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	Approved **Date** Ray Hoffman, Acting Director, Seattle Public Utilities	
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Introduction

The City of Seattle's Stormwater Code (Seattle Municipal Code 22.800 - 22.808) requires the use of green stormwater infrastructure (GSI) to the maximum extent feasible for some types of development. The purpose of this Director's Rule is to clarify the City's interpretation of "maximum extent feasible" and define steps for evaluating and reporting on this requirement. The provisions of this rule are adopted after considering the best available science set out in Clerk File 310134.

According to Seattle Municipal Code (SMC) 22.805.020.F, the following types of projects are required to implement GSI to the maximum extent feasible:

- Any new single family residential (SFR) projects,
- Any project with 7,000 square feet or more of land-disturbing activity, and
- Any project with 2,000 square feet or more of new plus replaced impervious surface.

Projects must implement GSI to infiltrate, disperse, and retain drainage water onsite to the maximum extent feasible without causing flooding, landslide, or erosion impacts.

In addition to the content of this rule, standards and requirements for GSI are presented in the Stormwater Code and Stormwater Manual (Director's Rules 15-2009 through 18-2009). These additional requirements include, but are not limited to, facility design specifications, the requirement for conveyance of stormwater to an approved discharge location, and the requirement that disturbed pervious areas be compost-amended.

Rule

The City of Seattle interprets the requirement for implementing GSI to the maximum extent feasible as follows:

- For single family residential projects: the GSI target is that all but 1,500 sf of new plus replaced impervious surface must be mitigated using GSI, limited only by feasibility based on engineering design, physical limitations of the site, and reasonable considerations of financial costs.

- For all other projects requiring GSI: the GSI target is that 100% of new plus replaced impervious surface must be mitigated using GSI, limited only by feasibility based on engineering design, physical limitations of the site, and reasonable considerations of financial costs.

The area of new plus replaced impervious surface to be controlled by GSI and the specific GSI strategies to be used shall be determined using the steps and sizing methods provided in this Director's Rule. Considerations of feasibility are clarified below.

I. Projects Subject to GSI Requirement Only

For a project that is not subject to minimum requirements for flow control pursuant to the Stormwater Code (i.e., the numerical performance standards including the Pre-developed Pasture, Pre-developed Forest, Peak Flow and Wetland Standards), project GSI requirements are achieved by demonstrating compliance with as set forth in this Director's Rule.

II. Project Subject to GSI Requirement and Flow Control Requirements

For a project that is subject to minimum requirements for flow control pursuant to the Stormwater Code, the project must meet GSI requirements set forth in this Director's Rule, and the project must also comply with the applicable flow control minimum requirements per Chapter 22.805 SMC. For additional details, see City of Seattle Stormwater Manual Volume 3 (DR 17-2009) Subchapter 2, dated November, XX, 2009 (hereinafter "Stormwater Manual Vol. 3").

Note that sizing of GSI facilities set forth in Table A.1 of this Director's Rule differs from GSI sizing used to meet the minimum requirements for flow control pursuant to the Stormwater Code (including but not limited to Stormwater Manual Vol. 3, Sections 2.3-2.6). While sizing for flow control compliance varies depending on a given site's flow control standard, Table A.1 has been simplified to one flow control standard for consistent application of the "maximum extent feasible" requirement, allowing a consistent Citywide upper threshold for maximum. Applicant may choose to exceed MEF requirements defined in this Director's Rule and meet the sites prescriptive standard with GSI.

To demonstrate compliance with both GSI to the maximum extent feasible and flow control standards, a project that is subject to minimum requirements for flow control pursuant to the Stormwater Code must complete the following:

1. Meet the GSI to the maximum extent feasible requirement using Table A.1. The applicant meets GSI to the maximum extent feasible if the project demonstrates compliance with the requirements set forth in this Director's Rule; and,
2. Meet the SMC flow control requirement (Pre-developed Pasture, Pre-developed Forest, Peak Control or Wetland Standard) using Stormwater Manual Vol. 3. Any GSI used in step 1 counts toward flow control but must be re-evaluated using Stormwater Manual Vol. 3 standards. Some projects are eligible to use the Stormwater Manual Vol. 3 Pre-Sized Approach and Table 4.7; if so, the applicant completely meets the Code's flow control requirement if the area mitigated by GSI is at least 70 percent of the new plus replaced impervious surface using the Stormwater Manual Vol. 3 Pre-Sized Approach calculations. Otherwise, the applicant meets the Code's flow control requirements by using Volume 3 to add GSI, traditional infiltration and or detention facilities to the project.

GSI Evaluation

The project applicant must evaluate, select and calculate sizing for GSI best management practices (BMPs) listed in Table 1. The applicant must use and complete the applicable forms included in Appendix A and in Appendix B (and additional requirements in the Stormwater Manual Vol. 3 if the project is subject to minimum requirements for flow control pursuant to the Stormwater Code). The applicant is encouraged to evaluate, select, and calculate sizing for GSI BMPs from each GSI category unless determined infeasible, before moving on to successive GSI categories listed here in Table 1 (modified from Stormwater Manual Vol. 3 Table 4.2). Feasibility is defined to include (I) Engineering Limitations, (II) Physical limitations of the site and (III) Financial Costs; see sections below for guidance and submittal requirements. Design requirements from the Stormwater Manual Vol. 3 apply to all GSI BMPs.

Table 1. Green Stormwater Infrastructure Evaluation Category Prioritization

GSI Evaluation Category		GSI BMPs	Stormwater Manual Vol. 3 Section
No.	Name		
1	Green Stormwater Infrastructure – Runoff reduction methods	Maintain Existing Trees	4.4.2
		Dispersion (downspout or sheet flow)	4.4.3 / 4.4.4
		Plant New Trees	4.4.2
2	Green Stormwater Infrastructure – Infiltrating and reuse facilities	Bioretention Cells (without underdrain)	4.4.5
		Rainwater Harvesting	4.4.6
		Permeable Pavement Facilities (with storage reservoir and overflow)	4.4.7
3	Green Stormwater Infrastructure – Impervious surface reduction methods	Green Roof	4.4.8
		Permeable Pavement Surfaces	4.4.7
4	Green Stormwater Infrastructure – Non infiltrating facilities	Bioretention Cells (with underdrain or detention)	4.4.5
		Detention Cisterns, aboveground with harvesting capacity [a]	4.6.6

[a] Detention cisterns with harvesting capacity are considered green stormwater infrastructure for single family residential projects only.

I. Evaluating feasibility: engineering limitations

Engineering design conditions may limit the type and amount of GSI that can be implemented at a given site. Sections 4.3 and 4.4 of Stormwater Manual Vol. 3 includes examples of engineering limitations to the implementation of green stormwater infrastructure. Limitations are based on the need to protect private and public property, infrastructure and effectiveness of the facilities. Appendix B of this Director's Rule summarizes engineering limitations from Stormwater Manual Vol. 3 that may limit applicability of each GSI BMP on a site. Refer to the appropriate sections in the Stormwater Manual Vol. 3 for more detail on site considerations and for the design requirements for GSI. All sizing provided in this DR and Stormwater Manual Vol. 3 assumes that an overflow conveyance system is included in the design.

To explain and justify the applicant's conclusion, the applicant shall provide, at a minimum, the following with the project application for drainage review and approval:

1. A completed Table A.1 (Appendix A); and

2. A completed Engineering Design Feasibility Checklist (Appendix B) including description of the technical site limitations used to determine the limits of proposed mitigation to meet maximum extent feasible; and

3. If the applicant determines it is not technically feasible to mitigate the required amount of new plus replaced impervious surface identified above using GSI, then the applicant must provide substantial evidence sufficient to explain and justify the applicant's conclusion that including additional green stormwater infrastructure in the site design is not technically feasible.

4. A statement by the applicant certifying that the project design implements green stormwater infrastructure to the maximum extent feasible.

II. Evaluating feasibility: physical limitations of the site

Urban environments have multiple demands on space. The City requires that the applicant consider these physical site limitations when designing GSI to the maximum extent feasible. Examples of non-BMP based physical site limitations that may restrict use of GSI include, but are not limited to, historical designation, pedestrian access, and usable open space requirements. If the applicant determines that non-BMP based physical site limitations do restrict use of GSI, then the applicant must provide a narrative description and rationale, with substantial evidence sufficient to explain and justify the applicant's conclusion.

III. Evaluating feasibility: financial costs

If the applicant claims it is not economically feasible to mitigate the required amount of new plus replaced impervious area identified above using GSI, then the applicant must provide substantial evidence sufficient to explain and justify the conclusion that including additional green stormwater infrastructure in the site design is not economically feasible. To explain and justify the applicant's conclusion and reasonable consideration of costs, the applicant shall provide the following with the project application for drainage review and approval:

1. A detailed breakdown and total cost of constructing the project;

2. A detailed breakdown and total cost of constructing the project's stormwater requirements without using GSI;

3. A detailed breakdown and total cost of constructing the proposed GSI

   Note: When quantifying the costs for substituting a GSI material for a traditional material, report the difference in cost between the conventional and GSI approach (e.g., the difference in cost between permeable concrete relative to standard concrete);

4. A detailed breakdown and total cost of constructing the required green stormwater infrastructure beyond what is proposed using GSI that would be feasible from an engineering and site design standpoint; and

5. A narrative description and rationale indicating why the proposed GSI mitigation meets the maximum extent feasible standard and why additional GSI is economically infeasible, with a statement by the applicant certifying that the project design implements green stormwater infrastructure to the maximum extent feasible.

Definitions

The following definitions are from Chapter 22.801 of the Stormwater Code:

' "*Green stormwater infrastructure*" [GSI] means a drainage control facility that uses infiltration, evapotranspiration, or stormwater reuse. Examples of green stormwater infrastructure include permeable pavement, bioretention facilities, and green roofs.'

' "*Maximum extent feasible*" means the requirement is to be fully implemented, constrained only by the physical limitations of the site, practical considerations of engineering design, and reasonable considerations of financial costs and environmental impacts.'

' "Project" means the addition or replacement of impervious surface or the undertaking of land disturbing activity on a site.'

' "Roadway project" means a project located in the public right-of-way, that involves the creation of a new or replacement of an existing roadway, or that involves the creation of new

or replacement of existing impervious surface.'

' "Sidewalk project" means a project that exclusively involves the creation of a new or replacement of an existing sidewalk, including any associated planting strip, curb, or gutter.'

Note: To provide clarity on the meaning of associated curb or gutter, a project involving a sidewalk with associated curb or gutter is considered a sidewalk project, only if all of the following apply:

1. Any new and replaced impervious surface in the roadway is specifically required as a component of the sidewalk project. That is, the sidewalk project cannot be completed without the associated work in the roadway;

2. The total amount of new plus replaced impervious surface in the roadway does not exceed 10,000 square feet in a drainage basin; and

3. The total amount of new plus replaced pollution-generating impervious surface does not exceed 5,000 square feet in a designated storm drainage basin.

' "Site" means the lot or parcel, or portion of street, highway or other right-of-way, or contiguous combination thereof, where a permit for the addition or replacement of impervious surface or the undertaking of land disturbing activity has been issued or where any such work is proposed or performed. For roadway projects, the length of the project site and the right-of-way boundaries define the site.'

' "Trail project" means a project that exclusively involves creating a new or replacement of an existing trail, and which does not contain pollution-generating impervious surfaces.'

APPENDIX A: Documenting Green Stormwater Infrastructure to the Maximum Extent Feasible

The GSI Requirement Worksheet is presented as Table A.1. The applicant shall follow the steps presented below. Note that GSI facilities must meet the requirements set forth in Stormwater Manual Vol. 3 (DR 17-2009). If project is in the right-of-way, the Street Use Permit process will require compliance with design requirements in Chapter 6.4 of the Right-of-Way Improvement Manual (www.seattle.gov/transportation/rowmanual/).

Step A – Review the GSI Requirement Worksheet (see Table A.1) to identify initial BMP options for the project site. (Note that spreadsheet version is available at on DPD website. XXXXlink).

Step B – Divide the project area into distinct drainage basins (e.g., creek basin, combined sewer basin, etc).

Step C – Divide the project area into distinct surface types (e.g., sidewalk, trail, lawn, etc).

Step D – Calculate and report total new plus replaced impervious surface surface.

Step E – Identify opportunities and available space for GSI Category 1 "GSI Runoff Reduction Methods" (retaining trees, planting new trees and dispersion).

Find GSI credits for selected BMPs (Table A.2).

For each BMP, calculate and report the impervious area mitigated as a product of the BMP area and its GSI credit.

Step F – Identify opportunities and available space for GSI Category 2 "Infiltrating and reuse facilities" (bioretention cells, permeable pavement facilities and rainwater harvesting).

Find sizing factors for selected bioretention and permeable pavement facilities (Table A.3). For parcels using rainwater harvesting applicant must provide calculations to document area mitigated by the rainwater harvesting strategy per XXX.

For each BMP, calculate and report the impervious area mitigated using the sizing factor or reuse analysis.

Step G – If there are remaining unmitigated impervious surfaces, identify opportunities and available space for GSI category 3, "Impervious surface reduction methods" (green roofs and permeable pavement surfaces) followed by GSI Category 4 "non-infiltrating green stormwater infrastructure" (bioretention planter with underdrain, and detention cisterns with harvesting capacity). Note that detention cisterns are only considered GSI for SFR projects.

Find GSI credits (Table A.4) and/or sizing factors (Table A.5) for selected BMPs.

For each, BMP, calculate and report the impervious area mitigated using the flow control credits or sizing factors.

Step H – Calculate and report the total impervious area mitigated by summing the area mitigated.

Step I – If desired, consider innovation by evaluating emerging GSI facilities approved by the Washington State Department of Ecology. Any conditions of use for approved facilities within City of Seattle will be listed at www.seattle.gov/util/greeninfrastructure.

Table A.1. Green Stormwater Infrastructure Requirement Worksheet[1]

New and Replaced Impervious Area → _____ sf

Category 1: Runoff Reduction Methods	Facility Size			Credit (Table A.2)	Area Mitigated
Retained Trees					
Existing Evergreen	Canopy Area	_____ sf	x	20%	= _____ sf
	# Trees	_____ trees			
Existing Deciduous	Canopy Area	_____ sf	x	10%	= _____ sf
	# Trees	_____ trees			
New Trees					
New Evergreen	# Trees	_____ trees	x	50sf/tree	= _____ sf
New Deciduous	# Trees	_____ trees	x	20sf/tree	= _____ sf
Dispersion[2]					
Downspout or Sheet Flow Dispersion	Impervious Area	_____ sf	x	100%	= _____ sf

Category 2: Infiltrating and Reuse Facilities		Facility Size		Factor (Table A.3)	Area Mitigated
Bioretention Cell (without underdrain)					
Ponding Depth	_____ in	Bottom Area	_____ sf	÷ _____	= _____ sf
Design Infiltration Rate	_____ in/hr				
Permeable Pavement Facility (may receive run-on)					
Reservoir Ponding Depth	_____ in	Pavement Area	_____ sf	÷ _____	= _____ sf
Design Infiltration Rate	_____ in/hr				
Rainwater Harvesting[2]					
(supplement calculations required)					= _____ sf

Category 3: Impervious Surface Reduction Methods	Facility Size			Credit (Table A.4)	Area Mitigated
Alternative Pavement Surfaces					
Permeable Pavement Surface with slope ≤2%	Permeable Pvmnt Area	_____ sf	x	100%	= _____ sf
Permeable Pavement Surface with slope 2-5%	Permeable Pvmnt Area	_____ sf	x	70%	= _____ sf
Alternative Roof Surfaces[2]					
Green Roof (Single-Course/ 4" Growth Medium)	Green Roof Area	_____ sf	x	71%	= _____ sf
Green Roof (Multi-Course/ 4" Growth Medium)	Green Roof Area	_____ sf	x	71%	= _____ sf
Green Roof (Multi-Course/ 8" Growth Medium)	Green Roof Area	_____ sf	x	79%	= _____ sf

Table A.1 Green Stormwater Infrastructure Requirement Worksheet (continued)

Category 4: Non-infiltrating Facilities			Facility Size				Factor (Table A.5)		Area Mitigated	
Bioretention Planter (with underdrain)										
Ponding Depth	_____	In	Bottom Area	_____	sf	÷	_____	=		sf
Detention Cistern (Single Family Residential only)										
Cistern height	_____	Ft	Bottom Area	_____	sf	÷	_____	=		sf
Total Area Mitigated by GSI	→									sf
Percent of Impervious Area Mitigated by GSI										%

GSI – Green Stormwater Infrastructure; sf – square feet; ft – feet; in – inch; in/hr – inch per hour; eqn – equation

[1] Approved electronic worksheet available on DPD website, http://dpdwinw314/DPD/Codes/StormwaterGradingandDrainageCode . .

[2] Single fanily projects are not required to evaluate these facilities.

Table A.2. GSI Credits for GSI Evaluation Category 1: Runoff Reduction Methods

BMP	Design Variable	Flow Control Credit [a] (%)	Volume 3 Section providing Design Requirements
Retained Tree [b]	Evergreen	20% canopy area (min 100 sf)	4.4.2
	Deciduous	10% canopy area (min 50 sf)	
New Tree [b]	Evergreen	50 sf / tree	4.4.2
	Deciduous	20 sf / tree	
Dispersion [c]	Dispersion to compost amended lawn or landscape	100%	4.4.3 and 4.4.4

sf - square feet; % - percent

[a] Impervious area mitigated by a BMP is calculated as: [Flow Control Credit (%)/100] x [Existing Tree Canopy Area, Number New Trees Planted, or Impervious Area Dispersed].

[b] Trees must be within 20 feet of ground-level impervious surface. The total tree credit shall not exceed 25 percent of impervious surface requiring mitigation.

Table A.3. Sizing Factors for GSI Evaluation Category 2: Infiltrating and Reuse Facilities

Facility Type	Facility Overflow Depth	Native Soil Design Infiltration Rate (in/hr)	Sizing Factor (% of contributing impervious area)[a]	Design Requirements
Bioretention Cell [b]	2 inch ponding depth	0.25	15.4%	▪ Volume 3 Section providing Design Requirements: 4.4.5. ▪ Bottom area shall be sized using sizing factor ▪ Bottom area shall be flat (0 percent slope) ▪ Side slopes within ponded area shall be no steeper than 3H (horizontal):1V (vertical) ▪ For swales with ponding depth less than 3-inch depth and sidewalk only drainage area, use of soil quality and depth specification XXX may be allowed. For all other bioretention swales use imported bioretention soil per City of Seattle GSP 7-21 shall be used, obtain current version from www.seattle.gov/util/greeninfrastructure ▪ No underdrain or impermeable liner shall be used ▪ Maximum ponding depth for sidewalk only projects of 6-inches recommended. For urban villages and other high density areas 6-inch is maximum allowable ponding depth. ▪ Maximum drainage area to one cell is 5,000 sf impervious area. If contributing drainage area is greater than 2,000 sf and flow is concentrated, the point that flow enters the swale shall be preceded by presettling technique.
		0.5	10.2%	
		1.0	5.8%	
	6 inch ponding depth	0.25	9.8%	
		0.5	6.4%	
		1.0	4%	
	12 inch ponding depth	0.25	NA	
		0.5	4.1%	
		1.0	2.5%	
Permeable Pavement Facility [c] (may receive run-on)	6 inch storage reservoir depth	0.25	60.6%	▪ Volume 3 Section providing Design Requirements: 4.4.7. ▪ Average water surface depth in storage reservoir before berm overtopping or overflow shall be a minimum of 6 inches (requires design measures to provide this subsurface ponding) ▪ The storage reservoir shall be composed of aggregate with a minimum void volume of 20 % ▪ No underdrain or impermeable liner shall be used ▪ Slope of the pervious pavement shall be less than 5% ▪ See www.seattle.gov/util/greeninfrastructure for list of approved permeable pavement wearing course materials
		0.5	33.3%	
		1.0	33.3%	
Rainwater Harvesting	Facilities cannot be presized, applicant must provide water balance calculations demonstrating 95% average annual volume reuse per requirements in 4.4.6 .			.

sf – square feet; in/hr – inch per hour; % - percent

[a] BMP area is calculated as a function of impervious area draining to it: BMP Area = Contributing Impervious Area x Factor (%)/100

[b] Sizing factors are for bioretention facility bottom area. Total footprint area may be calculated based on side slopes (3H:1V), ponding depth, and freeboard.

[c] The City requires that the contributing impervious area for permeable pavement facilities be no larger than 3 times the area of the permeable pavement facility receiving runoff, corresponding to a minimum sizing factor of 33.3%.

Table A.4. GSI Credits for GSI Evaluation Category 3: Impervious Surface Reduction Methods

BMP	Design Variable	Flow Control Credit (%)[a]	Volume 3 Section Providing Design Requirements
Permeable Pavement Surface (may not receive run-on)	Slope less than or equal to 2%	100%	4.4.7
	Slope 2%-5%	70%	
Green Roofs	4 inch depth growing medium	71%	4.4.8
	8 inch depth growing medium	79%	

sf - square feet; % - percent
[a] Impervious area mitigated by a BMP is calculated as: [Flow Control Credit (%)/100] x [Permeable Pavement Surface Area or Green Roof Area]

Table A.5. Sizing Factors for GSI Evaluation Category 4: Non-Infiltrating Facilities

BMP	Design Variable	Sizing Factor (% of contributing impervious area)[a]	Design Requirements
Bioretention Planter with Underdrain [c]	12 inch ponding depth	6.0%	▪ Volume 3 Section providing Design Requirements: 4.4.5. ▪ Bottom area shall be sized using factor ▪ Side slopes may be vertical ▪ Imported bioretention soil per City of Seattle GSP 7-21 shall be used, obtain current version from www.seattle.gov/util/greeninfrastructure ▪ For bioretention cells receiving runoff from more than sidewalk area only the minimum freeboard shall be 6-inches. ▪ Maximum drainage area to one cell is 5,000 sf impervious area. If contributing drainage area is greater than 2,000 sf and flow is concentrated, shall be preceded by presettling technique.
Bioretention Cell with Detention			▪

sf – square feet; %-percent.
[a] BMP area is calculated as a function of impervious area draining to it: BMP Area = Contributing Impervious Area x Factor (%)/100
[b] Sizing factors are for bioretention facility bottom area. .
[c] See www.seattle.gov/util/greeninfrastructure for potential updates to bioretention planter with underdrain sizing.

Table A.6. Sizing Factors for GSI Evaluation Category 4: Non-infiltrating Facilities

Facility Type	Contributing area, sf	Sizing or Sizing Factor (% of contributing impervious area)[a]	Flow Control Credit (%)[a]	Design Requirements
Detention Cistern with Harvesting Capacity (SFR projects only)	100-500	160 gallons live storage, 3 foot maximum head	60%	Volume 3 Section providing Design Requirements: 4.4.6. and See seattle.gov/util/greeninfrastructure for supplemental guidance on calculations
	501-1,000	320 gallons live storage, 3 foot maximum head	70%	
	1001-2000	[sizing factor]	100%	

sf – square feet; in/hr – inch per hour; % - percent

[a] BMP bottom area is calculated as a function of impervious area draining to it: BMP Area = Contributing Impervious Area x Factor (%)/100

Appendix B: Engineering Design Feasibility Limits Checklist

The intent of Table B.1 is to help designers and reviewers evaluate general feasibility of GSI BMPs for a given site. For BMPs selected, the applicant must proceed to detailed design and must use the more detailed information and design requirements in the *City of Seattle Stormwater Flow Control and Water Quality Treatment Technical Requirements Manual* (Stormwater Manual Vol. 3, Director's Rule 17-2009). Applicants shall submit this checklist with permit applications as part of drainage review and approval.

Table B.1 Engineering Design Considerations for GSI Evaluation Category 1: Runoff Reduction Methods

BMP	Feasibility Considerations	Additional information from applicant
Maintain Existing Trees	☐ No existing trees in project area ☐ 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", site design cannot avoid grading within the dripline or otherwise meet standards (per COS Standard Plans and Specifications) required for retention. ☐ For tree(s) with a diameter between 4-6": site design cannot avoid grading within 5-feet of tree trunk or otherwise meet standards (per COS Standard Plans and Specifications) required for retention.	
Dispersion – Downspout and Sheet Flow	☐ Dispersion evaluation is not required if site is single family residential project. ☐ Geotechnical evaluation recommends infiltration NOT be used anywhere within project area due to plausible concerns about erosion, slope failure, or other hazards (attach geotechnical report) ☐ Project within a landslide hazard area defined by the Regulations for Environmental Critical Areas ☐ Project area in or within 100 feet of a known contaminated site or abandoned landfill. ☐ Site design can only accommodate dispersion upgradient of septic system and flow may intersect drainfield. ☐ Site design can only accommodate dispersion within steep slope setback (calculated as 10 times the total slope rise, measured from the top of a slope, with a 500-foot maximum setback). Applicable if geotechnical analysis shows that infiltration is allowable within this setback. ☐ Site design can NOT accommodate the min 1% fall from the building to the GSI and from the GSI to the point of connection to the public system	

Downspout Dispersion - Splash Block	☐ There are no downspouts ☐ Site design cannot accommodate a 50-foot minimum flow path for the dispersion area or a maximum of 700 sf drainage area to any dispersion area.	
Downspout Dispersion- Gravel Filled Trench	☐ There are no downspouts ☐ Site design cannot accommodate a maximum of 700 sf drainage area to any dispersion area, along with a 10' by 2' level trench followed by 25-foot minimum flow path.	
Sheet Flow Dispersion	☐ Site cannot be designed to sheet flow runoff. ☐ Impervious surface being dispersed cannot be graded to have less than a 15% slope. ☐ Site design cannot accommodate at least a 10-foot wide vegetation buffer for dispersion of the adjacent 20-feet of impervious surface	
New Trees	☐ Site design cannot accommodate space necessary for the mature height, size, and/or rooting depth for tree planting per the current COS Recommended Tree List	

Table B.2. Engineering Design Considerations for GSI Evaluation Category 2: Infiltrating and Reuse Facilities

BMP	Feasibility Consideration	Additional information from applicant
All Infiltrating Facilities (including permeable paving facilities and bioretention without impermeable liner)	☐ Infiltration restrictions and setbacks per Stormwater Manual Vol. 3, Chapter 4.3 must be considered. Figure 4.2 "Infiltration Feasibility Flow Chart" is provided below for initial screening purposes. Infiltrating facilities may not be sited within: ☐ Landslide prone critical areas ☐ Setbacks from steep slope areas ☐ 100 feet of a known contaminated site or abandoned landfill ☐ Other setbacks presented in the Stomrwater Manual Vol. 3 (e.g., setbacks from structures). ☐ The minimum vertical separation of one foot from the bottom of the facility to the underlying water table, bedrock or other impermeable layer cannot be achieved. ☐ Geotechnical evaluation recommends infiltration NOT be used anywhere within project area due to plausible concerns about erosion, slope failure, or other hazards (attach geotechnical report). ☐ Test Pits determined native soil infiltration rate to be less than 0.25inches/hr. ☐ Site design cannot accommodate the min 1% fall from the building to the GSI and for the system overflow from the GSI to the point of connection to approved discharge location per Stormwater manual Vol. 3 Section 4.2.5.	
Bioretention Facilities (without impermeable liner)	☐ Site design cannot accommodate bioretention areas because sites longitudinal surface slopes cannot be graded to less than 7 percent.	

Permeable Pavement Facilities	☐ Site has high potential for concentrated pollutant spills ☐ Site design cannot accommodate permeable pavement wearing course on surface slopes less than 5 percent. ☐ Site design cannot avoid putting permeable pavement in areas likely to have excessive sediment contamination or in close proximity to areas that will be sanded. ☐ This is a right-of-way application and the project area does not have an approved location for permeable pavement use per the Right-of-Way Improvement Manual (Section 6.4). ☐ This is a private roadway and owner adopted same guidelines for approved facilities as Seattle Right-of-Way Improvement Manual. ☐ Site design cannot avoid a contributing tributary area more than 3 times larger than the permeable pavement facility.	
Rainwater Harvesting	☐ Rainwater harvesting evaluation is not required if project site is one of the following: o Single family residential project o Trail or sidewalk project o Roadway project o Parcel project with less than 10,000 sf new and replaced impervious surface. ☐ Project does not include a roof from which to harvest rainwater	

Table B.3. Engineering Design Considerations for GSI Evaluation Category 3: Impervious Surface Reduction Methods

BMP	Feasibility Consideration	Additional information from applicant
Permeable Pavement Surface	☐ Site has high potential for concentrated pollutant spills ☐ Site design cannot accommodate permeable pavement wearing course on surface slopes less than 5 percent. ☐ Site design cannot avoid putting permeable pavement in areas likely to have excessive sediment contamination or in close proximity to areas that will be sanded. ☐ This is a right-of-way application and the project area does not have an approved location for permeable pavement use per the Right-of-Way Improvement Manual (Section 6.4). ☐ Site design cannot avoid a tributary area larger than the permeable pavement surface.	
Green Roof	☐ Green roof evaluation is not required if project site is one of the following: o Single family residential o Trail and Sidewalk Project o Roadway project o Parcel project with less than 5,000sf new and replaced impervious surface. ☐ Roof design has a slope greater than 2.5":12" (20%) ☐ Building cannot technically be designed to accommodate structural load of green roofs.	

Table B.4. Engineering Design Considerations for GSI Evaluation Category 4: Non-Infiltrating BMPs

BMP	Feasibility Consideration	Additional information from applicant
Bioretention Planter or Bioretention with Detention	☐ Site design cannot accommodate bioretention areas because site's longitudinal surface slopes cannot achieve less than 7 percent. ☐ Site design cannot accommodate the min 1% fall from the building to the GSI and for the system overflow from the GSI to the point of connection to approved discharge location per Stormwater manual Vol. 3 Section 4.2.5.	
Detention Cistern with Rainwater Harvesting	☐ Detention cistern evaluation is not required because site is NOT Single family residential ☐ Site design cannot accommodate detention cisterns	

Figure 4.2 Infiltration Feasibility Flow
Figure copied from Stormwater Manual Vol. 3, Chapter 4.3. to highlight technical feasibility criteria for completing Appendix B of this DR, Table B.2.

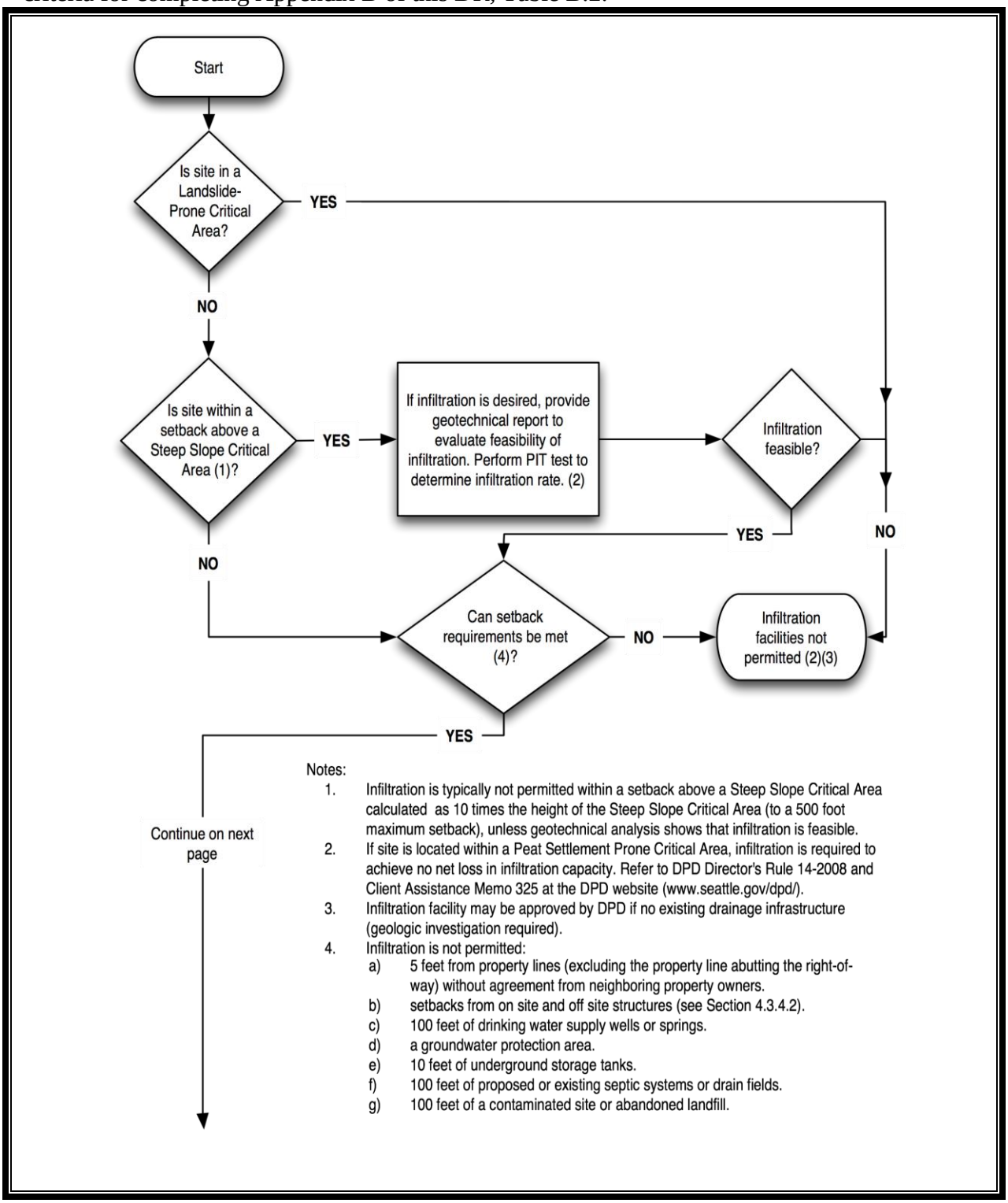

Figure 4.2. Infiltration Feasibility Flow Chart.

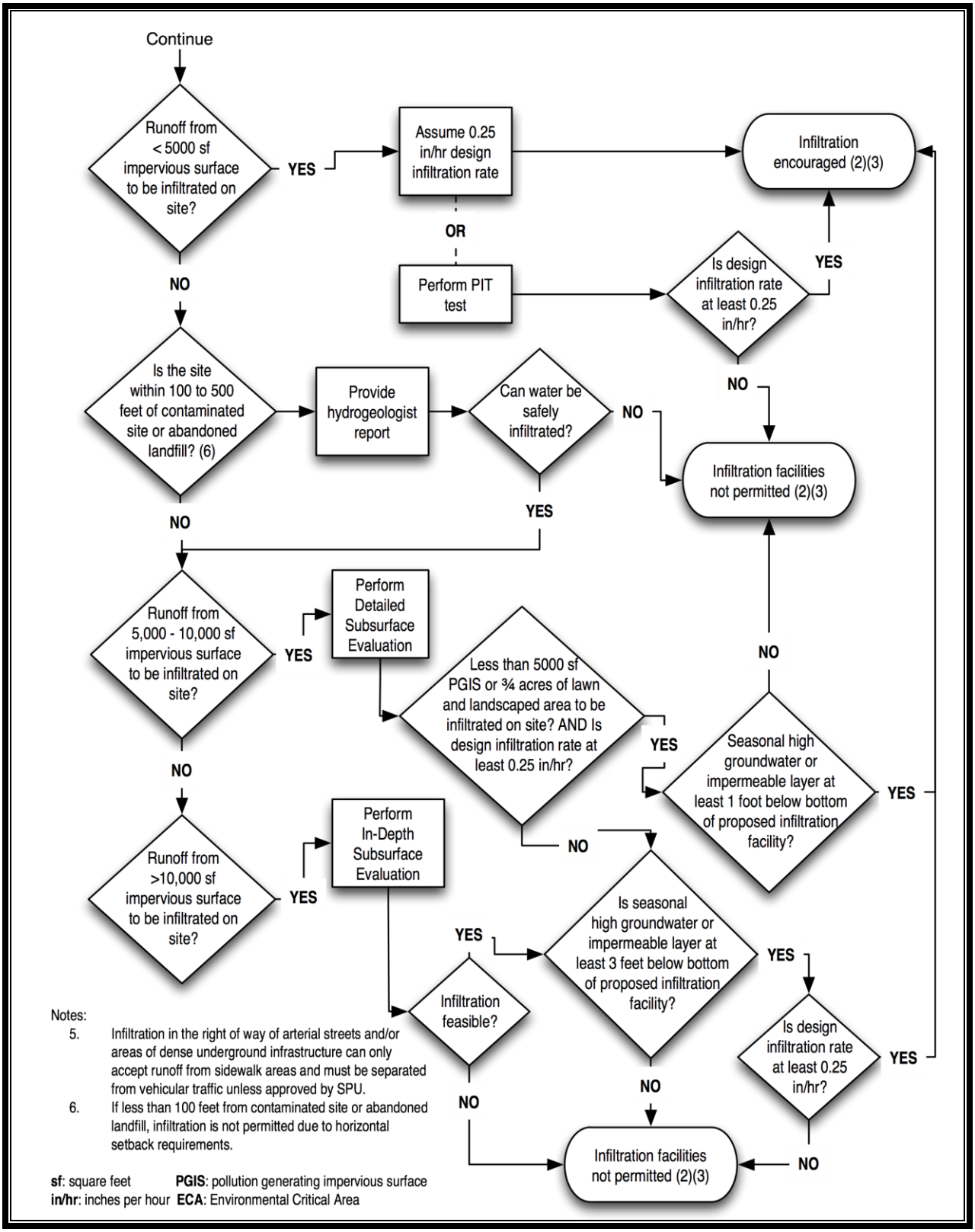

Figure 4.2 (continued). Infiltration Feasibility Flow Chart