

APPENDIX C

On-site Stormwater ~~Management~~List BMP Infeasibility Criteria

This appendix provides infeasibility criteria for use in evaluating BMPs ~~for meeting to meet~~ the On-site Stormwater Management Requirement using the On-Site List approach (SMC, Section 22.805.070.D). ~~GSI BMP lists are provided in 2) to manage new and replaced hard surfaces. Refer to Volume 1, Section 5.4.2.2, to determine which on-site BMPs require evaluation for a project. Evaluation is based on project type, discharge location, and other criteria.~~ Step-by-step instructions for using the On-site List Approach are provided in *Volume 3, Section 3.3.1*.

Prior to evaluating on-site BMPs, review the site design consideration in *Volume 1, Chapter 7 - Site Assessment and Planning* to conserve natural areas, retain native vegetation, reduce impervious surfaces, and integrate stormwater controls into the existing site layout to the maximum extent feasible. The Infeasibility Criteria provided below apply to BMPs if the area proposed for the BMP is the only available area for the BMP, after all reasonable efforts to regrade the site and allow for alternative placement of the BMP have been made.

When using the On-site List approach, ~~if a GSI BMP cannot be installed within the existing project site, then the BMP~~ an on-site BMP is considered infeasible if an infeasibility criteria in Tables C.1 through C.4 is met.

Table C.1. On-site ~~Requirement List~~ Infeasibility Criteria Checklist: All Dispersion BMPs and ~~All~~ Infiltration BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
All Dispersion BMPs	<ul style="list-style-type: none"> Where professional geotechnical evaluation recommends dispersion not be used anywhere within project site due to reasonable concerns of erosion, slope failure, or flooding (requires a signed and stamped written determination based on site-specific conditions from an appropriately licensed professional). <u>Only available dispersion flowpath area Installation requires removal of an existing tree. To use this infeasibility criterion, the tree must be in good health and meet minimum size requirements: deciduous trees must have trunks at least 1.5 inches in diameter measured 6 inches above the ground, and evergreen trees must be at least 4 feet tall. In addition, the existing tree must be in an area that will be protected throughout construction.</u> Where BMP installation is within a landslide hazard area defined by the prohibited per Regulations for Environmentally Critical Areas. Only available dispersion flowpath area is in or within 100 feet up-gradient of a known contaminated site or abandoned landfill. Only available dispersion flowpath area is in a Steep Slope Critical Area (SMC Section Chapter 25.09.020) or within setback to Steep Slope Critical Area (calculated as 10 times the height of the Steep Slope to a 500 foot maximum setback). <u>Only available dispersion flowpath area is up-gradient and within 10 feet of proposed or existing septic system or drainfield.</u> 	

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
<p>All Infiltration/Dispersion BMPs</p>	<p>The following criteria each establish that the BMP is infeasible but only if based on an evaluation of site-specific conditions and a signed and stamped written determination from an appropriately licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> • Where professional geotechnical evaluation as defined in Appendix D, Section D-1 recommends infiltration/dispersion not be used anywhere within project site due to reasonable concerns about erosion, slope failure, or flooding (requires a signed and stamped written determination based on site-specific conditions from a licensed professional). • Where the only area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces or subgrades. • Where the only area available for siting does not allow for a safe overflow pathway. • Where infiltrating water would threaten shoreline structures such as bulkheads. <p>The following criteria each establish that the BMP is infeasible, without further justification, though some criteria require professional services:</p> <ul style="list-style-type: none"> • Within area designated as Landslide-Prone Critical Area, Steep Slope Critical Area or within setback from Steep Slope Critical Area (refer to Volume 3, Section 5.4.4.4). • Within 5 foot setback from a structure without an underground basements or 10 feet from structure with a basement is not achievable. (Note: for projects infiltrating runoff from 5,000 square feet or more of impervious surface, see additional setback information in Volume 3, Section 5.4.4.3). • Within 5 foot setback from property lines (excluding the property line abutting the right-of-way) if structure setbacks are met. <ul style="list-style-type: none"> • Within The dispersion flow path area does not provide positive drainage. • The dispersion flowpath area is within a landslide-prone area (SMC, Section 25.09.080). • The dispersion flowpath area is within 100 feet of a drinking water well, or a spring used for drinking water supply. • Within drinking water protection area. • Within 10 feet of an underground storage tank or connecting underground pipes when the capacity of the tank and pipe system is 1100 gallons or less. (Applicable to tanks used to store petroleum products, chemicals, or liquid hazardous wastes). 	

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
	<ul style="list-style-type: none"> • Within 100 feet of an underground storage tank or connecting underground pipes when the capacity of the tank and pipe system is greater than 1100 gallons. • Within 10 feet of a proposed or existing septic system or drain field for rain gardens, bioretention, permeable pavement facilities, infiltration trenches and drywells and within 100 feet of a proposed or existing septic system for other infiltration BMPs. • Where the following minimum vertical separation to the seasonal high water table or hydraulically restrictive layer would not be achieved below the infiltration BMP: <ul style="list-style-type: none"> — One foot separation for a BMP that would serve a drainage area that is: 1) less than 5,000 square feet of pollution-generating impervious surface (PGIS), and 2) less than 10,000 square feet of pervious surface; and, 3) less than three-quarter (3/4) acres of pervious surface. This clearance also applies to permeable pavement facilities regardless of size. Vertical separation requirements are larger if explorations are conducted during the dry season (refer to Volume 3, Section 5.4.1.3). — Three foot separation for a BMP that would serve a drainage area that meets or exceeds: 1) 5,000 square feet of PGIS, or 2) 10,000 square feet of impervious surface, or 3) three-quarter (3/4) acres of pervious surfaces. To use the 3 foot separation criterion, it must be demonstrated that the drainage areas cannot reasonably be broken down into amounts smaller than the drainage thresholds listed above. Vertical separation requirements are larger if explorations are conducted during the dry season (refer to Volume 3, Section 5.4.1.3). <ul style="list-style-type: none"> • Within 100 feet up-gradient of a contaminated site or landfill (active or closed) for project sites where runoff from less than 5,000 square feet of impervious surface will be infiltrated on site, and within 500 feet up-gradient of contaminated sites or landfill (active or closed) for projects where runoff from 5,000 square feet or more of impervious area will be infiltrated on site. • Note: For most infiltration BMPs, setbacks are measured from the vertical extent of maximum ponding before overflow. For bioretention and rain gardens, setback distances are as measured from the bottom edge of the bioretention or rain garden soil mix (i.e., bioretention cell bottom at the toe of the side slope). <u>The dispersion flowpath area is in a steep slope area (SMC, Section 25.09.020) or within a setback to a steep slope area (calculated as 10 times the height of the steep slope to a 500 foot maximum setback).</u> • The dispersion flowpath area is within 10 feet of a proposed or existing septic system or drainfield. 	

Table C.2-1 (continued). On-site Requirement List Infeasibility Criteria Checklist: Retain Existing Trees; All Dispersion and Soil Amendment Infiltration BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
<p>Retain Existing Trees <u>All Infiltration BMPs</u></p>	<ul style="list-style-type: none"> ▪ No existing trees with diameter equal to or greater than 4 inches on project site. ▪ New and/or replaced ground level impervious surface not proposed within 20 feet of existing tree. ▪ For tree(s) with a diameter greater than or equal to 6 inches, significant grading is unavoidable within the dripline or otherwise does not meet standards (per <u>City Standard Plans and Specifications</u>) required for retention. ▪ For tree(s) with a diameter of 4-6 inches significant grading is unavoidable within 5 feet of tree trunk or otherwise does not meet standards (per <u>City Standard Plans and Specifications</u>) required for retention. <p>Trees are not considered healthy according to <u>TIP 331B-Hazard Trees</u>. The following criteria each establish that the BMP is infeasible but only if based on an evaluation of site-specific conditions and documented within a signed and stamped written determination from a licensed professional (as defined in <u>Appendix D, Section D-1</u>):</p> <ul style="list-style-type: none"> • Infiltration is not recommended due to reasonable concerns about erosion, slope failure, or flooding. • The area available for siting would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, pre-existing structures, or pre-existing road or parking lot surfaces or subgrades. • The area available for siting would threaten shoreline structures such as bulkheads. <p>The following criteria each establish that the BMP is infeasible, without further justification, though some criteria evaluation require professional services:</p> <ul style="list-style-type: none"> • Evaluation of infiltration is not required per the "Infiltration Investigation Map". • The area available for siting does not allow for overflow conveyance to an approved point of discharge per <u>Section 4.3.2</u>. • The area available for siting is within a steep slope area or land-slide prone area (or setback) (refer to <u>Volume 3, Section 3.2</u>). • The area available for siting does not meet the minimum horizontal setback requirements (refer to <u>Volume 3, Section 3.2</u>). • The area available for siting does not meet the minimum vertical setback requirements (refer to <u>Volume 3, Section 3.2</u>, and <u>Appendix D</u>). • Infiltration is restricted due to contaminated soil or groundwater (refer to <u>Volume 3, Section 3.2</u>). 	

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
Soil Amendment	*— Portions of the site comprised of till soils with slopes greater than 33 percent need not meet this requirement.	

Table C.32. On-site Requirement List Infeasibility Checklist: Category 1 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
Full Dispersion	<ul style="list-style-type: none"> • The One or more of the infeasibility criteria for “All Dispersion BMPs” (Table C.1) apply. • The Design Criteria for Full Dispersion (Volume 3, Section 5.3.1) cannot be met. • A <u>The site has less than a</u> 65 to 10 ratio of the native vegetation area to the impervious area is unachievable. • A <u>The</u> minimum native vegetation flowpath length of <u>is less than</u> 100 feet (25 feet for sheet flow from a non-native pervious surface) is unachievable. 	
Infiltration Trenches	<ul style="list-style-type: none"> • The One or more of the infeasibility criteria for “All Infiltration BMPs” (Table C.1) apply. • The Design Criteria for Infiltration Trenches (Volume 3, Section 5.4.2) cannot be met. • Field testing indicates potential infiltration trench site(s) have a measured (a.k.a., initial) native <u>underlying</u> soil infiltration rate less than 0.5 inches per hour (Volume 3, Section 5.4.1-2). • <u>Where the site cannot be reasonably designed to locate a catch basin between the infiltration trench and point of connection to the public system.</u> 	
Drywells	<ul style="list-style-type: none"> • The One or more of the infeasibility criteria for “All Infiltration BMPs” (Table C.1) apply. • The Design Criteria for Dry Wells (Volume 3, Section 5.4.2) cannot be met. • Field testing indicates potential infiltration trench <u>drywell</u> site(s) have a measured (a.k.a., initial) native <u>underlying</u> soil infiltration rate less than 5 inches <u>5 inches</u> per hour (Volume 3, Section 5.4.1-3). • <u>Where the site cannot be reasonably designed to locate a catch basin between the drywell and point of connection to the public system.</u> 	

Table C.43. On-site Requirement List Infeasibility Criteria Checklist: Category 2 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
Rain Gardens	<ul style="list-style-type: none"> • Refer to feasibility criteria for Infiltrating Bioretention Facilities. 	
<p>Infiltrating Bioretention Facilities</p> <p>Rain Gardens</p>	<ul style="list-style-type: none"> • The feasibility <u>One or more of the infeasibility</u> criteria for “All Infiltration BMPs” (Table C.1) apply. • The Design Criteria for Infiltrating Bioretention cannot be met (Volume 3, Section 5.4.4) • Site cannot be reasonably designed to locate infiltrating bioretention facilities on slopes less than 8 percent. • Where the facility is not compatible with surrounding drainage system (e.g., there is less than 2 percent fall from the contributing area to the facility and from the facility to the point of connection to the public drainage system, or requires non-standard connection). • <u>For projects in the right-of-way, the total rain garden top area would be less than 500 square feet and the project discharges to:</u> <ul style="list-style-type: none"> o <u>A designated receiving water body, or</u> o <u>A combined system, or</u> o <u>A capacity constrained system which does not drain to a creek wetland or small lake.</u> • <u>In the right-of-way, the longitudinal road slope exceeds 4 percent.</u> • <u>The rain garden would have a linear geometry with a longitudinal slope greater than 8 percent.</u> • <u>The minimum bottom width of the infiltrating bioretention facility rain garden (12 inch average) cannot be met due to site constraints such as, but not limited to: encroachment within the critical root zone of an existing tree(s); or minimum setbacks to structures, utilities cannot be met; or available property lines.</u> • The infiltration area is within the project site or planting strip too small. <ul style="list-style-type: none"> • Minimum minimum vertical and/or horizontal clearance from utilities as, according to clearances required by the utility owner is unachievable. • Where field Field testing indicates soils have a measured (a.k.a., initial) native underlying soil infiltration rate less than 0.63 inches per hour infiltrating bioretention facilities without underdrains are not considered feasible. (Note: For soils with measured infiltration rates less than 0.6 inches per hour, but greater than or equal to 0.3 inches per hour, infiltrating bioretention with an underdrain is considered feasible, unless other feasibility restrictions apply.) • Where facility without underdrain is within 1/4 mile of nutrient critical receiving waters and the underlying native soil does not meet the treatment soil requirements outlined in Section 5.4. <ul style="list-style-type: none"> • Where facility with underdrain would route underdrained water to a nutrient critical receiving water. 	
Rainwater Harvesting	<ul style="list-style-type: none"> • The Design Criteria for Rainwater Harvesting (Volume 3, Section 5.5.4) cannot be met. 	

BMP	<u>On-site List</u> Infeasibility Criteria	Additional Information from Applicant
	<ul style="list-style-type: none"> • Project lacks non-pollution-generating surface from which to harvest rainwater. • Non-potable water demand is insufficient to use the harvested rainwater. • Due to reasonable considerations of financial cost, rainwater harvesting is infeasible. 	
<p>Permeable Pavement <u>Infiltrating Bioretention</u> Facilities</p>	<ul style="list-style-type: none"> • The <u>One or more of the</u> infeasibility criteria for “All Infiltration BMPs” (Table C.1) apply. • The Design Criteria for Permeable Pavement Facilities (<u>Volume 3, Section 5.4.6</u>) cannot be met. <p>The following criteria each establish that the BMP is infeasible but only if based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist):</p> <ul style="list-style-type: none"> • Where infiltrating and ponded water below permeable pavement area would compromise adjacent impervious pavements. • Where fill soils are used that can become unstable when saturated. • Where permeable pavements cannot provide sufficient strength to support heavy loads <u>For projects</u> in areas with “industrial activity” as identified in <u>40 CFR 122.26(b)(14)</u>. <p>The following criteria each establish that the BMP is infeasible, without further justification, though some criteria require professional services:</p> <ul style="list-style-type: none"> • Where subgrade slopes exceed 5 percent. • At multi-level parking garages, and over culverts and bridges. • Where <u>right-of-way</u>, the site design cannot avoid putting pavement in areas likely to have long-term excessive sediment deposition after construction (e.g., construction and landscaping material yards).* • Where <u>total bioretention top area (including the site cannot reasonably be designed to have a porous asphalt surface at <u>presettling zone</u> would be less than 5 percent slope, or a pervious concrete surface at less than 10 percent slope, or a permeable interlocking concrete pavement surface (where appropriate) at less than 12 percent slope. Note: grid systems upper slope limit can range from 6 to 12 percent; check with manufacturer and local supplier. <u>500 square feet and the project discharges to:</u></u> • Where the native soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. Refer to <u>Volume 3, Section 5.4.1</u>. • Where underlying soils are unsuitable for supporting traffic loads when saturated. Soils meeting a California Bearing Ratio of 5 percent are considered suitable for residential access roads. 	

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
	<ul style="list-style-type: none"> o Where field <u>A designated receiving water body, or</u> o A combined system, or o A capacity constrained system which does not drain to a creek wetland or small lake. • <u>The infiltrating bioretention facility would have a linear geometry with a longitudinal slope greater than 8 percent.</u> • <u>The minimum bottom width of the infiltrating bioretention facility (2 feet for facilities with vertical sides and 18 inch average for facilities with sloped sides) cannot be met due to, but not limited to: encroachment within the critical root zone of an existing tree(s) or minimum setbacks to structures, utilities, or property lines.</u> • <u>The infiltration area is within the minimum vertical and horizontal clearance from utilities, according to clearances required by the utility owner.</u> • <u>Field testing indicates soils have a measured (a.k.a., initial) native underlying soil infiltration rate less than 0.63 inches per hour; permeable pavement facilities without underdrains are not considered feasible. (Note: .</u> • <u>For soils with measured infiltration rates less than 0.6 inches per hour, but greater than or equal to 0.3 inches per hour, permeable pavement facilities infiltrating bioretention with underdrains are an underdrain is considered feasible, unless other infeasibility restrictions apply.)</u> • Where the road type is classified as arterial or collector rather than access.* Refer to RCW 35.78.010, RCW 36.86.070, and RCW 47.05.024. The facility with an underdrain would route underdrained water to a nutrient-critical receiving water. • In the right-of-way, installation requires a vertical walled facility. Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial. • Where road has ADT exceeding XX [to be developed to represent "very low traffic volumes"] or ADTT exceeding XX [to be developed to represent "very low truck traffic"]. • Where replacing existing impervious surfaces unless the existing surface is a non-pollution-generating surface over an outwash soil with an infiltration rate of four inches per hour or greater. • At sites defined as "high use sites" in SMC, Section 22.801.090*. • In areas with "industrial activity" as identified in 40 CFR 122.26(b)(14)*. • Where the risk of concentrated pollutant spills is more likely, including, but not limited to, gas stations, truck stops, and industrial chemical storage sites.* • Where routine, heavy applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation.* • Where it is infeasible to prevent stormwater run-on to the permeable pavement from unstabilized erodable areas without pre-settling. • Areas contributing runoff to the permeable pavement facilities cannot be limited to the maximum run-on limits: 	

BMP	<u>On-site List</u> Infeasibility Criteria	Additional Information from Applicant
	<ul style="list-style-type: none"> — Pollution-generating impervious surfaces (e.g., roadways, parking lots): maximum run-on ratio of 2:1 — Non-pollution-generating impervious surfaces (e.g., roofs, sidewalks) and stabilized pervious surfaces: maximum run-on ratio of 5:1 • *These criteria also apply to impervious pavements that would employ stormwater collection from the surface of impervious pavement with redistribution below the pavement. 	
Permeable Pavement Surfaces	<ul style="list-style-type: none"> • The Design Criteria for <u>Permeable Pavement Surfaces</u> (<u>Volume 3, Section 5.6.2</u>) cannot be met. • The infeasibility criteria provided for permeable pavement facilities cannot be met. (Note, however, that for permeable pavement surfaces, the infeasibility criteria for “All Infiltration BMPs” are not applicable and the minimum native soil infiltration rate differs, as described below). • Where field testing indicates soils have a measured (a.k.a., initial) native soil infiltration rate less than 0.3 inches per hour permeable pavement surfaces are not considered feasible. (Note: field infiltration tests are not required, but may be used to demonstrate infeasibility) • Where the site is a contaminated site or abandoned landfill. • Within 10 feet of an underground storage tank or connecting underground pipes. (Applicable to tanks used to store petroleum products, chemicals, or liquid hazardous wastes). • Run-on from an impervious area of 10 percent or less of the permeable pavement surface area is unavoidable. • Where professional geotechnical evaluation recommends permeable pavement not be used anywhere within the project site due to reasonable concerns of erosion, slope failure, or flooding (requires a signed and stamped written determination based on site-specific conditions from an appropriately licensed professional). 	

Table C.5. On-site Requirement Infeasibility Criteria Checklist: Category 3 BMPs.

Table C.3 (continued). On-site List Infeasibility Criteria: Category 2 BMPs.

BMP	<u>On-site List</u> Infeasibility Criteria	Additional Information from Applicant
<p><u>Rainwater Harvesting</u> Sheet-Flow Dispersion</p>	<ul style="list-style-type: none"> • The infeasibility criteria for “All Dispersion BMPs” (Table C.1) apply. • The Design Criteria for Sheet-Flow Dispersion (<u>Volume 3, Section 5.3.5</u>) cannot be met. • Positive drainage for sheet flow runoff is unachievable. • Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15 percent slope. • At least a 10-foot wide vegetation buffer for dispersion of the adjacent 20 feet of impervious surface is unachievable. • The flowpath setbacks to property lines, structures and other flowpaths (refer to <u>Volume 3, Section 5.3.4</u>) cannot be achieved. <u>Project lacks non-pollution-generating roof from which to harvest rainwater.</u> • <u>Non-potable water demand is insufficient to meet the On-site Performance Standard per modeling conducted in accordance with Volume 3, Section 5.5.1.6.</u> • <u>Installation is not economically feasible based on reasonable consideration of financial cost (e.g., roof area is less than 20,000 sf or the ratio of roof area to average daily rainwater demand is less than 10,000 square feet/gpm) (refer to Appendix H). Documentation is required.</u> 	
<p><u>Permeable Pavement Facilities</u> Concentrated-Flow Dispersion</p>	<ul style="list-style-type: none"> • <u>The One or more of the infeasibility criteria for “All Dispersion Infiltration BMPs” (Table C.1) apply.</u> • The Design Criteria for Concentrated-Flow Dispersion (<u>Volume 3, Section 5.3.4</u>) cannot be met. • The dispersion device and flowpath requirements are unachievable: <ul style="list-style-type: none"> — A minimum 10 feet length of dispersion trench followed by a 25-foot minimum flowpath or a rock pad with a 50-foot minimum flowpath. — A maximum of 700 square feet of drainage area to any dispersion device. • <u>The flowpath setbacks to property lines, structures and other flowpaths (refer to <u>Volume 3, Section 5.3.4</u>) cannot be achieved. The following criteria each establish that the BMP is infeasible but only if based on an evaluation of site-specific conditions and a written recommendation from a licensed professional (as defined in <u>Appendix D, Section D-1</u>):</u> <ul style="list-style-type: none"> • <u>Infiltrating or ponding water below pavement area would compromise adjacent pavements.</u> • <u>Fill soils are used that can become unstable when saturated.</u> • <u>The permeable pavement design does not provide sufficient strength to support heavy loads in areas with “industrial activity” as identified in 40 CFR 122.26(b)(14).</u> • <u>The following criteria each establish that the BMP is infeasible, without further justification, though some criteria require professional services:</u> 	

Table C.3 (continued). On-site List Infeasibility Criteria: Category 2 BMPs.

BMP	<u>On-site List Infeasibility Criteria</u>	Additional Information from Applicant
	<ul style="list-style-type: none"> • <u>The subgrade slope exceeds 6 percent after reasonable efforts to grade.</u> • <u>The permeable pavement wearing course slope exceeds 6 percent after reasonable efforts to grade.</u> • <u>For projects in the right-of-way, the permeable pavement surface area would be less than 2,000 square feet of contiguous pavement and the project discharges to:</u> <ul style="list-style-type: none"> ○ <u>A designated receiving water body, or</u> ○ <u>A combined system, or</u> ○ <u>A capacity constrained system which does not drain to a creek wetland or small lake.</u> • <u>The anticipated mature tree spread (based on tree species) would overhang more than 50 percent of permeable pavement area.</u> • <u>The pavement is over a structure, such as, but not limited to: parking garages, box culverts, and bridges.</u> • <u>The pavement is subject to long-term excessive sediment deposition (e.g., construction and landscaping material yards).</u> • <u>Underlying soils are unsuitable for supporting traffic loads when saturated (e.g., a residential access road has a California Bearing Ratio of 5 percent or less).</u> 	
<p>Splashblock Downspout Dispersion</p>	<ul style="list-style-type: none"> • The infeasibility criteria for “All Dispersion BMPs” (Table C.1) apply. • The Design Criteria for Splashblock Downspout Dispersion (Volume 3, Section 5.3.4) cannot be met. • There are no downspouts. • A 50-foot minimum flowpath for the dispersion area or a maximum of 700 square feet of drainage area to any splashblock is unachievable. • The flowpath setbacks to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.4) cannot be achieved. 	
<p>Trench Downspout Dispersion</p>	<ul style="list-style-type: none"> • The infeasibility criteria for “All Dispersion BMPs” (Table C.1) apply. • The Design Criteria for Splashblock Downspout Dispersion (Volume 3, Section 5.3.4) cannot be met. • There are no downspouts. • A minimum 10 feet length of dispersion trench for every 700 square feet of drainage area followed by 25-foot minimum flowpath is unachievable. • The flowpath setbacks to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.4) cannot be achieved. 	

<p><u>Non-Infiltrating Bioretention Permeable Pavement Facilities (continued)</u></p>	<ul style="list-style-type: none"> • <u>Field testing indicates soils have a measured underlying soil infiltration rate less than 0.3 inches per hour.</u> • <u>Pavement is replacing an existing pollution-generating hard surface in the right-of-way.</u> • <u>The street type is classified as arterial or collector rather than local access. Refer to RCW 35.78.010, RCW 36.86.070, and RCW 47.05.021. Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces associated with the collector or arterial.</u> • <u>Streets that receive more than very low traffic volumes, and areas having more than very low truck traffic. Streets with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO, 2001)(U.S. Dept. of Transportation, 2013). Areas with very low truck traffic volumes are streets and other areas not subject to through truck traffic but may receive up to weekly use by utility trucks (e.g., garbage, recycling), daily school bus use, and multiple daily use by pick-up trucks, mail/parcel delivery trucks, and maintenance vehicles. Note: This infeasibility criterion does not extend to sidewalks and other non-traffic bearing surfaces.</u> • <u>The pavement area is defined as a “high use site” in SMC, Section 22.801.090.</u> • <u>In areas with “industrial activity” as identified in 40 CFR 122.26(b)(14).</u> • <u>Where the risk of concentrated pollutant spills is more likely, including, but not limited to, gas stations, truck stops, and industrial chemical storage sites.</u> • <u>In areas where routine, heavy roadway applications of sand occur in frequent snow zones to maintain traction during weeks of snow and ice accumulation, including sidewalks within 7 feet of roadways with sand application.</u> • <u>Where runoff from unstabilized erodible areas would occur without presettling.</u> • <u>The areas contributing runoff to the permeable pavement facilities exceed the maximum run-on limits:</u> • — <u>Pollution-generating impervious surfaces (e.g., roadways, parking lots) cannot be met.</u> • — <u>Site cannot be reasonably designed to locate non-infiltrating bioretention facilities on slopes less than 8 percent.</u> • — <u>Where the facility is not compatible with surrounding drainage system (e.g., there is less than 2 percent fall from the contributing area to the facility and from the facility to the point of connection to the public system, or requires non-standard connection).</u> • — <u>The minimum bottom width of the non-infiltrating bioretention facility cannot be met due to site constraints such as encroachment within the critical root zone of an existing tree(s); minimum setbacks to structures/utilities cannot be met; project limits/planting strip too small.</u> • — <u>Minimum vertical and horizontal clearance from utilities is unachievable as required by utility owner</u> 	
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Table C.3 (continued). On-site List Infeasibility Criteria: Category 2 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
	<ul style="list-style-type: none"> o The underdrained water would be routed to a nutrient-critical receiving water.) <u>exceed the maximum run-on area ratio of 2:1</u> o <u>Non-pollution generating impervious surfaces (e.g., roofs, sidewalks) and stabilized pervious surfaces exceed the maximum run-on area ratio of 5:1</u> 	
<p><u>Permeable Pavement Surfaces</u> Vegetated Roofs</p>	<ul style="list-style-type: none"> • <u>One or more of the infeasibility criteria provided for permeable pavement facilities apply. (Note, however, that for permeable pavement surfaces, the infeasibility criteria for "All Infiltration BMPs" are not applicable).</u> • <u>Field testing indicates soils have a measured underlying soil infiltration rate less than 0.3 inches per hour (Note: field infiltration tests are not required for permeable pavement surfaces, but must be used to demonstrate infeasibility).</u> • <u>The site is a contaminated site or abandoned landfill.</u> * Installation is within 10 feet of an underground storage tank or connecting underground pipes. (Applicable to tanks used to store petroleum products, chemicals, or liquid hazardous wastes). The Design Criteria for Vegetated Roofs (see <u>Volume 3, Section 5.6.1</u>) cannot be met. * Project does not include a roof. * Roof design has a slope less than 1 degree (0.2:12) or greater than 40 degrees (2:12). <ul style="list-style-type: none"> • <u>Due to reasonable considerations of financial cost, building cannot be designed to accommodate structural load of vegetated roof.</u> • <u>Run-on from an adjacent impervious area is greater than 10 percent of the permeable pavement surface area.</u> • <u>A licensed professional (as defined in <i>Appendix D, Section D-1</i>) recommends permeable pavement not be used anywhere within the project site due to reasonable concerns of erosion, slope failure, or flooding (requires a signed and stamped written determination based on site-specific conditions from a licensed professional).</u> 	
<p>SFR Cisterns</p>	<ul style="list-style-type: none"> * The Design Criteria for SFR Cisterns (see <u>Volume 3, Section 5.5.2</u>) cannot be met. * Project site cannot accommodate above-ground detention cisterns. (Note: Belowground detention cisterns are not considered GSI.) 	

Table C.64. On-site Requirement List Infeasibility Criteria Checklist: Category 3 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
<p>Sheet Flow Dispersion Perforated Stub-out Connections</p>	<ul style="list-style-type: none"> The One or more of the infeasibility criteria for "All Infiltration Dispersion BMPs" (Table C.1) apply. The Design Criteria area to be dispersed (e.g., driveway, patio) exceeds a slope of 15 percent. The minimum vegetated flow path for Perforated Stub-Out Connections (Volume 3, Section 5.4) sheet flow dispersion cannot be met. Note: A 10 foot flowpath is required to disperse runoff from a contributing flow length of up to 20 feet. An additional 10 feet of flow path is required for each additional 20 feet of contributing flow path or fraction thereof. Refer to Volume 3, Figure 5.5. The only location for the perforated pipe portion of the system is under impervious or heavily compacted (e.g., driveways and parking areas) surfaces. A minimum of 10 feet of perforated pipe per 5,000 square feet of contributing roof area is unachievable. The flowpath does not meet the minimum horizontal setback requirements to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.5). 	
<p>Concentrated Flow Dispersion Ne w-Trees</p>	<ul style="list-style-type: none"> Space necessary for the mature height, size, and/or rooting depth for tree planting per the current City Approved Tree List is unachievable. One or more of the infeasibility criteria for "All Dispersion BMPs" (Table C.1) apply. There are no concentrated flows to disperse. The minimum dispersion trench length of 10 feet cannot be met. The vegetated flow path for the dispersion trench is less than 25 feet The vegetated flow path for a rock pad is less than 50 feet. Greater than 700 square feet of surface area drains to the BMP. The flowpath does not meet the minimum horizontal setback requirements to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.6). 	
<p>Splashblock Downspout Dispersion</p>	<ul style="list-style-type: none"> One or more of the infeasibility criteria for "All Dispersion BMPs" (Table C.1) apply. There are no downspouts. The vegetated flowpath is less than 50 feet. Greater than 700 square feet of surface area drains to the BMP. The flowpath does not meet the minimum horizontal setback requirements to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.3). 	
<p>Trench Downspout Dispersion</p>	<ul style="list-style-type: none"> One or more of the infeasibility criteria for "All Dispersion BMPs" (Table C.1) apply. There are no downspouts. The minimum dispersion trench length of 10 feet for every 700 square feet of drainage area cannot be met. The vegetated flowpath is less than 25 feet. The flowpath is within the setbacks to property lines, structures and other flowpaths (refer to Volume 3, Section 5.3.4). 	

Table C.4 (continued). On-site List Infeasibility Criteria: Category 3 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
<u>Non-Infiltrating Bioretention</u>	<ul style="list-style-type: none"> • <u>For projects in the right-of-way, the total bioretention top area (including the presettling zone) would be less than 500 square feet and the project discharges to:</u> <ul style="list-style-type: none"> ○ <u>A designated receiving water body, or</u> ○ <u>A combined system, or</u> ○ <u>A capacity constrained system which does not drain to a creek wetland or small lake.</u> • <u>The minimum bottom width of the non-infiltrating bioretention facility (2 feet) cannot be met due to, but not limited to: encroachment within the critical root zone of an existing tree(s), minimum setbacks to structures / utilities, or project limits/planting strip too small.</u> • <u>Minimum vertical and horizontal clearances from utilities are unachievable as required by utility owner.</u> • <u>The facility would route underdrained water to a nutrient-critical receiving water.</u> 	
<u>Vegetated Roof Systems</u>	<ul style="list-style-type: none"> • <u>Project does not include a roof.</u> • <u>Roof design has a slope less than 1 degree (0.2:12) or greater than 10 degrees (2:12).</u> • <u>Installation is not economically feasible based on reasonable consideration of financial cost (refer to Appendix H). Documentation is required.</u> 	
<u>SFR Cisterns</u>	<ul style="list-style-type: none"> • <u>Project does not include non-pollution generating surfaces.</u> • <u>The SFR cistern would be within restricted setbacks</u> 	

Table C.5. On-site List Infeasibility Criteria: Category 4 BMPs.

BMP	On-site List Infeasibility Criteria	Additional Information from Applicant
<u>Perforated Stub-out Connections</u>	<ul style="list-style-type: none"> • <u>One or more of the infeasibility criteria for “All Infiltration BMPs” (Table C.1) apply.</u> • <u>The location for the perforated pipe portion of the system is under impervious or heavily compacted (e.g., driveways and parking areas) surfaces.</u> • <u>The minimum perforated stub-out length of 10 feet per 5,000 square feet of contributing roof area cannot be met.</u> • <u>Where the site cannot be reasonably designed to locate a catch basin between the perforated stub-out and point of connection to the public system.</u> 	
<u>Newly Planted Trees</u>	<ul style="list-style-type: none"> • <u>The mature height, size, and/or rooting depth is not compatible with Medium and Large trees listed in the current Seattle Master Tree List.</u> 	