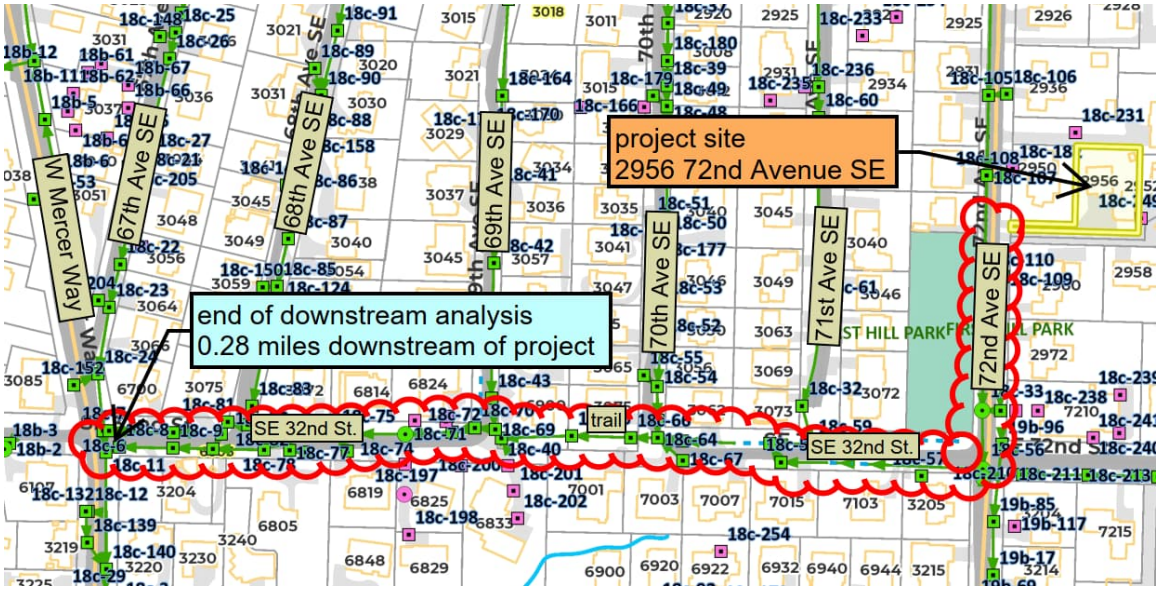
CIVIL ENGINEERING
SOLUTIONS

LEVEL 1 DOWNSTREAM ANALYSIS

Wu / Chang Residence
2956 72nd Avenue SE
Mercer Island, WA 98040

Tax Map #531510-0744
March 7, 2024
CES #2094

Stephenie Seawall, Civil Engineer
Duffy Ellis, PE



3/7/2024

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STATE OF WASHINGTON
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Ellis

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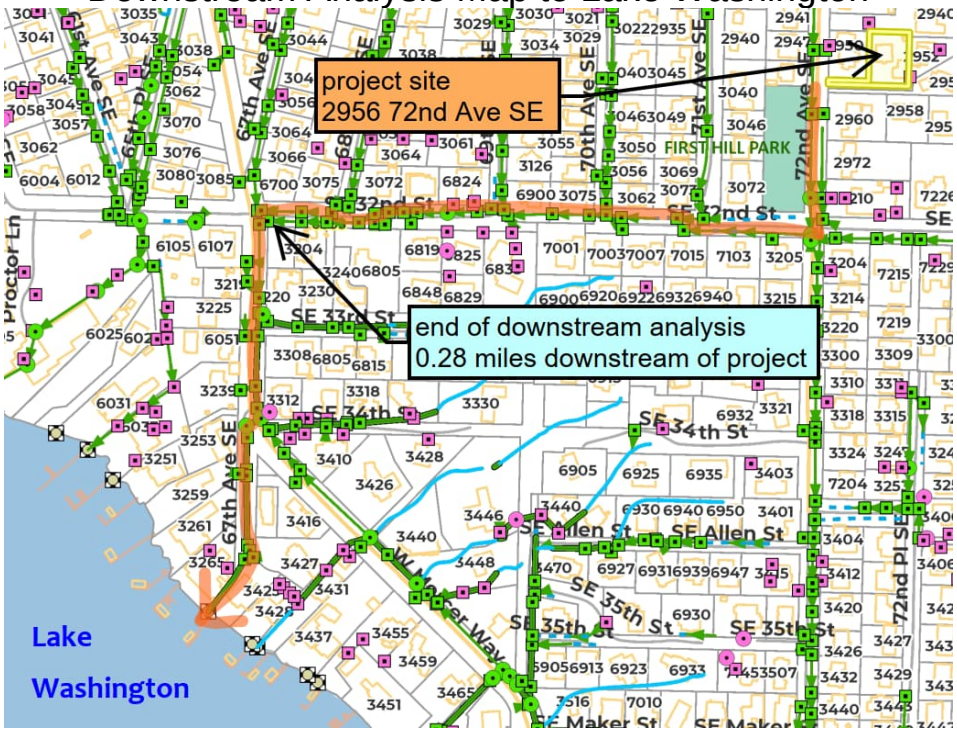
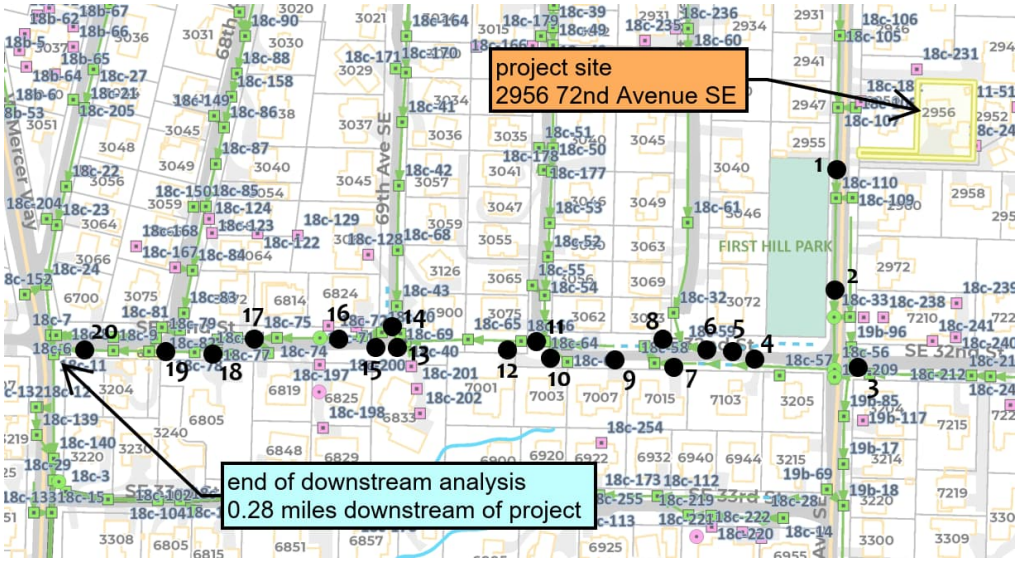
Downstream Analysis Map to Lake Washington



Downstream Analysis Map

Numbers refer to the picture numbers in the report



Executive Summary

This qualitative Downstream Analysis report is associated with the building permit application for subject property at 2956 72nd Avenue SE in northwest Mercer Island. Architect for project is Chris Luthi at CenterLine Design. Builder is Mercer Island based Aspen Homes.

The undersigned's civil engineer visited site on January 23, 2024 and did a visual verification of storm conveyance system route for approximately 0.28 miles downstream of project. The conveyance system is a mix of pipes and open ditch conveyance. See the downstream maps on the first two pages of this report. We observed no apparent evidence of chronic drainage or flooding issues for the ¼ mile section downstream of subject project. Also we observed no signs of relevant erosion in the ditch sections.

This SFR project's on-site stormwater runoff will be discharged to the public drainage system in 72nd Avenue SE as depicted on our sheet C2.0 in the building permit planset. From our research, there is one "hazard" noted at project site on the Mercer Island Maps website (Wind Speed-Up 1.6).

Downstream Flowpath Route Description

The downstream analysis began in the western ROW in front of the 2956 72nd Avenue SE (project site) driveway. From here stormwater is piped south to the intersection of SE 32nd Street. Stormwater turns at the catch basin here and heads south down a steep hill to W. Mercer Way. This corner is the end of the downstream analysis, although the water of course continues south to Lake Washington. The whole route is accessible either on the side of the road or on a trail, although not all catch basins on the map were able to be located. Based on Mercer Island utility mapping, all subject storm drain described below is 12" storm drain.

Downstream Analysis

Task 1. Study area Definition and Maps

See maps on pages 1 and 2 of this report, sourced from the Mercer Island IGS on-line mapping portal.

Task 2. Resource Review

The Mercer Island Maps IGS website was primarily utilized to review for any sensitive areas and for basic drainage information for subject site. From our research, there is one "hazard" noted at project site on the Mercer Island Maps website (Wind Speed-Up 1.6).

Task 3. Field Inspection

Offsite-Upstream drainage Inspection

This area is quite flat and developed. Stormwater problems from upstream are unlikely.

Onsite Drainage Inspection

The project lot is flat and flag-shaped with its driveway on-site. The existing house (to be removed) has its downspouts going into the ground and it is not obvious where they discharge. The garage (to remain) splash-blocks it's roof stormwater. The

driveway is gravel, and most of the driveway is proposed to remain with the new house.

Offsite—Downstream Drainage Inspection

See our maps on pages 1 and 2 of this report. ¼-mile of the downstream path was followed.

See photos on the following pages for reference.

Picture 1:

West side of 72nd Ave SE at northeast First Hill Park; looking south
Project proposes to connect into the storm pipe just upstream from here.

Picture 2:

West side of 72nd Ave SE at southeast First Hill Park; looking south
Stormwater continues south in a 12" storm pipe.

Picture 3:

SW corner of 72nd Avenue SE and SE 32nd Street; looking west
Stormwater pipe turns 90 degrees at CB below and discharges toward the west.

Picture 4:

South ROW in front of 7103 SE 32nd Street; looking east (upstream)
Stormwater coming out of a culvert.

Picture 5:
South ROW in front of 7103 SE 32nd Street garden; looking west (downstream)

Picture 6:
South ROW in front of 7103 SE 32nd Street garden; looking west (downstream)
This is the next ditch in line. Looks good.

Picture 7:

South ROW in front of 7015 SE 32nd Street; looking NW
From here the storm pipe crosses diagonally under SE 32nd Street toward the northwest.

Picture 8:

North ROW along 3073 71st Avenue SE; looking west
From here the stormwater discharges into a ditch.

Picture 9:

North ROW between 3073 71st Avenue SE and 3062 70th Avenue SE (looking west)
Note the rock right at the entrance to the pipe. It is probably doing a good job of slowing down the water entering the pipe.

Picture 10:

North ROW between 3073 71st Avenue SE and 3062 70th Avenue SE (looking west)
Note the rock right at the entrance to the pipe.

Picture 11:

Northwest corner of 70th Avenue SE and SE 32nd Street; top of trail (stairs)
Here is the last stop before the hill. No flowing water was heard here.

Picture 12:

Trail on the south side along 3075 70th Avenue SE; looking north
The map says there is a catch basin along here but engineer could not locate. There is some exposed 12" metal pipe that definitely has water flowing along inside of it.

Picture 13:

Bottom of the stairs; NE corner of 69th Avenue SE and SE 32nd Street
This is the catch basin at the bottom of the stairs.

Picture 14:

NW corner of 69th Avenue SE and SE 32nd Street; looking west

Picture 15:
End of the driveway at 6824 SE 32nd Street

Picture 16:
North ROW in front of 6824 SE 32nd Street (looking west)
Type 2 catch basin. See the next two catch basins downstream of this one.

Picture 17:

North ROW in front of 3072 68th Avenue SE (looking west)
The next two catch basins in line (2nd one is at the beginning of the curb).

Picture 18:

Southeast corner of 68th Avenue SE and SE 32nd Street
This is the first of a few catch basins with a flow-thru curb.

Picture 19:
Southwest corner of 68th Avenue SE and SE 32nd Street

Picture 20:
South ROW of SE 32nd Street in front of 3204 W. Mercer Way

Picture 21:

Southeast corner of SE 32nd Street and W. Mercer Way (looking west)
Stormwater rounds the corner here to drain toward the south to Lake Washington.