Stormwater Drainage Report
3745 77th Avenue SE
Mercer Island, Washington
KC Tax Parcel #545880-0500

Prepared For:

JayMarc Custom Homes, LLC
Piha Residence
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February 10, 2022

Prepared By:

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Narrative:

The subject property is located on the west side of 77th Avenue SE between SE 37th Street and SE 39th Street. The property slopes gently from west towards the northeast corner, along 77th Avenue SE. The drainage runoff from the subject property is currently sheet flowing into the gutter along the west side of 77th Avenue SE and then flows north.

The site soils are characterized between Vashon Glacial Till and infeasible for infiltration type BMP's. The subject property was visited in August 2021 and the downstream system walked and reviewed in February 2022.

The project will be evaluated for storm water treatment and control using the Amended December 2014 SWMMWW (DOE Manual).

SITE CHARACTERISTICS

Total Lot Area = 10,016 square feet

EXISTING CONDITIONS

Impervious:

House roof area (w/eaves) = 1,857 sq. feet
Uncovered driveway = 593 sq. feet ((PGHS))
Uncovered front walk = 75 sq. feet
Uncovered rear walkway/patios = 1,052 sq. feet
Impervious subtotal: *3,577 sq. feet*

Pervious:

Lawn, trees = *6,438 sq. feet*

((PGHS)) – Pollution Generating Hard Surface

DEVELOPED CONDITIONS

Impervious (hard) surfaces:

House roof area w/eaves = 3,308 sq. feet
Uncovered driveway = 659 sq. feet ((PGHS))
Uncovered patio/walkways = 518 sq. feet
Total Impervious (Hard) Surfaces = 4,485 square feet

Pervious Surfaces:

Landscaping = 5,531 sq. feet
Total Pervious Surfaces = 5,531 square feet

Summary of Project Information

Project Site Area	10,016 square feet
Existing Impervious Area	3,577 sq. feet
Existing Impervious Coverage	35.7%
New Impervious Area	908 sq. feet
Replaced Impervious Area	3,577 sq. feet
New plus Replaced Impervious	4,485 square feet
Proposed Impervious Area	4,485 square feet
Converted pervious: Native to lawn	0 sq. feet
Converted pervious: Native to pasture	0 sq. feet
Total Area of Land Disturbance	7,000 square feet

The existing property has greater than 35% (35.7%) imperious coverage and the total proposed project new plus replaced impervious surfaces will be less than 5,000 (4,485) square feet; using Figure I-2.4.2 – *"Flow Chart for Determining Minimum Requirements for Redevelopment"* page 38, 2014 Stormwater Management Manual for Western Washington, Minimum Requirements #1 – #5 apply to this project.

FLOW CHART FIGURE II-2.4.2

Figure I-2.4.1 Flow Chart for Determining Requirements for New Development

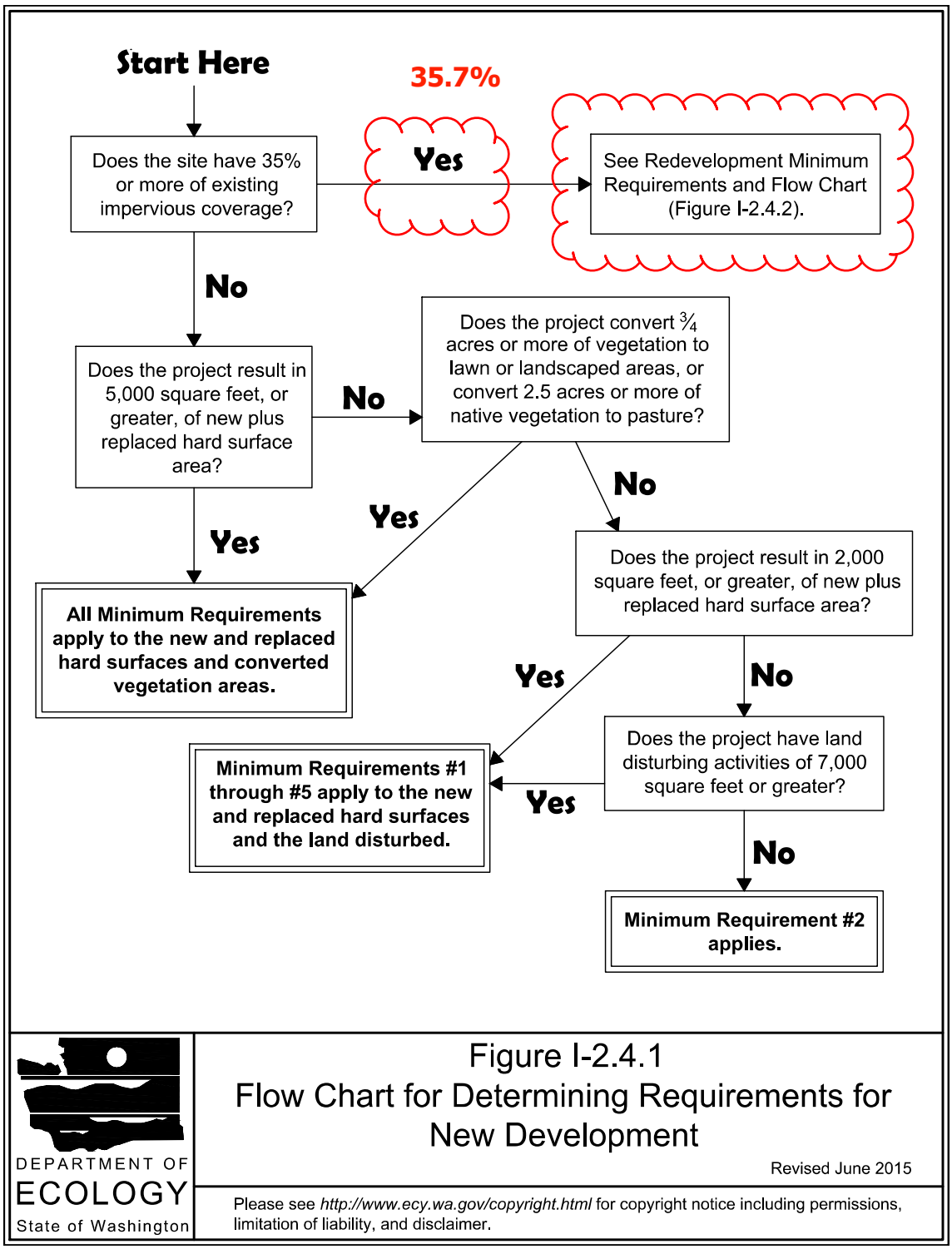
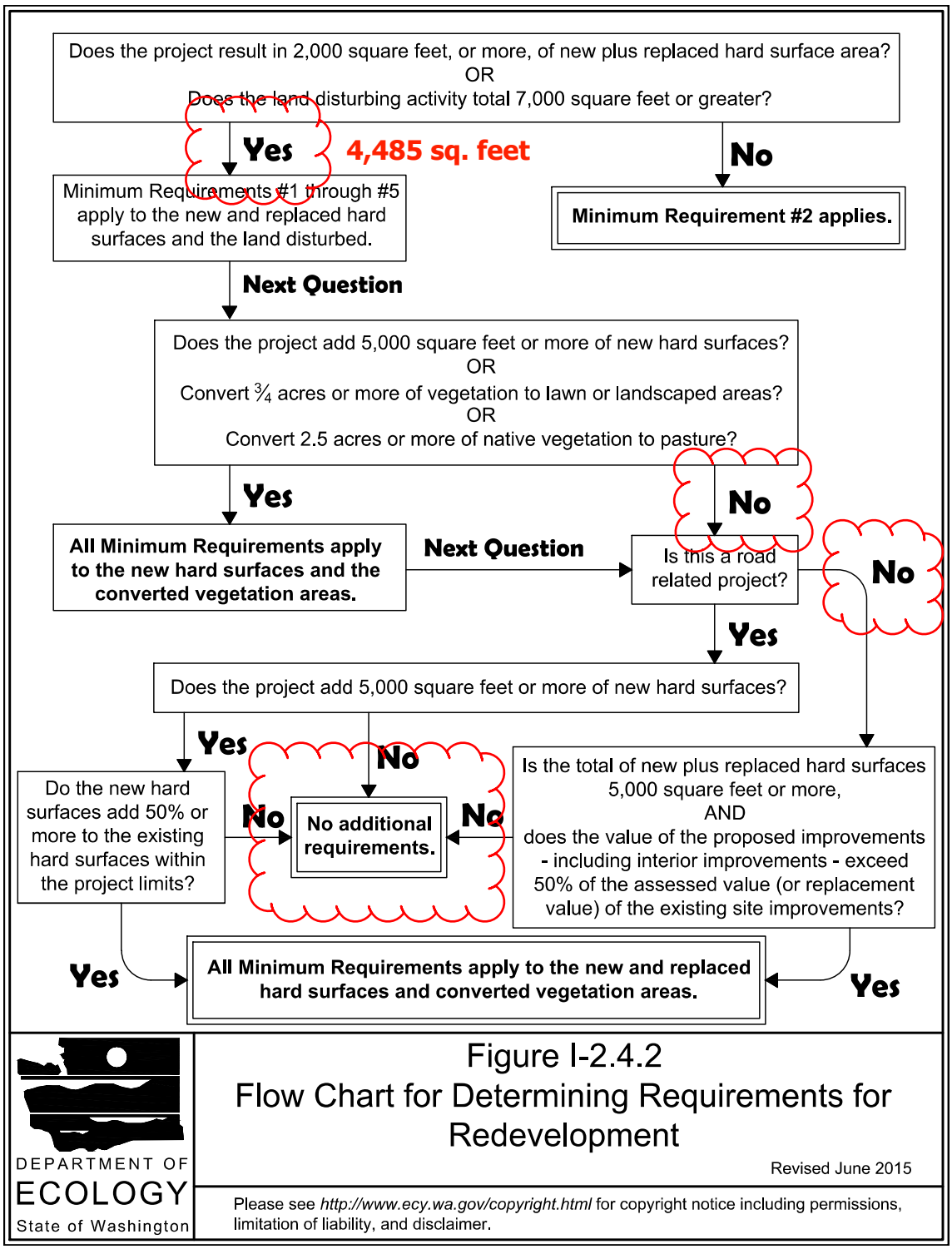


Figure I-2.4.2 Flow Chart for Determining Requirements for Redevelopment



Based upon the Flow Chart Figure I-2.4.1 and I-2.4.2 (Amended December 2014 SWMMWW, DOE Manual), the Minimum Requirements 1-5 apply to this project, see attached Flow Chart.

I-2.5.1 Minimum Requirement #1 – Preparation of Stormwater Site Plans

A Stormwater site plan (drainage plan) has been prepared for this project together with construction details for installation of the proposed drainage control system. The Stormwater site plans and drainage report shall be submitted and reviewed by the City of Mercer Island as part of the building permit application.

I-2.5.2 Minimum Requirement #2 - Construction Storm Water Pollution Prevention Plan (CSWPP)

The Stormwater site plan (Minimum Requirement #1) shall include construction installation of erosion control, establish a construction access, preservation of existing vegetation during construction, and protection of existing drainage inlets. This will include but not limited to: utilizing the existing driveway from 77th Avenue SE as a temporary construction entry; installing filter fabric silt fencing along the down gradient property lines (east and north); installation of filter socks within the public catch basins located within 77th Avenue SE; retention of native vegetated areas including tree retention within the rear yard (west); and the use straw or chipped materials placed over exposed disturbed soils to prevent runoff from carrying solids.

I-2.5.3 Minimum Requirement #3 - Source Control of Pollution

Source control BMP's will be utilized to contain pollution generating runoff. No concrete washout will be allowed on the property during construction. No fuel materials will be placed or stored on site during construction.

I-2.5.4 Minimum Requirement #4 - Preservation of Natural Drainage Systems and Outfalls

The property was visited in February 2022 to evaluate the existing drainage patterns and review the downstream drainage system. The subject property slopes gently from the west towards the northeast corner and drains into 77th Avenue SE. The drainage flows north within the gutter on the west side of 77th Avenue SE towards the intersection of 77th and SE 37th Place. Just south of the intersection, the drainage enters an existing City catch basin, #10-543. The storm inlets and catch basins were walked and reviewed from CB#10-543 to CB#10-561 at the intersection of SE 34th Street and 77th Avenue SE. Photos and comments of the downstream catch basins a follow:

CB#10-543 - inlet partially blocked, was flowing water -sump full of debris, needs maintenance
CB#10-545 - filter sock prevented access; inlet blocked – needs maintenance
CB#10-546 – filter sock prevented access; inlet clean
CB#10-47 – flowing water, sump full of debris – needs maintenance
CB#10-446 – flowing water, inlet clean, sump full – needs maintenance
CB#10-897 – flowing water, inlet clean, sump partially full of debris – needs maintenance
CB#10-561 – flowing water, inlet clean, sump partially full – need maintenance

3745 77th Avenue SE

Photo #1 – Viewing at northwest corner of Subject propert at 77th Avenue SE

Photo #2 – Viewing northwest at west gutter 77th Avenue SE

Photo #3 – Viewing northwest at 77th Avenue SE

Photo #4 – Viewing north along west side of 77th Avenue SE

Photo #5 – CB#10-543

Photo #6 – CB#10-545

Photo #7 – CB#10-117

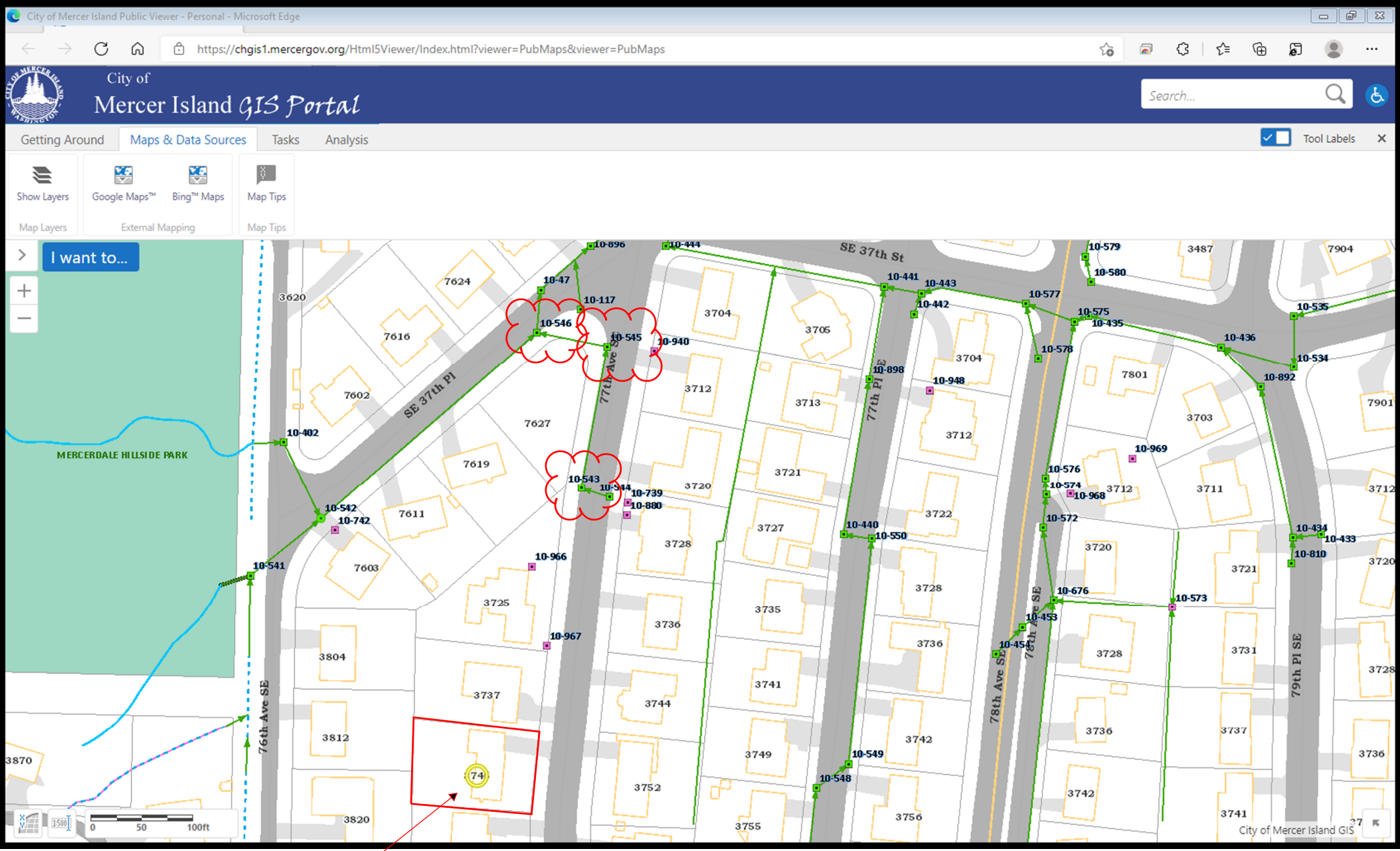
Photo #8 – CB#10-546

Photo #9 – CB#10-47

Photo #10 – CB#10-446

Photo #11 – CB#10-897

Photo #12 – CB#10-561



SUBJECT PROPERTY


City of Mercer Island Public Viewer - Personal - Microsoft Edge
https://chgis1.mercergov.org/Html5Viewer/Index.html?viewer=PubMaps&viewer=PubMaps
City of
Mercer Island GIS Portal
Search...
Getting Around
Maps & Data Sources
Tasks
Analysis
Tool Labels
Show Layers
Google Maps™
Bing™ Maps
Map Tips
Map Layers
External Mapping
Map Tips
I want to...
MERCERDALE HILLSIDE PARK
SE 34th St
SE 35th St
SE 36th St
SE 37th St
SE 37th Pl
76th Ave SE
74th Ave SE
78th Ave SE
79th Ave SE
81st Pl SE
Island Crest Way
0
100
200ft
City of Mercer Island GIS

I-2.5.5 Minimum Requirement #5 - On-Site Stormwater Management
The proposed project discharge shall be evaluated using *"List #1, On-Site Stormwater Management BMPs for projects triggering Minimum Requirements #1 - #5"* – DOE Volume 1, chapter 2, pages 56 and 57.

The subject property is located within an infiltration infeasibility area as shown the attached City of Mercer Island "*Infiltration Infeasibility Map*". A soils evaluation is not required.

List #1
Lawn and landscape areas – ***feasible -*** The use of Post-Construction Soil Quality and Depth shall be implemented within areas of the property that are not covered by hard surfaces and were disturbed during condition.

Roofs:

1.a. Full Dispersion – ***infeasible*** due to lack of available 100' of vegetated flow path downgradient from the roof area.

1.b. Full Infiltration – ***infeasible*** due to lack of permeable soils.

2. Rain Garden/Bioretention – ***infeasible*** due to lack of available area on the downgradient portion of the property (east side). there is no room in the front (east) yard of the house for this type of BMP.

3. Downspout Dispersion System – ***infeasible*** due to lack of available 50' flow path downgradient of the downspout leaders.

Other Hard Surfaces:

1. Full Dispersion – ***infeasible*** due to the lack of available 100' of vegetated flow path length.

2.a. Permeable Pavement – ***infeasible*** infiltration type BMP not recommended by City of Mercer Island Infiltration Infeasibility Map.

2.b. Rain Garden/Bioretention – ***infeasible*** due to lack of available space on the downgradient portion of the property (east side).

3. Sheet Flow Dispersion – ***infeasible*** due to lack of available 25 feet of flow path downgradient from driveway.

There are no available BMPs to provide treatment of the roof area or other hard surfaces. A new storm conveyance (12") pipe will be installed offsite from the Cities existing catch basin, 250 feet, north on 77th Avenue SE. The new system will run on the west side of 77th Avenue SE to the northeast corner of the subject property. The roof areas and pother hard surfaces on site will be collected and conveyed to the new storm system.