CITY OF MERCER ISLAND

DEVELOPMENT SERVICES GROUP

9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org
Inspection Requests: Online: www.MyBuildingPermits.com VM: 206.275.7730

SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Narrative and Plan Submittal

Instructions: This is a template for a simplified Stormwater Report. This form or an equivalent must accompany your Building Permit Application if the answer is "Yes" to each statement below. If "No" is the answer to one or more of the statements below, a full Drainage Report is required and the project does not qualify for use of the Small Project Stormwater Site Plan/Report template.

Select "yes" or "no" for each statement below. Answer "yes" if the statement accurately describes your project.

Yes	No	Statement
✔		This project disturbs less than 1 acre and is not part of a larger common plan of development.
✔		This project converts less than 3/4 acre to lawn or landscape areas.
✔		This project will create, add, or replace (in any combination) 2,000 square feet or greater, but less than 5,000 square feet, of new plus replaced hard surface **OR** will have a land disturbing activity of 7,000 square feet or greater **OR** will result in a net increase of impervious surface of 500 square feet or greater.
✔		This project will not adversely impact a wetland, stream, water of the state, or change a natural drainage course.

Basic Project Information

Project Name: Lot A House by Millad (part of approved 2-lot plat)

Site Address: 4276 East Mercer Way, Mercer Island, WA 98040

Total Lot Size: 16,549 sf 0.38 acres

Total Proposed Area to be Disturbed (including stockpile area): 8,100 sq ft

Total Volume of Proposed Cut and Fill: 170 cy cut (basement), 170 cy fill sq ft

Total Proposed New Hard Surface Area: 2,612 (net) sq ft

Total Proposed Replaced Hard Surface Area: 2,344 sf sq ft

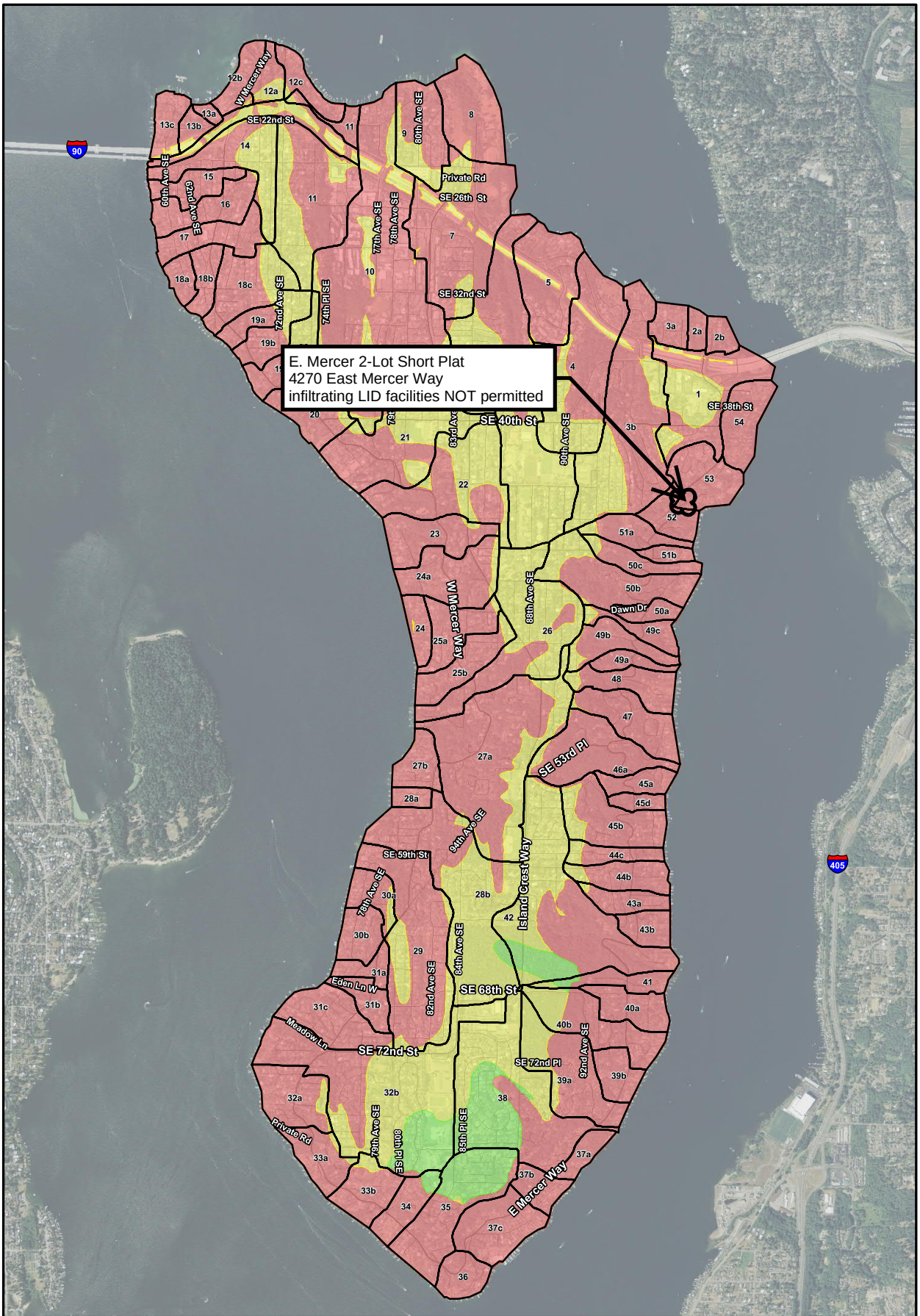
Total Proposed Converted Pervious Surface Area (Native vegetation to lawn or landscape): 2,000 sq ft

Net Increase in Impervious Surface: 2,344 sf sq ft

Impervious Area Spreadsheet

West Residence - 42xx East Mercer Way, Mercer Island, WA 98040 - CES #1766-W

Gross Site area	16,549	sf
	0.380	acres
Existing Impervious Area to be demolished		
Ex roof, rockery	740	sf
Ex Driveway, on-site	1,604	sf
total existing, to be demolished =	2,344	sf
Proposed Impervious Area (on-site) (new + replaced)		
Roof	3,583	sf
Exposed driveway, exposed, on-site	1,373	sf
total on-site (new + replaced) proposed =	4,956	sf
total replaced impervious =	2,344	sf
total new impervious =	2,612	sf
total new + replaced impervious =	4,956	sf
total proposed lawn/landscape =	11,593	sf
Proposed Impervious Area into detention pipe		
Roof	3,583	sf
Driveway, exposed, on-site	1,373	sf
Impervious area into detention pipe =	4,956	sf



Legend

- Infiltrating LID facilities may be feasible, and soil has high infiltration potential
- Infiltrating LID facilities may be feasible, and soil has moderate infiltration potential
- Infiltrating LID facilities are not permitted
- 36 Storm drainage basin

* Map is intended to be used for planning purposes only. Site-specific analysis is required prior to design and construction of LID facilities.

Figure 3. Low impact development infiltration feasibility on Mercer Island.

N

0 950 1,900 3,800 Feet

HERRERA

Aerial photography: USDA (2009)

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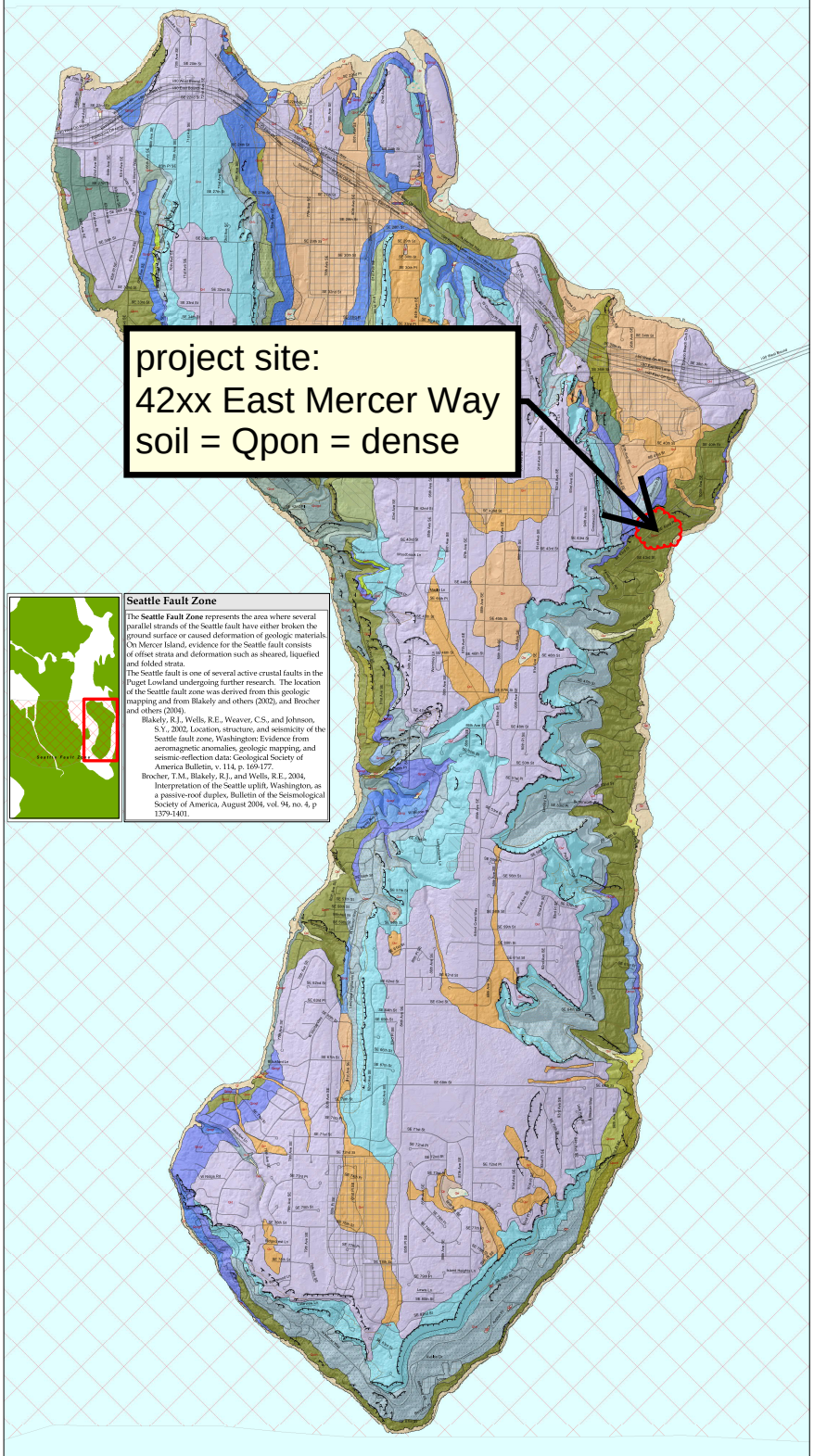


Seattle Fault Zone

The **Seattle Fault Zone** represents the area where several parallel strands of the Seattle fault have either broken the ground surface or caused deformation of geologic materials. On Mercer Island, evidence for the Seattle fault consists of offset strata and deformation such as sheared, liquefied and folded strata.

The Seattle fault is one of several active crustal faults in the Puget Lowland undergoing further research. The location of the Seattle fault zone was derived from this geologic mapping and from Blakely and others (2002), and Brocher and others (2004).

Blakely, R.J., Wells, R.E., Weaver, C.S., and Johnson, S.Y., 2002, Location, structure, and seismicity of the Seattle fault zone, Washington: Evidence from aeromagnetic anomalies, geologic mapping, and seismic-reflection data: Geological Society of America Bulletin, v. 114, p. 169-177.

Brocher, T.M., Blakely, R.J., and Wells, R.E., 2004, Interpretation of the Seattle uplift, Washington, as a passive-roof duplex, Bulletin of the Seismological Society of America, August 2004, vol. 94, no. 4, p 1379-1401.

Geologic Map of Mercer Island, Washington

by Kathy G. Troost & Aaron P. Wisher
October 2006

0 0.25 0.5 Miles
0 0.5 1 Kilometers
1:12,000

N

Geologic Units

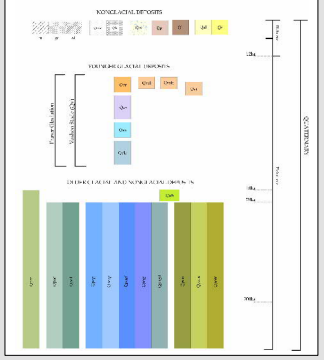
Nonglacial Deposits (Holocene)
- Qp - Peat
- Ql - Lake deposits
- Qw - Wetlands
- Qf - Fan deposits
- Qal - Alluvium

Deposits of Fraser Glaciation (Pleistocene)
- Qvr - Vashon recessional outwash deposits
- Qvrl - Vashon recessional lacustrine deposits
- Qvrlc - Vashon recessional course-grained lacustrine deposits
- Qvi - Vashon ice-contact deposits
- Qvt - Vashon subglacial till
- Qva - Vashon advance outwash
- Qvlc - Lawton Clay

Older Glacial and Nonglacial Deposits (Pleistocene)
- Qpfn - Pre-Fraser nonglacial deposits
- Qob - Olympia beds
- Qpof - Pre-Olympia fine-grained deposits
- Qpoc - Pre-Olympia coarse-grained deposits
- Qpog - Pre-Olympia glacial deposits
- Qpogc - Pre-Olympia coarse-grained glacial deposits
- Qpogf - Pre-Olympia fine-grained glacial deposits
- Qpogt - Pre-Olympia glacial till
- Qpogd - Pre-Olympia glacial diamict
- Qpon - Pre-Olympia nonglacial deposits
- Qponc - Pre-Olympia coarse-grained nonglacial deposits
- Qponf - Pre-Olympia fine-grained nonglacial deposits

- Scarps
- Qmw - Mass wastage deposits
- Qls - Landslide deposits
- m - Modified land
- af - Artificial fill
- gr - Graded Land
- Seattle Fault Zone

Correlation of Geologic Units



Age & Geologic Unit	Name	Summary Description	Thickness	Density/ Hardness	Permeability Factors
Holocene	NONGLACIAL DEPOSITS				
m	Modified land	Fill and/or graded natural deposits that obscure or alter the original deposit. Locally divided into:			
af	Artificial fill	Gravel, sand, silt, concrete, garbage, wood, and other materials, placed as a direct result of human activity, of substantial areal extent or thickness. Some rockery stones and boulders present. Mapped where boring data provide sufficient information to delineate extent or where topography and overlying development suggests likelihood of fill, and generally where greater than ~ 2 m in thickness. Thin deposits of fill are commonly present elsewhere throughout the map area but not mapped due to lack of information or control. Fill beneath most roadways not mapped. Locally divided into:	Mapped where >2 m; but 1m of fill common across most of the City; 2 m to > 9 m beneath roadways, in gullies, ravines, on peat and former lake beds, in other low-lying places, at upland edges, and on slopes.	Very soft to stiff or very loose to dense; variable degree of compaction during placement	Voids common; variable and unpredictable grain size; angular and large particles common; variable degree of compaction
gr	Graded land	Land substantially altered by excavation or grading, may include substantial thicknesses of fill too subtle to map or where boring data are insufficient to delineate extent. Gradational with unit "af"	Large areas for I-90 (other roadways not mapped)	Very soft to hard or very loose to very dense; variable degree of compaction	Depends on thickness of material removed, grain size, and degree of compaction of fill or native deposits
Qmw	Mass-wastage deposits	Colluvium, soil, landslide debris, and organic matter with indistinct morphology. Common below springs where peaty deposits are also present. Mapped on steep slopes, notably around the south end of the island, along the east -central side of the island, and around First Hill. Numerous unmapped areas of mass-wastage deposits occur elsewhere on the island along ravines and streams. Deposits, both mapped and unmapped, include abundant discrete landslides up to 150 m (500 ft) in lateral extent. Locally subdivided into:	Typically about 3 m, locally >10 m along steep slopes	Loose to dense and soft to stiff; variable degree of consolidation depends on material in colluvium and its coherency	Intermixed fine and coarse-grained deposits, variable degree of consolidation
Qls	Landslide deposits	Diamict of broken to internally coherent surficial deposits transported down slope *en masse* by gravity. Blocks of native material are commonly fractured, have rotated or deformed bedding, and have abundant slickensided surfaces. Numerous unmapped areas of both landslide and related mass-wastage deposits occur along slop es and ravines draining west, south, and east to Lake Washington, particularly where coarse-grained deposits overlie fine-grained deposits and springs exit the slopes. Vegetation, such as trees and roots, is commonly incorporated into the deposit. Landslide terrain often includes benches that slope back into the hillside and host wetlands and peat deposits.	Variable, commonly 2 to 18 m; along steep slopes	Very loose to very dense or soft to hard; variable degree of consolidation depends on material coherency	Intermixed fine and coarse-grained deposits, voids common; variable degree of consolidation, slide planes and other shear zones often preferred pathways
Qp	Peat	Predominantly organic matter consisting of plant material and woody debris, accumulated in bodies greater than about 1 m in thickness and of mappable extent. Accumulations are greatest in the floors of recessional-outwash channels, at the heads of some streams, and where lowering of Lake Washington has exposed extensive lake -floor deposits. From former wetlands, bogs, and lakes. Commonly interbedded with silt an d clay. Gradational with units Ql, Qal, and Qvrl	>1 to 4 m	Very soft to medium stiff or very loose to medium dense	Commonly saturated
Qw	Wetland deposits	Organic-rich silt, sandy silt, peat, and fine-grained alluvium, poorly drained and intermittently wet. Areas identified from Mercer Island GIS Wetlands layer which was based on; not all such deposits have been delineated	1 to 5 m; typically 2 to 3 m	Very soft to medium stiff or very loose to medium dense	Commonly saturated
Qal	Alluvium	Sand, silt, gravel, and cobbles deposited by streams and running water. May include landslide debris and colluvium at margins. Locally contains soft peat lenses. Locally subdivided into:	One m to 7 m; in river and stream valleys	Loose to dense or soft to stiff	Predominantly sandy and horizontally bedded, fine- and coarse-grained lenses
Ql	Lake deposits	Silt and clay with local sand layers, peat, and other organic sediments, deposited adjacent to Lake Washington. Most mapped areas are lake -bottom sediments exposed when Lake Washington was lowered in 1916. At many locations, the lake deposits are thin and overlie a d ense substrate. Commonly capped by fill to improve building sites. Locally gradational with units Qvrl, Qal, and Qp	One to 10 m adjacent to Lake WA	Very soft to medium stiff or very loose to medium dense	Predominantly fine grained and horizontally bedded
Qf	Fan deposits	Sand, silt, gravel, and cobbles deposited in lobate form where streams emerge from confining valleys and reduced gradients cause sediment loads to be deposited. Present at base of streams on east side of island. Gradational with units Qal and Ql	3 to 5 m	Loose to dense or soft to stiff	Variable grain size
Pleistocene	YOUNGER GLACIAL DEPOSITS				
Qv		Deposits of Vashon stade of Fraser glaciation of Armstrong and others (1965) , not used as a map unit			
Qvr	Recessional outwash deposits	Stratified sand and gravel, moderately sorted to well-sorted, and less common silty sand and silt. Deposited in outwash channels that carried south - draining glacial meltwater during ice retreat away from the ice margin. Also i ncludes deposits that accumulated in or adjacent to recessional lakes. Discontinuous. May include thin lag on glacial till uplands although deposits less than about 1 m (3 fd) thick not shown on map. Locally divided into:	~1 to 5 m; typically in channels	Loose to dense	Horizontally bedded to cross bedded, uniformly to well graded, channelized, coarse lag deposits common
Qvrl	Recessional lacustrine deposits	Laminated silt and clay, low to high plasticity, with local sand layers, peat, and other organic sediments, deposited in slow-flowing water and ephemeral lakes. Locally includes high-plasticity clay with swell potential. Lenses and layers of ash and diatomite may be present. Gradational with units Qvr, Qvrlc, Qp, and Ql	One to 4 m on uplands; as much as 10 m in city center area	Very soft to stiff	Horizontally bedded; sandy channels may breach the lacustrine deposits
Qvrlc	Recessional lacustrine sandy deposits	Predominantly sand, clean to silty, horizontally to cross bedded, deposited in recessional lakes	1 to 8 m	Loose to dense	Interspersed silt and gravel layers
Qvi	Ice-contact deposits	Intercalated till and outwash, irregularly shaped bodies of till and outwash. Outwash consists of sand and gravel, clean to silty, horizontally bedded to steeply dipping. The till consists of matrix supported gravelly sandy silt that may or may not have been glacially overridden. Deposits present at the highest area on the island (SE 44 th St and 89 th Ave SE) and at the southeast corner of the island. Gradational with units Qvr and Qvt	1 to 30 m; in patches on the upland	Loose to very dense; variable	Intermixed irregularly-shaped bodies of till and coarse-grained deposits, may have steep dips
Qvt	Vashon till	Compact diamict of silt, sand and subrounded to well-rounded gravel, glacially transported and deposited under ice. Contains large, often tabular, sand and gravel bodies, cobbles common. Coarse-grained layers may exceed 50% of the volume of the deposit. Commonly fractured and has i ntercalated sand lenses. Generally forms undulating, elongated surfaces. Often capped by +/- 1 meter of medium dense clean to silty, gravelly sand. Upper 1 meter of till generally weathered and only medium dense to dense. Locally gradational with unit Qva	Typically 3 to 10 m, locally 170m , locally absent	Dense to very dense; sand is commonly less dense	Vertical fractures, sand lenses, sand bodies, irregular bedding, crude sub-horizontal bedding common; commonly capped by +/- 1m of gravelly sand
Qva	Advance Outwash Deposits	Well-sorted sand and gravel deposited by streams issuing from advancing ice sheet. May grade upward into till. Silt lenses locally present in upper part and are common in lower part. Generally unoxidized to only slightly oxidized. May be overlain by Vashon till in area s too small to show at map scale. Includes Esperance Sand Member of the Vashon Drift of Mullineaux and others (1965). Grades downward into unit Qvlc with increasing silt content	Locally over 60 m thick; wide-spread, locally absent	Dense to very dense	Predominantly medium grained sand, horizontally to cross bedded, hard silt beds common throughout
Qvlc	Lawton Clay of Mullineaux and others (1965)	Laminated to massive silt, clayey silt, and silty clay with scattered dropstones deposited in lowland proglacial lakes. Marks transition from nonglacial to earliest glacial time, although unequivocal evidence for glacial or nonglacial origin may be absent. Deposits of correlative age and texture may be included in older fine-grained units where evidence of age and/or depositional environment is absent. Locally may include fine-grained sediment of unit Qob or distal deposits from the Cascade Mountains where indistinguishable from Qvlc	0 to > 27 m; generally present in pre-Vashon valleys below 280 ft in elevation	Very stiff to hard	Vertical fractures; fine sand partings common near top and bottom of unit
Pleistocene	OLDER GLACIAL AND NONGLACIAL DEPOSITS				
Qpf	Deposits of pre-Fraser glaciation age	Not used as a map unit. Locally divided into:			
Qpfn	Nonglacial deposits	Sand, gravel, silt, clay, and organic deposits of inferred nonglacial origin, based on the presence of peat, paleosols, and tephra layers; or a southern Cascade Range provenance for sedimentary clasts . Mapped around the recessional lake valley east of First Hill and near the northeast edge of the map	10 to 20 m, discontinuous	Very dense and hard	Localized iron-oxide cemented layers; interbedded and intermixed fine- and coarse-grained layers
Qob MIS 3 18-70 ka	Olympia beds of Minard and Booth (1988)	Sand, silt (locally organic -rich), gravel, and peat, discontinuously and thinly interbe dded; may contain tephra and/or diatomaceous layers. Sand and gravel clast lithology varies depending on source area, from volcanic to reworked northern lithologies. Assigned to the Olympia interglaciation of Mullineaux and others (1965) on the basis of stratigraphic position, correlation, and anticipated radiocarbon dates. Distinguished from Qvlc on the basis of coarser grain size and presence of orga nics. Mapped on the west side of the island	7 to 10 m, discontinuous	Very dense and hard	Localized iron-oxide cemented layers, interbedded and intermixed fine- and coarse-grained layers
Qpo	Deposits of pre-Olympia age	Not used as a map unit. Locally divided into:			
Qpof	Fine-grained deposits	Silt and clay, may have sandy interbeds, laminated to massive. Mapped on the north half of the island	10 to 27 m, discontinuous	Hard	Localized iron-oxide cemented layers and sandy partings
Qpoc	Coarse-grained deposits	Sand and gravel, clean to silty, with some silt layers, lightly to moderately oxidized . Mapped on the west side of First Hill and on the north half of the island. Likely present at more locations in the subsurface	6 to 20 m, discontinuous	Very dense	Localized iron-oxide cemented layers and channels
Qpog	Glacial deposits	Silt, sand, gravel and till of glacial origin . Weakly to strongly oxidized. Underlies Vashon-age deposits and thus must also be of pre -Olympia age. Sediment is of inferred g lacial (northern) origin, based on presence of clasts or mineral grains requiring southward ice -sheet transport. Mapped on the west central side of the island. Locally divided into:	7 to 10 m, discontinuous	Very dense and hard	Localized iron-oxide cemented layers, interbedded and intermixed fine- and coarse-grained layers
Qpogc	Coarse-grained glacial deposits	Sand and gravel, clean to silty, with some silt layers , moderately to heavily oxidized , mapped at two locations in the center part of the island at low elevation	10 to 17 m, discontinuous	Very dense	Localized iron-oxide cemented layers and channels
Qpogf	Fine-grained glacial deposits	Silt and clay, may have sandy interbeds, laminated to massive. Mapped at several locations along the west side of the island, including around First Hill	10 to 33 m, discontinuous, as much as 58 m in channels in the subsurface	Hard	Localized iron-oxide cemented layers and sandy partings
Qpogt	Till deposits	Till thick enough to show at map scale. Most extensive on southern west slopes of the island	Discontinuous, 1 to 17 m	Very dense and hard	Localized iron-oxide cemented layers, sandy partings, and lenses
Qpogd	Glacial diamict	Silt and clay, slightly sandy, with few dropstones and shells, till-like, but finer grained and with fewer gravel clasts than most Puget Lowland tills . Partly to wholly glaciomarine in origin. Mapped on west central part of island	Discontinuous, 3 to 27 m	Very dense and very hard	Localized iron-oxide cemented layers, sandy partings and lenses
Qpon	Nonglacial deposits	Sand, gravel, silt, clay, and organic deposits of inferred nonglacial origin, based on the presence of paleosols, and tephra layers; or a southern Cascade Range provenance for sedimentary clasts . Present near lake level	7 to 50 m, discontinuous	Very dense and hard	Localized iron-oxide cemented layers , interbedded and intermixed fine- and coarse-grained layers
Qponc	Coarse-grained nonglacial deposits	Sand and gravel, clean to silt, with silt layers and peat, moderately to heavily oxidized. Mapped at one location, south end of the east -central side of the island. More prevalent in the subsurface	10 to 13 m, discontinuous	Very dense	Localized iron-oxide cemented layers, and channels
Qponf	Fine-grained nonglacial deposits	Silt and clay, may have sandy interbeds, and peat, laminated to massive.	7 to 17 m, discontinuous	Hard	Localized iron-oxide cemented layers and sandy partings

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #1 : Preparation of Stormwater Site Plan

Written Project Description:

This new single family construction project is the western lot of the East Mercer 2-lot Short Plat. The average grade on-site is 30% down toward the south. Basement is proposed. Stormwater detention was not required with the short plat if downstream storm drain is in good condition with capacity, but it has turned out that it is not. Detention is proposed for this lot (and will be proposed with the west lot).

We are not proposing infiltration or dispersion BMPs for this project. Infiltration facilities are not permitted, the slope is too great for dispersion, and detention is available.

Calculate new or replaced areas by surface type:

Lawn or Landscape Areas: 2,000 sq ft	Roof Area: 3,583 sq ft

Other Hard Surface Areas:

Driveway: 1,373 sf sq ft Patio: _____ sq ft Sidewalk: _____ sq ft

Parking Lot: _____ sq ft Other: front steps 173 sq ft

☑ Attach Drainage Plan

Drainage Plan shall include the following:

- Scaled drawing with slopes, lot lines, any public-right-of-way and any easements, location of each on-site stormwater management BMP selected above and the areas served by them, buildings, roads, parking lots, driveways, landscape features, and areas of disturbed soils to be amended.
- The scaled drawing must be suitable to serve as a recordable document that will be attached to the property deed for each lot that includes on-site BMPs. Document submittal must follow the "Standard Formatting Requirements for Recording Documents" per King County: www.kingcounty.gov/depts/records-licensing/recorders-office/recording-documents.aspx
- Identify design details and maintenance instructions for each on-site BMP, and attach them to this Small Project Stormwater Site Plan/Report.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #2 : Construction Stormwater Pollution Prevention

☑ Complete Section B of this submittal package: Construction Stormwater Pollution Prevention Plan Narrative (SWPPP)

☑ Attach construction SWPPP (see sheet C1.0 Erosion Control Plan)

Minimum Requirement #3 : Source Control of Pollution

This section contains practices and procedures to reduce the release of pollutants. Provide a description of all known, available and reasonable source control BMPs that will be, or are anticipated to be, used at this location to prevent stormwater from coming into contact with pollutants. Additional BMPs are found in Volume IV of the 2014 Stormwater Management Manual for Western Washington (SWMMWW).

Check the BMPs you will use:

☐ BMP S411 for Landscaping and Lawn/ Vegetation Management
Operational practices for sites with landscaping

☐ BMP S421 for Parking and Storage of Vehicles.
Public and commercial parking lots can be sources of suspended solids, metals, or toxic hydrocarbons such oils and greases.

☐ BMP S433 for Pools, Spas, Hot Tubs, Fountains
Discharge from pools, hot tubs, and fountains can degrade ambient water quality. Routine maintenance activities generate a variety of wastes. Direct disposal of these waters to drainage system and waters of the state are not permitted without prior treatment and approval.

☐ Other BMPs found in Volume IV of SWMMWW applicable to project:

above are not applicable for this single family project

☑ No source control BMPs are applicable for this project.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #4 : Preservation of Natural Drainage Systems

Natural drainage patterns shall be maintained and discharges from the project site shall occur at the natural location, to the maximum extent practicable. All outfalls require energy dissipation.

Choose the option below that best describes your project:

☑ This site has existing drainage systems or outfalls. These items are shown on the Drainage Plan. Include the following items on the Drainage Plan:

- Pipe invert elevations, slopes, cover, and material
- Locations, grades, and direction of flow in ditches and swales, culverts, and pipes

Describe how these systems will be preserved:

Development of this lot will substantially maintain storm runoff patterns but to our knowledge there is no natural drainage pattern to maintain. The existing (public) 12" storm drain that bisects this property will require re-routing to build the east house (see other permit).

☐ This site does not have any existing drainage systems or outfalls.

Additional Comments:

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management

All projects meeting the thresholds for this Small Project Stormwater Report shall employ on-site stormwater management BMPs (See Small Project Stormwater Requirements Tip Sheet) to infiltrate, disperse, and retain stormwater runoff on-site to the extent feasible without causing flooding or erosion impacts.

List #1

For each category select the *first* feasible item on the list below. Document your justification for each infeasible BMP in Section C of this submittal package.

Check one option for each category below:

Lawn and Landscape Areas

- ☐ My project does not have *Lawn or Landscape* areas
- ☑ Post-construction soil quality and depth
- ☐ Post-construction soil quality and depth is infeasible (see Section C of this submittal package)

Roofs

- ☐ My project does not have *Roof* areas
- ☐ 1. Full dispersion or downspout full infiltration
- ☐ 2. Rain garden or bioretention
- ☐ 3. Downspout dispersion system
- ☐ 4. Perforated stub-out connections
- ☑ 5. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-4 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- ☐ 6. No Roof BMP (applicable if options #1-4 are infeasible and on-site detention is not required)

Measured Infiltration Rate: not determined in/ hr

If #5 or #6 is selected, briefly describe why no Roof BMP is feasible (include detailed information in Section C of this submittal package):

LID practices are mostly infeasible for this site. City infiltration maps indicate infiltration is not advised. This site is too sloped for dispersion to be feasible. Detention is therefore proposed to mitigate peak flows leaving site before entering city storm.

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management (cont.)

Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- ☐ My project does not have *Other Hard Surface* areas
- ☐ 1. Full dispersion

Measured Infiltration Rate: not determined in/ hr

- ☐ 2. Permeable pavement, rain gardens, or bioretention
- ☐ 3. Sheet flow dispersion or concentrated flow dispersion
- ☑ 4. On-site detention system or fee-in-lieu of on-site detention authorized by the City Engineer (applicable if options #1-3 are infeasible and drainage from the site will be discharged to a storm or surface water system that includes a watercourse or there is a capacity constraint in the system)
- ☐ 5. No Other Hard Surface BMP (applicable if options #1-3 are infeasible and on-site detention is not required)

If #4 or #5 is selected, briefly describe why no Other Hard Surface BMP is feasible (include detailed information in Section C of this submittal package):

Same answer as previous page. LID practices are mostly infeasible for this site. City infiltration maps indicate infiltration is not advised. This site is too sloped for dispersion to be feasible. Detention is therefore proposed to mitigate peak flows leaving site before entering city storm.

Flow Control Exempt List

Proceed with this list if your project discharges directly to Lake Washington or if findings from a downstream analysis confirm that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile.

For flow control exempt discharges, the BMPs listed below for Roofs and Other Hard Surfaces do not need to be evaluated in priority order. You can select any BMP from the lists provided below and do not need to document infeasibility in Section C of this submittal package.

Check one option for each category below:

Lawn and Landscape Areas

- ☐ My project does not have *Lawn or Landscape* areas
- ☑ Post-construction soil quality and depth

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SECTION A: SMALL PROJECT STORMWATER SITE PLAN/REPORT

Minimum Requirement #5 : On-site Stormwater Management (cont.)

Roofs

- ☐ My project does not have *Roof* areas
- ☐ Downspout full infiltration
- ☐ Downspout dispersion system
- ☐ Perforated stub-out connections
- ☑ Each item above is infeasible

If "Each item above is infeasible" is selected, briefly describe why no Roof BMP is feasible:

Same answer.
LID practices are not advised on this site with considerable slope and suboptimal soils in terms of stability. City infiltration maps indicate infiltration is not advised. This site is too sloped for dispersion to be feasible. Detention is therefore proposed to mitigate peak flows leaving site before entering city storm drain system for both lots.

Other Hard Surfaces (such as driveway, sidewalk, parking lot, patio, etc.)

- ☐ My project does not have *Other Hard Surface* areas
- ☐ Sheet flow dispersion
- ☐ Concentrated flow dispersion
- ☑ Each item above is infeasible

If "Each item above is infeasible" is selected, briefly describe why no Other Hard Surface BMP is feasible:

LID practices are mostly infeasible for this site. City infiltration maps indicate infiltration is not advised. This site is too sloped for dispersion to be feasible. Detention is therefore proposed to mitigate peak flows leaving site before entering city storm.

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Instructions

This is a template for a simplified Construction Stormwater Pollution Prevention Plan ("Construction SWPPP"). If "No" is the answer to one or more of the statements on the first page of Section A of this submittal package, then a full Construction SWPPP is required and the project does not quality for the use of the Small Project Construction SWPPP Narrative template. If the project is less than the thresholds on the first page of Section A of this submittal package, then Minimum Requirement #2 still applies, but this section (Section B) or a full construction SWPPP is not required. You should include your Construction SWPPP in your contract with your builder. A copy of the Construction SWPPP must be located at the construction site or within reasonable access to the site for construction and inspection personnel at all times.

General Information on the Existing Site and Project

Describe the following in the Project Narrative box below (attach additional pages if necessary):

- Nature and purpose of the construction project
- Existing topography, vegetation, and drainage, and building structures
- Adjacent areas, including streams, lakes, wetlands, residential areas, and roads that might be affected by the construction project
- How upstream drainage areas may affect the site
- Downstream drainage leading from the site to the receiving body of water
- Areas on or adjacent to the site that are classified as critical areas
- Critical areas that receive runoff from the site up to one-quarter mile away
- Special requirements and provisions for working near or within critical areas
- Areas on the site that have potential erosion problems

Project Narrative:

This project proposes to remove the existing structure on this recently platted property and build two new houses and their respective driveways. The lot slopes down from north to south at roughly 30%. Hazards exists for this lot: wind exposure, wind speed-up, potential slide, steep slope, seismic, and erosion.

The proposed on-site "new + replaced" impervious area is 4,956 sf including roof and new/replaced driveway. Stormwater BMPs are not proposed.Stormwater from this site will be directed to the proposed detention pipe which then is routed to the new storm drain along the eastern property line (see east house plans for this new storm drain).

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Construction SWPPP Drawings

Refer to the general Drawing Requirements in Stormwater Management Manual for Western Washington (SWMMWW) Volume I, Chapter 3.

Vicinity Map

Provide a map with enough detail to identify the location of the construction site, adjacent roads, and receiving waters.

Site Map

Include the following (where applicable):

- [x] Legal description of the property boundaries or an illustration of property lines (including distances) on the drawings.
- [x] North arrow.
- [x] Existing structures and roads.
- [ ] Boundaries and identification of different soil types.
- [ ] Areas of potential erosion problems.
- [ ] Any on-site and adjacent surface waters, critical areas, buffers, flood plain boundaries, and Shoreline Management boundaries.
- [x] Existing contours and drainage basins and the direction of flow for the different drainage areas.
- [ ] Where feasible, contours extend a minimum of 25 feet beyond property lines and extend sufficiently to depict existing conditions.
- [x] Final and interim grade contours as appropriate, drainage basins, and the direction of stormwater flow during and upon completion of construction.
- [x] Areas of soil disturbance, including all areas affected by clearing, grading, and excavation.
- [ ] Locations where stormwater will discharge to surface waters during and upon completion of construction.
- [ ] Existing unique or valuable vegetation and vegetation to be preserved.
- [ ] Cut-and-fill slopes indicating top and bottom of slope catch lines.
- [ ] Total cut-and-fill quantities and the method of disposal for excess material.
- [ ] Stockpile; waste storage; and vehicle storage, maintenance, and washdown areas.

Temporary and Permanent BMPs

Include the following on site map (where applicable):

- [ ] Locations for temporary and permanent swales, interceptor trenches, or ditches.
- [x] Drainage pipes, ditches, or cut-off trenches associated with erosion and sediment control and stormwater management.
- [x] Temporary and permanent pipe inverts and minimum slopes and cover.
- [ ] Grades, dimensions, and direction of flow in all ditches and swales, culverts, and pipes.
- [ ] Locations and outlets of any dewatering systems.
- [ ] Details for bypassing off-site runoff around disturbed areas.
- [ ] Locations of temporary and permanent stormwater treatment and/or flow control best management practices (BMPs).
- [x] Details for all structural and nonstructural erosion and sediment control (ESC) BMPs (including, but not limited to, silt fences, construction entrances, sedimentation facilities, etc.)
- [ ] Details for any construction-phase BMPs or techniques used for Low Impact Development (LID) BMP protection.

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 1: Preserve Vegetation / Mark Clearing Limits

The goal of this element is to preserve native vegetation and to clearly show the limits of disturbance.

This element **does not** *apply to my project because:*

☐ The site was cleared as part of clearing activity that is subject to an enforcement action and is re-vegetated. Restoration may be necessary to comply with Critical Area Regulations or NPDES requirements. Buffer Zones-BMP C102 may apply if Critical Areas exist on-site and buffer zones shall be protected.

☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the best management practices (BMPs) you will use:*

☑ The perimeter of the area to be cleared shall be marked prior to clearing operation with visible flagging, orange plastic barrier fencing and/or orange silt fencing as shown on the SWPPP site map. The total disturbed area shall be less than 7,000 square feet. Vehicles will only be allowed in the areas to be graded, so no compaction of the undeveloped areas will occur.

Additional Comments:

We delineate an estimated limits of disturbance on sheet C1.0. Most trees are to remain.

Check the BMPs you will use:

☑ C101 Preserving Natural Vegetation ☐ C102 Buffer Zones ☑ C103 High Visibility Fence

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 2: Construction Access

The goal of this element is to provide a stabilized construction entrance/exit to prevent or reduce or sediment track out.

*This element **does not** apply to my project because:*

☐ The driveway to the construction area already exists and will be used for construction access. All equipment and vehicles will be restricted to staying on that existing impervious surface.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☑ A stabilized construction entrance will be installed prior to any vehicles entering the site, at the location shown on the SWPPP site map.

Additional Comments:

See C1.0 for location of construction entrance. The existing access off E Mercer will be the point of access during construction and will be upgraded to serve as driveway for the new house.

Check the BMPs you will use:

☑ C105 Stabilized Construction Entrance / Exit

☐ C106 Wheel Wash

☐ C107 Construction Road / Parking Area Stabilization

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 3: Control Flow Rates

The goal of this element is to construct retention or detention facilities when necessary to protect properties and waterways downstream of development sites from erosion and turbid discharges.

This element **does not** *apply to my project because:*

☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

☑ Flow rates will be controlled by using SWPPP Element 4 sediment controls and BMP T5.13 Post-Construction Soil Quality and Depth if necessary.

Additional Comments:

See plan for Silt Fence and the like to help mitigate sediment runoff during construction.

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 4: Sediment Control

The goal of this element is to construct sediment control BMPs that minimize sediment discharges from the site.

*This element **does not** apply to my project because:*

- [ ] The site has already been stabilized and re-vegetated.
- [ ] Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

- [x] Sediment control BMPs shall be placed at the locations shown on the SWPPP site map

Additional Comments:

See C1.0 for Silt Fence that will help control and contain sediment during construction period.

Check the BMPs you will use:

- [ ] C231 Brush Barrier
- [x] C233 Silt Fence
- [x] C235 Wattles
- [ ] C232 Gravel Filter Berm
- [ ] C234 Vegetated Strip

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 5: Stabilize Soils

The goal of this element is to stabilize exposed and unworked soils by implementing erosion control BMPs.

*This element **does not** apply to my project because:*

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☑ Exposed soils shall be worked during the week until they have been stabilized. Soil stockpiles will be located within the disturbed area shown on the SWPPP site map. Soil excavated for the foundation will be backfilled against the foundation and graded to drain away from the building. No soils shall remain exposed and unworked for more than 7 days from May 1 to September 30 or more than 2 days from October 1 to April 30. Once the disturbed landscape areas are graded, the grass areas will be amended using BMP T5.13 Post-Construction Soil Quality and Depth. All stockpiles will be covered with plastic or burlap if left unworked.

Additional Comments:

We typically cover this requirement with notes on our plans and your standard erosion control notes shown on sheet C1.2 which cover this requirement. I don't usually try and show stockpile locations on our plans since that's difficult to predict where contractor will place.

Check the BMPs you will use:

☐ C120 Temporary & Permanent Seeding
☑ C122 Nets & Blankets
☐ C124 Sodding
☐ C131 Gradient Terraces
☑ C235 Wattles
☑ C121 Mulching
☑ C123 Plastic Covering
☐ C125 Topsoil / Composting
☐ C140 Dust Control

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 6: Protect Slopes

The goal of this element is to design and construct cut-and-fill slopes in a manner to minimize erosion.

*This element **does not** apply to my project because:*

☐ No cut slopes over 4 feet high or slopes steeper than 2 feet horizontal to 1 foot vertical, and no fill slopes over 4 feet high will exceed 3 feet horizontal to 1 foot vertical. Therefore, there is no requirement for additional engineered slope protection.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

Additional Comments:

Check the BMPs you will use:

☑ C120 Temporary & Permanent Seeding

☐ C205 Subsurface Drains

☐ C207 Check Dams

☑ C204 Pipe Slope Drains

☐ C206 Level Spreader

☐ C208 Triangular Silt Dike (Geotextile-Encased Check Dam)

IF WARRANTED

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 7: Protect Permanent Drain Inlets

The goal of this element is to protect storm drain inlets during construction to prevent stormwater runoff from entering the conveyance system without being filtered or treated.

This element **does not** *apply to my project because:*

- ☐ The site has open ditches in the right-of-way or private road right-of-way.
- ☐ There are no catch basins on or near the site.
- ☐ Other Reason / Additional Comments:

If it **does** *apply, describe the steps you will take and select the BMPs you will use:*

- ☑ Catch basins on the site or immediately off site in the right-of-way are shown on the SWPPP site map. Storm drain inlet protection shall be installed.

Additional Comments:

See C1.0 for Inlet Protection in SE 42nd Place.

Check the BMPs you will use:

- ☑ C220 Storm Drain Inlet Protection

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 8: Stabilize Channels and Outlets

The goal of this element is to design, construct, and stabilize on-site conveyance channels to prevent erosion from entering existing stormwater outfalls and conveyance systems.

*This element **does not** apply to my project because:*

☐ Construction will occur during the dry weather. No storm drainage channels or ditches shall be constructed either temporary or permanent. A small swale shall be graded to convey yard drainage around the structure using a shallow slope; it shall be seeded after grading and stabilized.

☑ Other Reason / Additional Comments:

To our knowledge there are no identified natural channels or outlets for site.

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☐ A wattle shall be placed at the end of the swale to prevent erosion at the outlet of the swale.

Additional Comments:

Check the BMPs you will use:

☐ C202 Channel Lining ☐ C207 Check Dams ☐ C209 Outlet Protection ☐ C235 Wattles

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 9: Control Pollutants

The goal of this element is to design, install, implement and maintain BMPs to minimize the discharge of pollutants from material storage areas, fuel handling, equipment cleaning, management of waste materials, etc.

*This element **does not** apply to my project because:*

☑ Other Reason / Additional Comments:

No special source BMP's are anticipated for this residential single family project

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

☐ Any and all pollutants, chemicals, liquid products and other materials that have the potential to pose a threat to human health or the environment will be covered, contained, and protected from vandalism. All such products shall be kept under cover in a secure location on-site. Concrete handling shall follow BMP C151.

Additional Comments:

Check the BMPs you will use:

☐ C151 Concrete Handling

☐ C152 Sawcutting and Surfacing Pollution Prevention

☐ C153 Material Delivery, Storage, and Containment

☐ C154 Concrete Washout Area

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 10: Control De-watering

The goal of this element is to handle turbid or contaminated dewatering water separately from stormwater.

*This element **does not** apply to my project because:*

☑ No dewatering of the site is anticipated.

☐ Other Reason / Additional Comments:

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

Additional Comments:

The geotechnical engineer (Geo Group Northwest) did not encounter any groundwater on any of the 4 hollow stem auger boriings performed in summer of 2018. Depth of borings were typically 20 feet or more.

Check the BMPs you will use:

☐ C203 Water Bars ☐ C236 Vegetated Filtration ☑ C206 Level Spreader

CITY OF MERCER ISLAND

SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 11: Maintain Best Management Practices

The goal of this element is to maintain and repair all temporary and permanent erosion and sediment control BMPs to assure continued performance.

Describe the steps you will take:

☑ Best Management Practices or BMPs shall be inspected and maintained during construction and removed within 30 days after the City Inspector or Engineer determines that the site is stabilized, provided that they may be removed when they are no longer needed.

Element 12: Manage the Project

The goal of this element is to ensure that the construction SWPPP is properly coordinated and that all BMPs are deployed at the proper time to achieve full compliance with City regulations throughout the project.

*If it **does** apply, describe the steps you will take and select the BMPs you will use:*

The Construction SWPPP will be implemented at all times. The applicable erosion control BMPs will be implemented in the following sequence:

☑ 1. Mark clearing limits

☑ 2. Install stabilized construction entrance

☑ 3. Install protection for existing drainage systems and permanent drain inlets

☑ 4. Establish staging areas for storage and handling polluted material and BMPs

☑ 5. Install sediment control BMPs

☑ 6. Grade and install stabilization measures for disturbed areas

☑ 7. Maintain BMPs until site stabilization, at which time they may be removed

Additional Comments:

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SECTION B: SMALL PROJECT CONSTRUCTION SWPPP NARRATIVE

Element 13: Protect Low Impact Development BMPs

The goal of this element is to protect on-site stormwater management BMPs (also known as "Low Impact Development BMPs") from siltation and compaction during construction. On-site stormwater management BMPs used for runoff from roofs and other hard surfaces include: full dispersion, roof downspout full infiltration or dispersion systems, perforated stubout connections, rain gardens, bioretention systems, permeable pavement, sheetflow dispersion, and concentrated flow dispersion. Methods for protecting on-site stormwater management BMPs include sequencing the construction to install these BMPs at the latter part of the construction grading operations, excluding equipment from the BMPs and the associated areas, and using the erosion and sedimentation control BMPs listed below.

Describe the construction sequencing you will use:

Additional Comments:

Not applicable for this. No LID's are proposed.

Select the BMPs you will use:

- ☐ C102 Buffer Zone
- ☐ C103 High Visibility Fence
- ☐ C231 Brush Barrier
- ☐ C233 Silt Fence
- ☐ C234 Vegetated Strip

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Minimum Requirement #5 (On-Site Stormwater Management)

The following tables summarize infeasibility criteria that can be used to justify not using various on-site stormwater management best management practices (BMPs) for consideration for Minimum Requirement #5. This information is also included under the detailed descriptions of each BMP in the 2014 Stormwater Management Manual for Western Washington (Stormwater Manual), but is provided here in this worksheet for additional clarity and efficiency. Where any inconsistencies or lack of clarity exists, the requirements in the main text of the Stormwater Manual shall be applied. If a project is limited by one or more of the infeasibility criteria specified below, but an applicant is interested in implementing a specific BMP, a functionally equivalent design may be submitted to the City for review and approval. Evaluate the feasibility of the BMPs in priority order based on List #1 or #2 (Small Project Stormwater Requirements Tip Sheet and Stormwater Manual). Select the first BMP that is considered feasible for each surface type. Document the infeasibility (narrative description and rationale) for each BMP that was not selected. Only one infeasibility criterion needs to be selected for a BMP before evaluating the next BMP on the list. Attach additional pages for supporting information if necessary.

Note: If your project discharges directly to Lake Washington (flow control exempt) or a downstream analysis confirms that the downstream system is free of capacity constraints for a minimum of ¼ mile and a maximum of 1 mile, then you do not need to complete this worksheet, but should still refer to the infeasibility criteria when selecting BMPs.

Lawn and Landscaped Areas		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Post-construction Soil Quality and Depth List #1 and #2	☐ Siting and design criteria provided in BMP T5.13 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ Lawn and landscape area is on till slopes greater than 33 percent.	(proposed)
Roofs		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Full Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.30 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved. ☑ A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	no setback from steep slope
Downspout Full Infiltration List #1 and #2	☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards. ☐ Site setbacks and design criteria provided in BMP T5.10A (**Stormwater Manual** Volume III, Section 3.1.1) cannot be achieved. ☐ The lot(s) or site does not have out-wash or loam soils. ☐ There is not at least 3 feet or more of permeable soil from the proposed final grade to the seasonal high groundwater table or other impermeable layer. ☐ There is not at least 1 foot or more of permeable soil from the proposed bottom of the infiltration system to the seasonal high groundwater table or other impermeable layer.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens List #1 (both) and List #2 (bioretention only)	*Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.* Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☑ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ 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. ☐ Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system. ☐ Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects. ☐ Where infiltrating water would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads. The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ Within setback provided for BMP T7.30 (**Stormwater Manual** Volume V, Section 7.4) ☐ Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area).	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060). ☐ Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent. ☐ Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface. ☐ Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7. ☐ Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): o 5,000 square feet of pollution-generating impervious surface (PGIS) o 10,000 square feet of impervious area o 0.75 acres of lawn and landscape. ☐ Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds. ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply. ☐ Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Roofs (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Downspout Dispersion Systems List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.10B (**Stormwater Manual** Volume III, Section 3.1.2) cannot be achieved. ☐ For splash blocks, a vegetated flowpath at least 50 feet in length from the downspout to the downstream property line, structure, stream, wetland, slope over 15 percent, or other impervious surface is not feasible. ☑ For trenches, a vegetated flowpath of at least 25 feet in between the outlet of the trench and any property line, structure, stream, wetland, or impervious surface is not feasible. A vegetated flowpath of at least 50 feet between the outlet of the trench and any slope steeper than 15 percent is not feasible.	no setback from steep slope
Perforated Stub-Out Connections List #1 and #2	☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ For sites with septic systems, the only location available for the perforated portion of the pipe is located up-gradient of the drainfield primary and reserve areas. This requirement can be waived if site topography will clearly prohibit flows from intersecting the drainfield or where site conditions (soil permeability, distance between systems, etc.) indicate that this is unnecessary. ☐ Site setbacks and design criteria provided in BMP T5.10C (**Stormwater Manual** Volume III, Section 3.1.3) cannot be achieved. ☐ There is not at least 1 foot of permeable soil from the proposed bottom (final grade) of the perforated stub-out connection trench to the highest estimated groundwater table or other impermeable layer. ☐ The only location available for the perforated stub-out connection is under impervious or heavily compacted soils.	
On-site Detention List #1 and #2	☐ Project discharges directly to Lake Washington. ☐ Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. ☐ Site setbacks and design criteria provided in the **Stormwater Manual** (Volume III, Section 3.2.2) cannot be achieved.	(proposed)

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Full Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.30 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ A 65 to 10 ratio of forested or native vegetation area to impervious area cannot be achieved. ☑ A minimum forested or native vegetation flowpath length of 100 feet (25 feet for sheet flow from a non-native pervious surface) cannot be achieved.	no setback from steep slope
Permeable Pavement List #1 and #2	Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☑ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or downgradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ Where infiltrating and ponded water below the new permeable pavement area would compromise adjacent impervious pavements. ☐ Where infiltrating water below a new permeable pavement area would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads. ☐ Down slope of steep, erosion prone areas that are likely to deliver sediment. ☐ Where fill soils are used that can become unstable when saturated. ☐ Excessively steep slopes where water within the aggregate base layer or at the subgrade surface cannot be controlled by detention structures and may cause erosion and structural failure, or where surface runoff velocities may preclude adequate infiltration at the pavement surface. ☐ Where permeable pavements cannot provide sufficient strength to support heavy loads at industrial facilities such as ports. ☐ Where installation of permeable pavement would threaten the safety or reliability of pre-existing underground utilities, pre-existing underground storage tanks, or pre-existing road subgrades.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards ☐ Within an area designated as an erosion hazard, or landslide hazard. ☐ Within 50 feet from the top of slopes that are greater than 20 percent. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under MTCA): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply, if the pavement is a pollution-generating surface. ☐ Within 10 feet of a small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC. ☐ Within 10 feet of any underground storage tank and connecting underground pipes, regardless of tank size. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface. ☐ At multi-level parking garages, and over culverts and bridges. ☐ Where 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).	LID not feasible for this site per city engineer

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Where the site cannot reasonably be designed to have: • Porous asphalt surface < 5% slope • Pervious concrete surface < 10% slope • Permeable interlocking concrete pavement surface < 12% slope • Grid systems < 6-12% slope (check with manufacturer and local supplier to confirm maximum slope) ☐ Where the subgrade soils below a pollution-generating permeable pavement (e.g., road or parking lot) do not meet the soil suitability criteria for providing treatment. See soil suitability criteria for treatment in the **Stormwater Manual** Volume III, Section 3.3.7. Note: In these instances, the city may approve installation of a 6 inch sand filter layer meeting city specifications for treatment as a condition of construction. ☐ 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. ☐ Where replacing existing impervious surfaces unless the existing surface is a non-pollution generating surface over an outwash soil with a saturated hydraulic conductivity of 4 inches per hour or greater. ☐ Where appropriate field testing indicates soils have a measured (a.k.a., initial) subgrade soil saturated hydraulic conductivity less than 0.3 inches per hour. Only small-scale PIT or large-scale PIT methods in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to evaluate infeasibility of permeable pavement areas. (Note: In these instances, unless other infeasibility restrictions apply, roads and parking lots may be built with an underdrain, preferably elevated within the base course, if flow control benefits are desired.) ☐ Roads that receive more than very low traffic volumes, and areas having more than very low truck traffic. Roads with a projected average daily traffic volume of 400 vehicles or less are very low volume roads (AASHTO 2001) (U.S. Department of Transportation, 2013). Areas with very low truck traffic volumes are roads 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 associated with the collector or arterial).	LID not feasible for this site per city engineer

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Permeable Pavement (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ At sites defined as "high-use sites" (refer to the Glossary in the **Stormwater Manual** Volume I). ☐ In areas with "industrial activity" as identified in 40 CFR 122.26(b)(14). ☐ Where the risk of concentrated pollutant spills is more likely such as 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 the seasonal high groundwater or an underlying impermeable/ low permeable layer would create saturated conditions within 1 foot of the bottom of the lowest gravel base course.	
Bioretention or Rain Gardens List #1 (both) and List #2 (bioretention only)	*Note: Criteria with setback distances are as measured from the bottom edge of the bioretention soil mix.* Citation of any of the following infeasibility criteria must be based on an evaluation of site-specific conditions and a written recommendation from an appropriate licensed professional (e.g., engineer, geologist, hydrogeologist): ☑ Where professional geotechnical evaluation recommends infiltration not be used due to reasonable concerns about erosion, slope failure, or down-gradient flooding. ☐ Within an area whose ground water drains into an erosion hazard, or landslide hazard area. ☐ 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. ☐ Where the only area available for siting does not allow for a safe overflow pathway to stormwater drainage system or private storm sewer system. ☐ Where there is a lack of usable space for bioretention areas at re-development sites, or where there is insufficient space within the existing public right-of-way on public road projects. ☐ Where infiltrating water would threaten existing below grade basements. ☐ Where infiltrating water would threaten shoreline structures such as bulkheads.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☑ Where evaluation of infiltration is not required per the Infiltration Infeasibility Map due to steep slopes, erosion hazards, or landslide hazards. ☐ Within setback provided for BMP T7.30 (**Stormwater Manual** Volume V, Section 7.4) ☐ Where they are not compatible with surrounding drainage system as determined by the city (e.g., project drains to an existing stormwater collection system whose elevation or location precludes connection to a properly functioning bioretention area). ☐ Where land for bioretention is within an erosion hazard, or landslide hazard area (as defined by MICC 19.07.060). ☐ Where the site cannot be reasonably designed to locate bioretention areas on slopes less than 8 percent. ☐ Within 50 feet from the top of slopes that are greater than 20 percent and over 10 feet of vertical relief. ☐ For properties with known soil or groundwater contamination (typically federal Superfund sites or state cleanup sites under the Model Toxics Control Act [MTCA]): • Within 100 feet of an area known to have deep soil contamination. • Where groundwater modeling indicates infiltration will likely increase or change the direction of the migration of pollutants in the groundwater. • Wherever surface soils have been found to be contaminated unless those soils are removed within 10 horizontal feet from the infiltration area. • Any area where these facilities are prohibited by an approved cleanup plan under the state MTCA or Federal Superfund Law, or an environmental covenant under Chapter 64.70 RCW. ☐ Within 100 feet of a closed or active landfill. ☐ Within 10 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is 1,100 gallons or less. As used in these criteria, an underground storage tank means any tank used to store petroleum products, chemicals, or liquid hazardous wastes of which 10 percent or more of the storage volume (including volume in the connecting piping system) is beneath the ground surface.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Bioretention or Rain Gardens (cont.)	The following criteria can be cited as reasons for infeasibility without further justification (though some require professional services to make the observation): ☐ Within 100 feet of an underground storage tank and connecting underground pipes when the capacity of the tank and pipe system is greater than 1,100 gallons. ☐ Where field testing indicates potential bioretention/rain garden sites have a measured (a.k.a., initial) native soil saturated hydraulic conductivity less than 0.30 inches per hour. A small-scale or large-scale PIT in accordance with **Stormwater Manual** Volume III, Section 3.3.6 (or an alternative small scale test specified by the City) shall be used to demonstrate infeasibility of bioretention areas. If the measured native soil infiltration rate is less than 0.30 in/hour, bioretention/rain garden BMPs are not required to be evaluated as an option in List #1 or List #2. In these slow draining soils, a bioretention area with an underdrain may be used to treat pollution-generating surfaces to help meet Minimum Requirement #6, Runoff Treatment. If the underdrain is elevated within a base course of gravel, it will also provide some modest flow reduction benefit that will help achieve Minimum Requirement #7. ☐ Where the minimum vertical separation of 3 feet to the seasonal high groundwater elevation or other impermeable layer would not be achieved below bioretention that would serve a drainage area that exceeds the following thresholds (and cannot reasonably be broken down into amounts smaller than indicated): o 5,000 square feet of pollution-generating impervious surface (PGIS) o 10,000 square feet of impervious area o 0.75 acres of lawn and landscape. ☐ Where the minimum vertical separation of 1 foot to the seasonal high groundwater or other impermeable layer would not be achieved below bioretention that would serve a drainage area less than the above thresholds ☐ Within 100 feet of a drinking water well, or a spring used for drinking water supply. ☐ Within 10 feet of small on-site sewage disposal drainfield, including reserve areas, and grey water reuse systems. For setbacks from a "large on-site sewage disposal system," see Chapter 246-272B WAC.	

CITY OF MERCER ISLAND

SECTION C: INFEASIBILITY CRITERIA

Other Hard Surfaces (cont.)		
BMP and Applicable Lists	**Infeasibility Criteria**	**Infeasibility Description and Rationale for Each BMP Not Selected**
Sheet Flow Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.12 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ Positive drainage for sheet flow runoff cannot be achieved. ☐ Area to be dispersed (e.g., driveway, patio) cannot be graded to have less than a 15 percent slope. ☑ For flat to moderately sloped areas, at least a 10 foot-wide vegetation buffer for dispersion of the adjacent 20 feet of contributing surface cannot be achieved. For variably sloped areas, at least a 25 foot vegetated flowpath between berms cannot be achieved.	no setback from steep slope
Concentrated Flow Dispersion List #1 and #2	☑ Site setbacks and design criteria provided in BMP T5.11 (**Stormwater Manual** Volume V, Section 5.3) cannot be achieved. ☐ A minimum 3 foot length of rock pad and 50 foot flowpath OR a dispersion trench and 25 foot flowpath for every 700 square feet of drainage area followed with applicable setbacks cannot be achieved. ☐ More than 700 square feet drainage area drains to any dispersion device.	no setback from steep slope
On-site Detention List #1 and #2	☐ Project discharges directly to Lake Washington. ☐ Findings from a 1/4 mile downstream analysis confirm that the downstream system is free of capacity constraints. ☐ Site setbacks and design criteria provided in the **Stormwater Manual** (Volume III, Section 3.2.2) cannot be achieved.	proposed for parking area of driveway

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SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

Attachments Required *(Check off required items that are attached)*

- [x] Site Plan showing, to scale:
  - [x] Areas of undisturbed native vegetation (no amendment required)
  - [x] New planting beds (amendment required)
  - [x] New turf areas (amendment required)
  - [ ] Type of soil improvement proposed for each area
- [ ] Soil test results (required if proposing custom amendment rates)
- [ ] Product test results for proposed amendments

Total Amendment / Topsoil / Mulch for All Areas

Calculate the quantities needed for the entire site based on all of the areas identified on the Site Plan and the calculations on the following page(s):

Product	Total Quantity (CY)	Test Results
Product #1: compost	29 CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐
Product #2: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐
Product #3: _____	_____ CY	_____ % organic matter _____ C:N ratio "Stable"? yes ☐ no ☐

CY = cubic yards, C:N = Carbon:Nitrogen

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SECTION D: POST-CONSTRUCTION SOIL MANAGEMENT

Amendment / Topsoil / Mulch by Area

For each identified area on your Site Plan, provide the following information: (Use additional sheets if necessary)

Area # 1 (should match identified Area # on Site Plan)

Planting type: ☑ Turf ☐ Undisturbed native vegetation
☑ Planting Beds ☐ Other: _____

Pre-Approved Amendment Method		
☑ Amend with compost	Turf: 2,000 SF x 5.4 CY ÷ 1,000 SF = 10.8 CY Planting beds: 500 SF x 9.3 CY ÷ 1,000 SF= 4.7 CY Total Quantity = 15.5 CY Scarification depth: 8 inches	Product: compost
☐ Stockpile and amend	Turf: _____ SF x 5.4 CY ÷ 1,000 SF = _____ CY Planting beds: _____ SF x 9.3 CY ÷ 1,000 SF= _____ CY Total Quantity = _____ CY Scarification depth: 8 inches	Product: _____
☐ Topsoil import	Turf: _____ SF x 18.6 CY÷1,000 SF = _____ CY Planting beds: _____ SF x 18.6 CY ÷ 1,000 SF= _____ CY Total Quantity = _____ CY Scarification depth: 6 inches	Product: _____
Custom Amendment		
☐ Amend with compost	Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____
☐ Stockpile and amend	Attach information on bulk density, percent organic matter, moisture content, C:N ratio, and heavy metals analysis to support custom amendment rate and scarification depth. Total Quantity = _____ CY Scarification depth: _____ inches	Product: _____
Mulch		
☐ Amend with compost	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____ CY Total Quantity = _____ CY	Product: _____
☐ Stockpile and amend	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____ CY Total Quantity = _____ CY	Product: _____
☐ Topsoil import	Planting beds: _____ SF x 12.4 CY ÷ 1,000 SF= _____ CY Total Quantity = _____ CY	Product: _____

CY = cubic yards, C:N = Carbon:Nitrogen

CITY OF MERCER ISLAND

SECTION E: SIGNATURE PAGE

Project Engineer's Certification for Section B

For Stormwater Site Plans with engineered elements, the Construction SWPPP is stamped by a professional engineer licensed in the State of Washington in civil engineering.

If required, attach a page with the project engineer's seal with the following statement:

"I hereby state that this Construction Stormwater Pollution Prevention Plan for West Residence *(name of project) has been prepared by me or under my supervision and meets the standard of care and expertise which is usual and customary in this community for professional engineers. I understand that the City of Mercer Island does not and will not assume liability for the sufficiency, suitability, or performance of Construction SWPPP BMPs prepared by me."*

Applicant Signature for Full Stormwater Package (Sections A through D)

I have read and completed the Stormwater Submittal Package and know the information provided to be true and correct.

Print Applicant Name: Duffy Ellis, engineer (behalf of Millad Development)

Applicant Signature: Duffy Ellis Date Febrary 26, 2021