



June 3, 2022

Project: Hu Residence
Site Address: 2448 72nd Avenue SE, Mercer Island, WA 98040
King County Parcel No: 531510-0366

DOWNSTREAM ANALYSIS REPORT

Task 1: Study Area Definition and Maps

A Downstream Analysis has been performed for the subject site per Section I-3.5.3 of the 2019 DOE SWMMWW. This project is located at 2448 72nd Avenue SE in the City of Mercer Island on a 7,200 SF parcel. The site is currently developed with a single-family residence, and contains site access via a driveway from 72nd Avenue SE. The site is bordered by 72nd Avenue SE to the west, and single-family residences to the north, south, and east. The topography of the site gently slopes to the northeast at grades ranging between 2-5%. Properties upslope to the south may contribute some stormwater runoff onto the site in the form of sheet and interflow from lawn and pervious runoff. It was observed that the roof downspouts surrounding the residence were discharging runoff directly underground into a roof drain system that is assumed to connect to the 72nd Avenue SE stormwater system. A downstream map showing the study area is included in Figure 1.

Task 2: Resource Review

Encompass has reviewed the site and the applicable resources for both listed and potential problems. According to Mercer Island GIS Portal, the central portion of the site falls within a potential landslide area. The site is located within the Mercer Island drainage basin, within the Cedar River/Lake Washington watershed according to King County iMap.

Task 3: Field Inspection

The field portion of the Level 1 Downstream Analysis was performed by Encompass Engineering & Surveying on Monday, March 7th, 2022. The analysis was performed at approximately 12:00 PM with a temperature of about 50°. Weather conditions were overcast, and soil conditions were observed to be relatively wet. Information collected during this study is included in the Task 4 system description.

Task 4: Drainage System Description and Problem Descriptions

Stormwater runoff leaves the site through one natural discharge area (NDA), creating a single threshold discharge area (TDA) for the site. The runoff from the existing single-family residence (roof) is conveyed directly into an underground roof drain system (A) that connects to the public stormwater system (ditch) along the eastern side of 72nd Avenue SE (B). Runoff from the surrounding lawn sheet flows to the northeast across the downstream neighboring properties. Rooftop runoff is discharged to the ditch along the eastern side of 72nd Ave SE, it runs to the north for about 100 FT until reaching a type 1 catch basin location (C) where the stormwater ditch changes into an underground system. In 200 FT from this point, the system outlets the runoff back into a ditch via an 8" concrete culvert (D). After another 250 FT, the system reaches the intersection of 72nd Avenue SE and SE 24th Street. At this point is a type 2 catch basin location (E), where the stormwater begins being conveyed to the east along SE 24th Street. After heading east for 600 FT, the system crosses the intersection of SE 24th

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Street and 74th Ave SE which is where a type 1 catch basin location is located (F). This is approximately where surface water flows from the lawn would intercept with the public stormwater system. Shortly after this intersection, the ¼ mile downstream limit was reached at another type 1 catch basin location (G). This is where the downstream analysis was concluded. No problems or capacity constraints in the downstream storm system were identified. See Figure 1 below for a detailed Downstream Map.

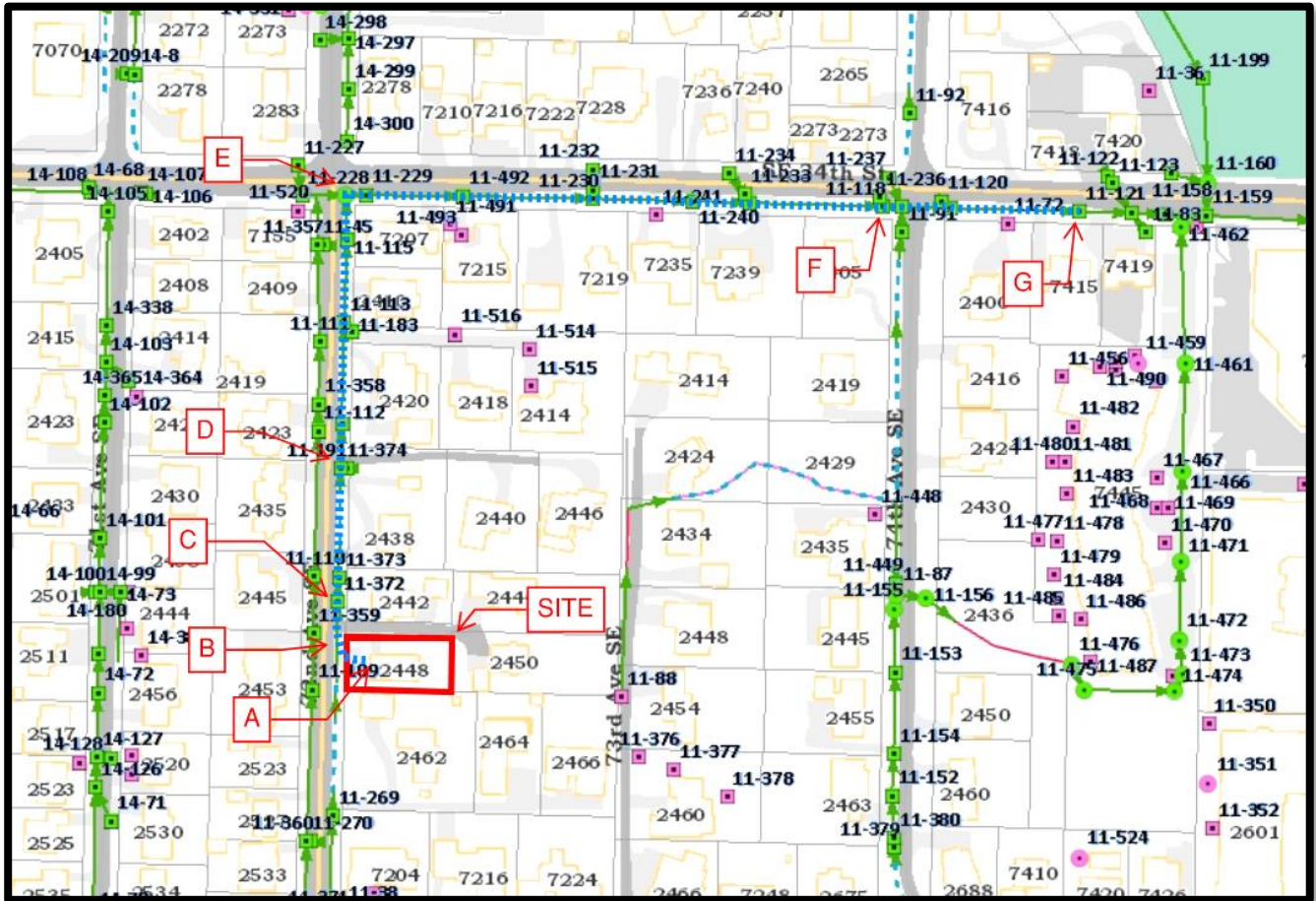


Figure 1: Downstream Map



Element A: Downspouts connect to underground roof drain system



Element B: Stormwater ditch along eastern site frontage



Element C: Type 1 CB along eastern side of 72nd Avenue SE



Element D: 8" concrete culvert along eastern side of 72nd Avenue SE



Element E: Type 2 CB at intersection of 72nd Avenue SE and SE 24th Street



Element F: Type 1 CB at intersection of SE 24th Street and 74th Avenue SE



Element G: Type 1 CB at ¼ mile downstream limit