LID BMP Infeasibility Criteria	NA	<ul style="list-style-type: none"> Updated infeasibility criteria for consistency with updated SDM text and the Ecology Manual (primarily related to dispersion BMP updates) Added infeasibility criteria for perforated stub-out connections Removed infeasibility criteria for permeable pavement; replaced with reference to Ecology Manual 	No changes.

Title 12		
Chapter 12.04 - General Provisions		
12.04.020 - Storm water management standards and specifications		Deleted reference to purchasing a copy of the manual since it is in an electronic format.
Chapter 12.08 - Definitions		
Definitions		Updated per the following section changes.
12.08.050 - Bioretention facilities		Updated reference to point to the County manual rather than the Ecology manual.
12.08.085 - Comprehensive drainage plan		Updated flow control and runoff treatment terminology to match manual update.
12.08.095 - Converted vegetation		Changed “converted vegetation” to “converted vegetation areas”.
12.08.160 - Ecology Manual		Updated reference to current Ecology manual.
12.08.165 - Effective impervious surface		Updated reference to point to the County manual rather than the Ecology manual.
12.08.183 - Flow control best management practices (BMPs)		Added examples of BMPs.
12.08.200 - Geotechnical report and geological report		Added “hydrogeologist” as another preparer of a geotechnical report.
12.08.240 - Illicit Discharge		<ul style="list-style-type: none"> • Removed hyphen from “fire-fighting”. • Added “spa and hot tub” to item (P). • Added clarification that discharges shall be thermally controlled to prevent an increase in temperature of the receiving water.
12.08.280 - Low impact development (LID)		Added abbreviations for green storm water infrastructure and green storm water solutions.

12.08.285 - Low impact development (LID) best management practices (BMPs)		Added examples of LID BMPs.
12.08.290 - Maintenance		Updated reference to point to the County manual rather than the Ecology manual.
12.08.318 - New impervious surface		New section. Added to comply with the NPDES permit.
12.08.360 - Pollution-generating impervious surface (PGIS)		<ul style="list-style-type: none"> • Made grammatical edits for clarification. • Added additional examples of pollution generating impervious surfaces.
12.08.365 – Pollution-generating pervious surfaces (PGPS)		<ul style="list-style-type: none"> • Updated the term “nonhard” with “pervious” • Made grammatical edits for clarification.
12.08.372 - Project		New section. Added to comply with the NPDES permit.
12.08.395 - Redevelopment		Updated the term “impervious” with “hard” to comply with Ecology manual language.
12.08.450 – Soils investigation report		<ul style="list-style-type: none"> • Deleted the term “investigation” to match language in the County manual. • Replaced “qualified soils engineer or geologist” with “licensed professional”.
12.08.460 – Source Control BMP		Updated reference to point to the County manual rather than the Ecology manual.
12.08.460 – Stormwater or storm water		Updated definition to match definition in NPDES permit.
12.08.480 – Storm water facility or storm water control facility		Added sentence to clarify that these facilities are also known as BMPs.
12.08.495 – Storm water system		Updated terminology to match County manual.

12.08.505 – Treatment best management practices (BMPs)		<ul style="list-style-type: none"> • Added term “runoff” to match County manual terminology. • Added examples of BMPs.
Chapter 12.10 - Permits		
12.10.030 – Site development activity permits required		<ul style="list-style-type: none"> • Updated figure labels. • Clarified “storm water” drainage in item 2.
12.10.040 - Exemptions		Updated exemption number 4 to match the NPDES permit language.
12.10.060 – Professional engineer required		<ul style="list-style-type: none"> • Updated figure labels. • Updated terminology to match County manual language.
12.10.080 – Geotechnical analysis		Updated terminology to match County manual.
Chapter 12.12 - Covenants, Sureties and Liability Insurance		
		No changes.
Chapter 12.16 - Grading		
12.16.040 – Abbreviated grading plan		Updated figure labels.
Chapter 12.20 - Storm Water Management		
12.20.010 – Minimum requirements for new and redevelopment projects		<ul style="list-style-type: none"> • Updated figure labels. • Added language related to the minimum requirements for redevelopment to match NPDES permit language.
12.20.040 – Storm water management facility design requirements		Updated terminology to match County manual.
12.20.060 – Emerging technologies		Updated terminology to match language in Ecology manual.
12.20.100 – Easements, tracts and covenants		Added “best management practices” for clarification.

12.20.120 – Regional facilities		Updated terminology to match County manual.
12.20.130 – Watershed planning		Updated terminology to match County manual.
Chapter 12.24 - Operation and Maintenance		
12.24.010 – Maintenance of storm water facilities by owners		Updated terminology to match County manual.
12.24.020 – Maintenance covenant required for privately maintained facilities		Updated terminology to match County manual.
12.24.030 – County acceptance of new residential storm water facilities		Updated terminology to match County manual.
12.24.040 – County acceptance of existing storm water facilities		Updated terminology to match County manual.
12.24.050 – County inspections of privately maintained storm water facilities		Updated terminology to match County manual.
12.24.060 – Inspection schedule		Updated terminology to match County manual.
Chapter 12.28 - Critical Drainage Areas		
		No changes.
Chapter 12.30 - Illicit Discharge Detection and Elimination		
12.30.040 – Pollution control device maintenance		Updated terminology to match County manual.
Chapter 12.32 - Enforcement		
		No changes.

Chapter 12.36 - Storm Water Management Program		
12.36.040 – Program authority and administration		Updated terminology to match County manual.
12.36.050 – Program elements		Added clarification that source control applies to existing development.
Chapter 12.40 - Storm Water Management Program Rate Structure		
12.40.020 – Purpose		Added clarification that services apply to <i>storm water</i> drainage system.
12.40.040 – Rate structure		Added clarification that services apply to <i>storm water</i> drainage system.