CIVIL ENGINEERING
SOLUTIONS

DOWNSTREAM ANALYSIS REPORT

Day Residence
9843 Mercerwood Drive
Mercer Island, WA 98040

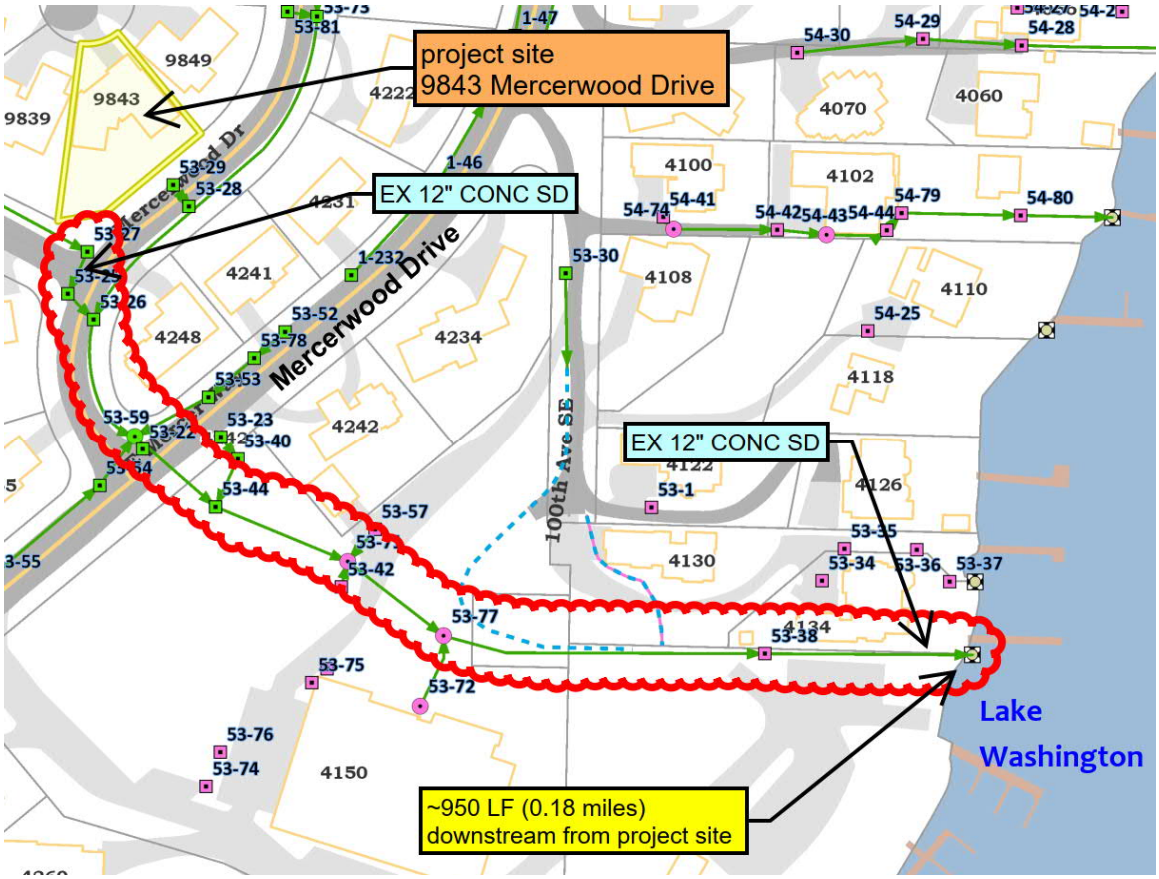
Tax Map #545600-0490
September 29, 2021

CES #2002

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

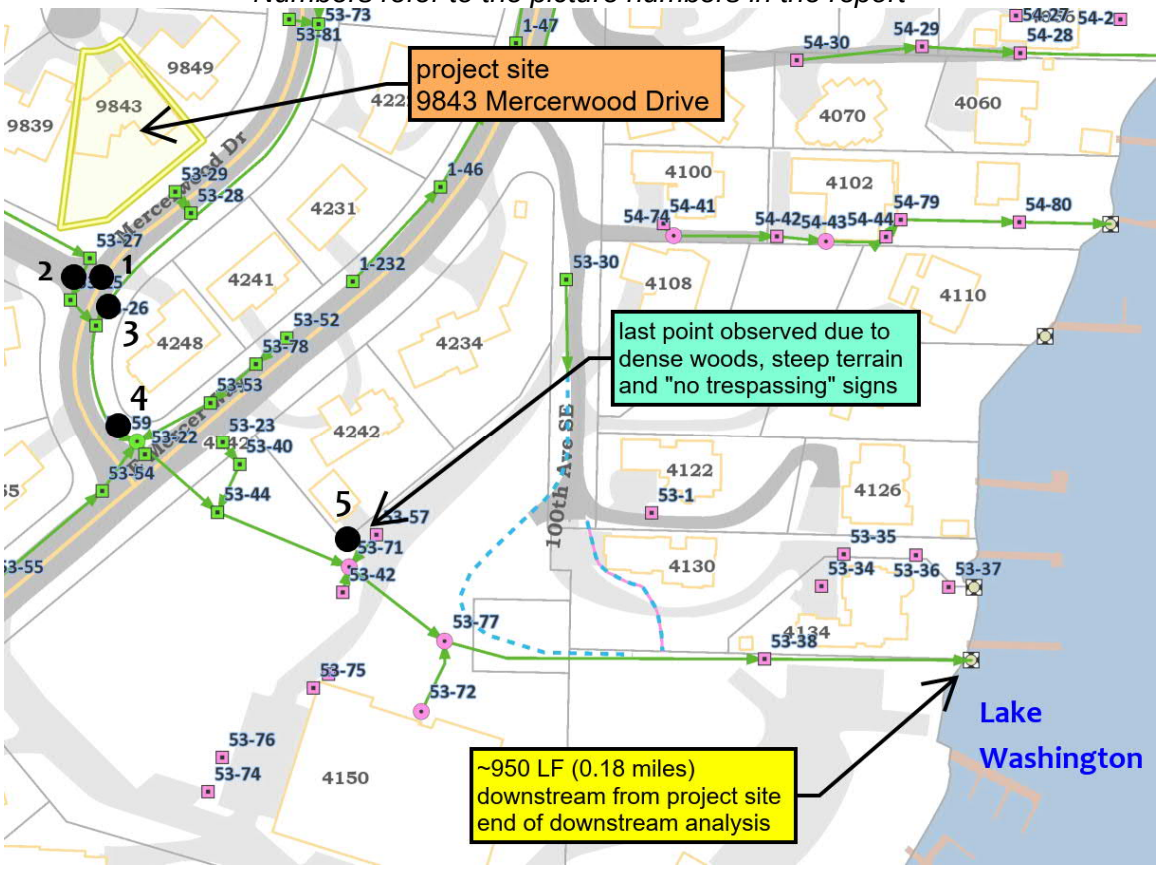
September 29, 2021
JEFFREY E. ELLIS
STATE OF WASHINGTON
39766
REGISTERED
PROFESSIONAL ENGINEER

Downstream Analysis Map



Downstream Analysis Map with numbers

Numbers refer to the picture numbers in the report



TIR SECTION 3
OFFSITE ANALYSIS

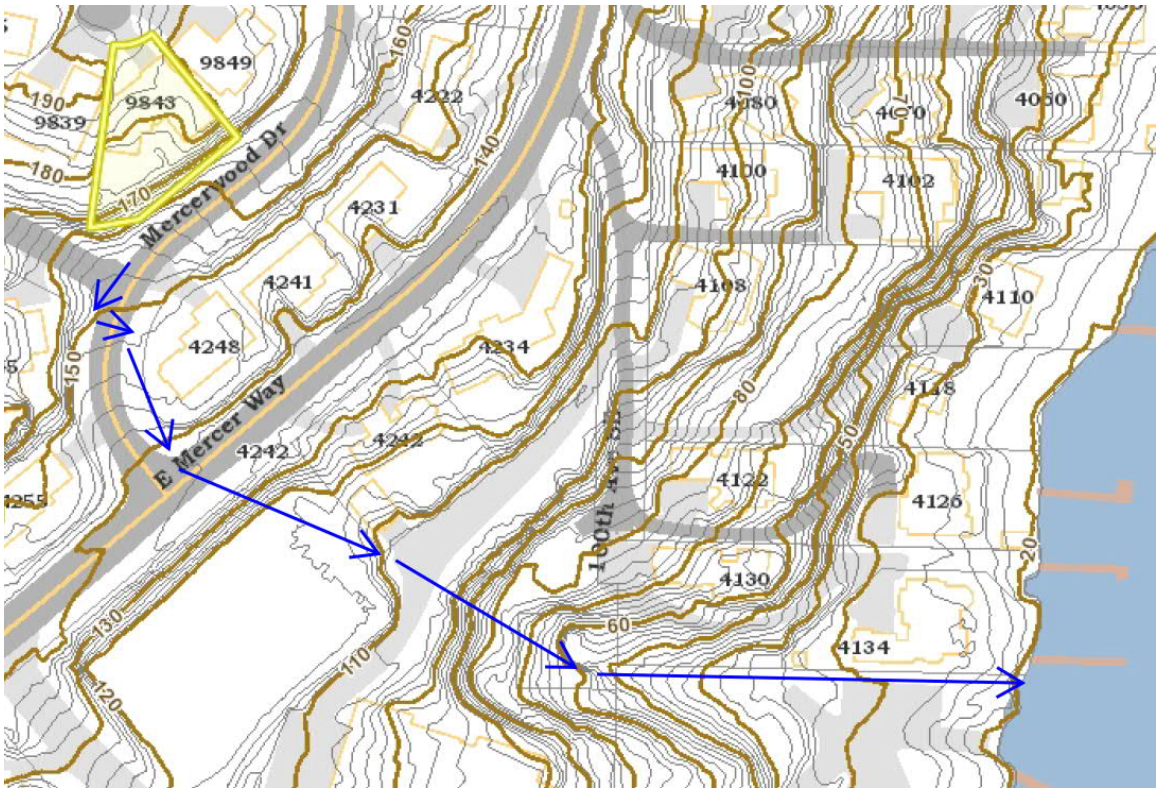
Summary

This Downstream Analysis is related to a new home proposed at subject address in Mercer Island, Washington. The project will connect to the existing storm line in Mercerwood Drive. The undersigned's civil engineer visited the site and mapped the downstream storm drain path to the best of her ability on September 21, 2021. See the downstream analysis maps above and on the previous sheet for the downstream stream path that was observed.

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.

Below is brief summary of this downstream report:

Item	***Findings***	***Explanation***
Flooding or drainage problems downstream	No evidence of based on field visit observations.	See pictures and maps identifying the alignment and size of storm system verified in the field.
Erosion problems	No evidence of based on field visit	This area has an average grade of 15% down toward the Lake Washington; see 2' contour map below. 100% of downstream flowpath is piped to the lake.
Wetland Impacts	Not applicable	Not applicable
Water quality	No evidence of based on field visit	Water quality assessment not applicable for underground storm drain.



See pictures in the report following. This downstream analysis is mostly a mapping exercise to confirm the route of the storm drain system for a quarter mile (0.2 miles in this case) beyond the point of connection by subject property. We have limited ability to know condition of the underground storm drain system.

Flowpath Route

The downstream analysis began at the downhill corner of the project site at SE 43rd Place and Mercerwood Drive, and continued down the hill to Lake Washington, about 950 LF. This area is piped. Pictures were taken of the catch basin lids confirming the storm drain location & route. See the maps on pages 1 and 2 for the route. The average grade is 15%.

It should be noted that "no trespassing" signs abound at the lower section of the country club (Mercerwood Shore Club), and this is the only access to the lower part of the flowpath, therefore the lowest part of the flowpath that is accessible is the catch basin (lid) at 100th Avenue SE. See this note on page 2 of this report.

Downstream Analysis

Task 1. Study area Definition and Maps

See maps on pages 1 and 2 of this report, sourced from the Mercer Island GIS Portal website.

Task 2. Resource Review

Mercer Island GIS 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.

Onsite Drainage Inspection

Not warranted for this site. Proposed is to pipe stormwater to the existing storm system.

Offsite--Downstream Drainage Inspection

See our maps on Pages 1 and 2 of this report. Downstream analysis was started at the corner of SE 43rd Place and Mercerwood Drive and continued southeasterly to Lake Washington (although as mentioned above, the latter part of the downstream analysis was inaccessible). All of the flowpath in this area is piped.

See photos on the following pages for reference.

Picture 1: northernmost corner of Mercerwood Drive and SE 43rd Place
Existing house is up the hill on the right side of the picture. The catch basin we propose to connect to is circled; it's hard to see because of the shadows.

Picture 2: westernmost corner of Mercerwood Drive and SE 43rd Place
Catch basin across 43rd Place SE from the first one.

Picture 3: southernmost corner of Mercerwood Drive and SE 43rd Place
Following the mapped flowpath, this catch basin is across Mercerwood Drive.

Picture 4: northernmost corner of Mercerwood Drive and East Mercer Way

The catch basin in question is the one that is labeled “sewer”. The other is an offshoot that leads back to it. From here the water heads across East Mercer Way and under the tennis courts to 100th Avenue SE (access road).

Picture 5: on the access road at 4242 East Mercer Way (residence)
Flowing water was heard down in this catch basin, an indication that it is working properly. From here water crosses southeast under the access road and enters a steep, wooded area which is inaccessible. This engineer could not personally verify the downstream path from here but it is likely all underground anyway.