

11/2/2022

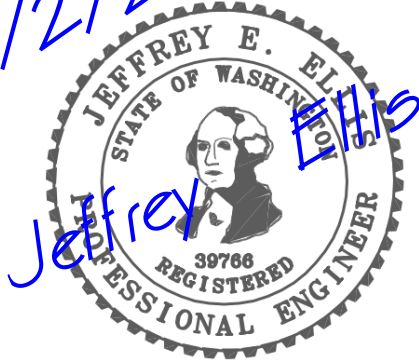
# DOWNSTREAM ANALYSIS REPORT

RKK Project  
3419 72<sup>nd</sup> Place SE  
Mercer Island, WA 98040

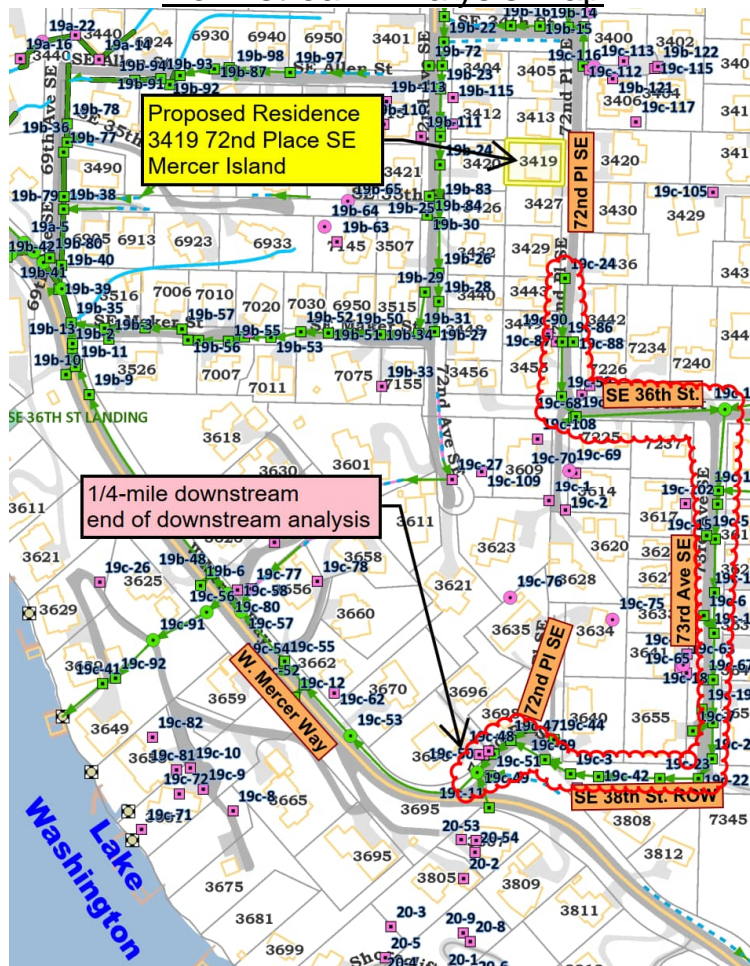
Tax Map #130030-1381  
November 2, 2022

CES #2036

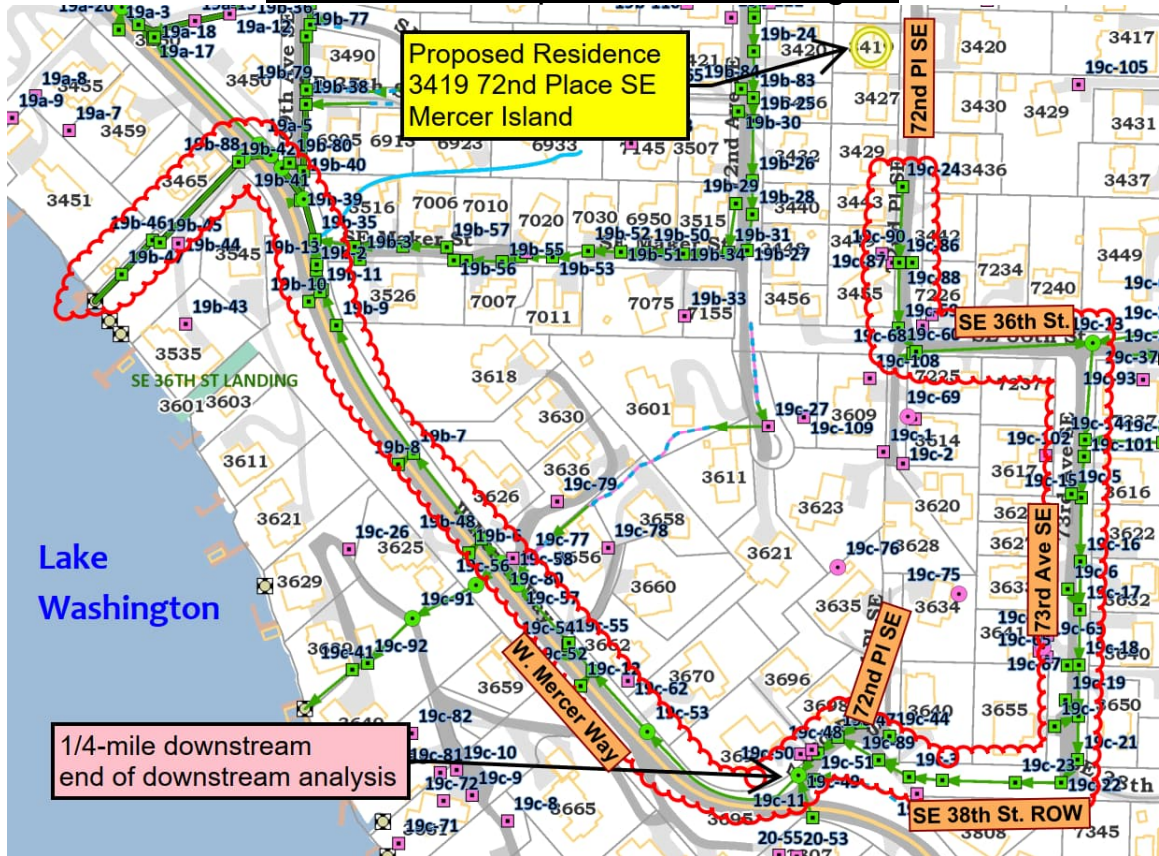
By Stephenie Seawall, Civil Engineer  
Edited by Duffy Ellis, PE



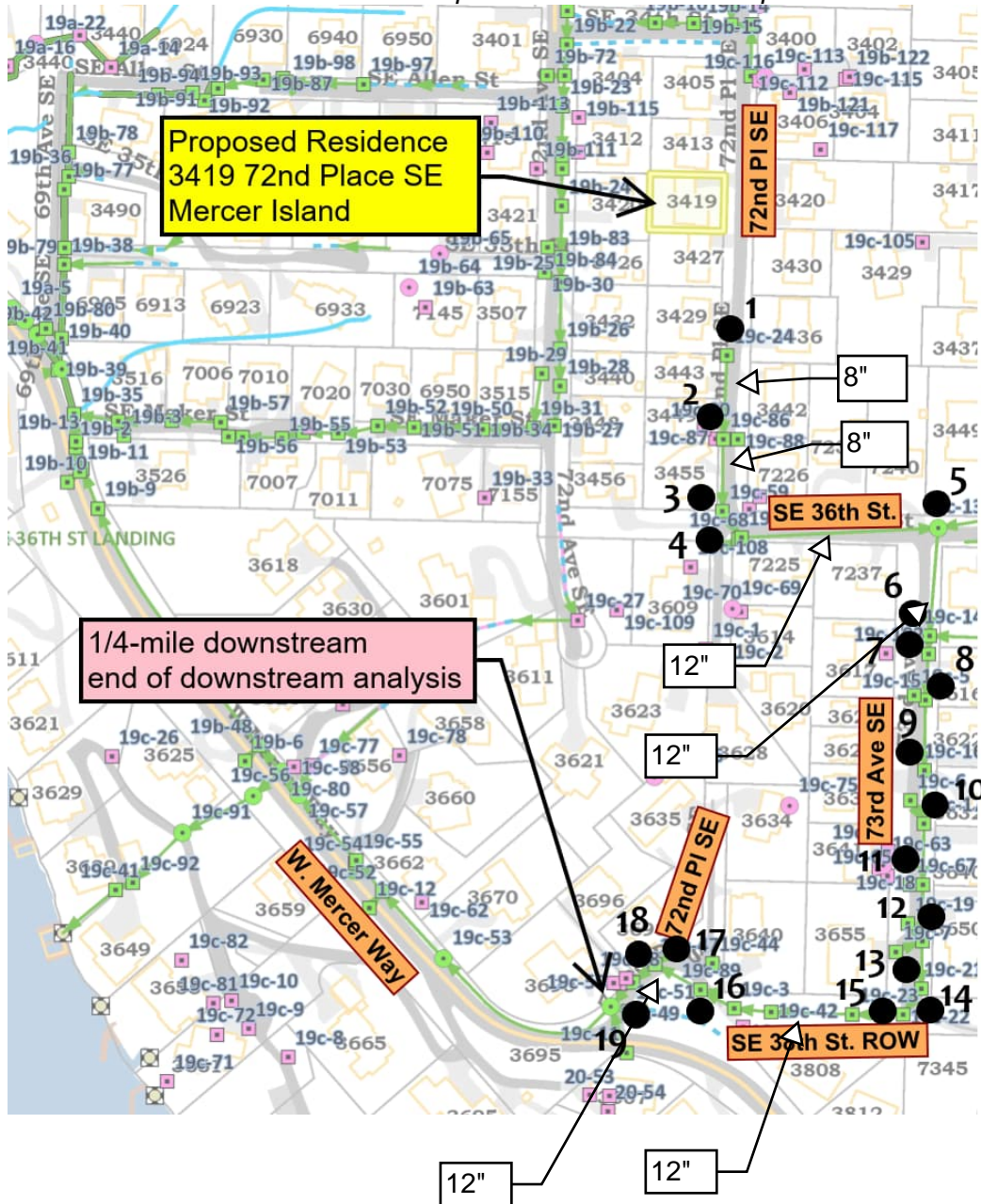
## Downstream Analysis Map



### Downstream Map to Lake Washington



Downstream Analysis Map with numbers  
Numbers refer to the picture numbers in the report



## TIR SECTION 3 OFFSITE ANALYSIS

### Summary

This Downstream Analysis of the city storm system is related to a new home proposed at subject address on Mercer Island, Washington. The subject storm system is piped for the ¼-mile analysis, and flows south in 72<sup>nd</sup> Place SE, east in SE 36<sup>th</sup> St., south in 73<sup>rd</sup> Ave SE, west under the SE 38<sup>th</sup> St. ROW (stepped path), then west in 72<sup>nd</sup> PI SE to W. Mercer Way. One would assume the storm flow capacity of pipe is substantial given there is plenty of grade drop along the route. Average grade for the ¼-mile observed is 7.6%.

The undersigned's civil engineer visited site and mapped the quarter mile downstream storm drain path to the best of her ability on October 17, 2022. See the downstream analysis maps on previous sheets for the downstream stream path that was observed. See our civil plans for on-site details which include a stormwater pump system.

A Downstream Analysis as defined in the DOE Manual Section I-3.5.3 is a qualitative survey of the downstream storm conveyance system for ¼ mile with goal of identifying any flooding problems, erosion problems, or potential impacts to wetland hydrology if applicable. Report should also identify any water quality problems as described in more detail in DOE Manual's section referenced above.

We have requested downstream drainage complaint information from City of Mercer Island at the time of submitting this document (January 12, 2022). We'll update report with any relevant information and provide report at 2<sup>nd</sup> submittal.

Below is brief summary of this downstream report:

| <i><b>Item</b></i>                       | <i><b>Findings</b></i>  | <i><b>Explanation</b></i>   |
|--|---|---|
| Flooding or drainage problems downstream | Downstream storm path is 100% underground storm drain. There was no visual evidence of flooding or drainage problems based on our field visit observations. | See pictures and maps identifying the alignment storm system verified in the field.             |
| Erosion problems                         | Downstream storm path is 100% underground storm drain. No evidence of erosion in vicinity of storm drain path based on field visit                          | See pictures and maps identifying the alignment and size of storm system verified in the field. |
| Wetland Impacts                          | Not applicable  | Not applicable  |

|               |  |  |
|---------------|--|--|
| Water quality | Downstream storm path is 100% underground storm drain. No evidence of water quality degradation based on field visit | Water quality assessment not applicable for underground storm drain. |
|---------------|--|--|

See pictures in the following report which follows the storm drain path from project. Given this analysis falls within a suburban area with storm drain infrastructure, this downstream analysis is mostly a mapping exercise to confirm the route of the storm drain system for a quarter mile beyond the point of connection by subject property.

### Flowpath Route

The downstream analysis began a few lots downhill from the project site, at the catch basin in front of 3443 72<sup>nd</sup> PI SE. Water flows south in 72<sup>nd</sup> Place SE, east in SE 36<sup>th</sup> St., south in 73<sup>rd</sup> Ave SE, west under the SE 38<sup>th</sup> St. ROW (stepped path), then west in 72<sup>nd</sup> PI SE to W. Mercer Way. Here the downstream analysis stops (1/4 mile from project site), but the water keeps going of course. It travels north in W. Mercer Way and then flows into Lake Washington.

### Downstream Analysis

#### Task 1. Study area Definition and Maps

See maps on Sheets 2 and 3 of this report, sourced from the Mercer Island IGS website.

#### Task 2. Resource Review

The Mercer Island IGS website storm drainage map was used for mapping resources.

#### Task 3. Field Inspection

##### *Offsite-Upstream drainage Inspection*

Not warranted for this site. Uphill of project lot are developed lots and ROW.

##### *Onsite Drainage Inspection*

Not warranted for this site. Proposed is pumping/piping stormwater to the discharge point (proposed storm extension).

##### *Offsite--Downstream Drainage Inspection*

See our maps on Pages 1 and 2 of this report. The downstream analysis began a few lots downhill from the project site, at the catch basin in front of 3443 72<sup>nd</sup> PI SE. Water flows south in 72<sup>nd</sup> Place SE, east in SE 36<sup>th</sup> St., south in 73<sup>rd</sup> Ave SE, west under the SE 38<sup>th</sup> St. ROW (stepped path), then west in 72<sup>nd</sup> PI SE to W. Mercer Way. Analysis concludes at the 72nd Place SE / W. Mercer Way intersection, just over ¼-mile downstream of project site. From end of analysis, water discharges into Lake Washington near 69<sup>th</sup> Avenue SE.

See photos on the following pages for reference.

Picture 1:  
ROW in front of 3443 72<sup>nd</sup> Place SE  
Storm will extend south from project site to this catch basin.



Picture 2  
ROW in front of 3449 72<sup>nd</sup> Place SE  
8" DI pipe discharging toward the south leads to this catch basin.



Picture 3  
ROW at intersection of 72<sup>nd</sup> Pl SE and SE 36<sup>th</sup> Street  
From here water turns the corner into SE 36<sup>th</sup> Street.





Picture 4  
ROW in front of 7225 SE 36<sup>th</sup> Street  
Another catch basin in line, this one under SE 36<sup>th</sup> Street.



Picture 5  
ROW in front of 3449 SE 36<sup>th</sup> Street  
From this catch basin, water turns toward the south.



Picture 6  
ROW in front of 7337 SE 36<sup>th</sup> Street  
Water discharges toward the south in this 12" concrete pipe.  
CBs are on the east side of the street on this block.



Picture 7  
ROW in front of 3616 73<sup>rd</sup> Avenue SE (north)



Picture 8  
ROW in front of 3616 73<sup>rd</sup> Avenue SE (south)  
Still flowing south



Picture 9  
ROW in front of 3622/32 73<sup>rd</sup> Avenue SE



**Picture 10**  
ROW in front of 3632 73<sup>rd</sup> Avenue SE (south)



**Picture 11**  
ROW in front of 3640 73<sup>rd</sup> Avenue SE (south)



Picture 12  
ROW in front of 3650 73<sup>rd</sup> Avenue SE  
storm direction is due south



Picture 13  
ROW at the NE corner of 73<sup>rd</sup> Avenue SE and SE 38<sup>th</sup> Street  
At this CB the storm drain makes a turn east under the SE 38<sup>th</sup> Street ROW





Picture 14  
ROW at the sw corner of 73<sup>rd</sup> Avenue SE and SE 38<sup>th</sup> Street  
runoff heading east



Picture 15:  
SE 38<sup>th</sup> Street ROW  
Engineer could not locate the two catch basins in this area.



Picture 16

bottom of stairs in SE 38<sup>th</sup> Street ROW @ 72<sup>nd</sup> Place SE  
CB at the bottom of stairs. From here runoff crosses 72<sup>nd</sup> Place SE to its west side.



**Picture 17:**  
SW side of 72<sup>nd</sup> Place SE



Picture 18  
ROW in front of 3698 72<sup>nd</sup> Place SE  
From this catch basin water heads toward the west.



Picture 19  
ROW in front of 3696 72<sup>nd</sup> Place SE



Picture 20

ROW at the NW corner of 72<sup>nd</sup> Place SE and W. Mercer Way  
From this catch basin water heads turns northwest onto W. Mercer Way



Picture 21

looking nw along West Mercer Way at 72<sup>nd</sup> Place SE  
runoff leaves the CB at Picture 20, and heads along W. Mercer Way.

