

July 12, 2019

Mr. Evan Maxim
City of Mercer Island Community Planning and Development
9611 SE 36th Street
Mercer Island, WA 98040-3732

RE: GEOTECHNICAL THIRD-PARTY REVIEW, 5637 EAST MERCER WAY,
CITY OF MERCER ISLAND PROJECT NO. CAO15-001

Dear Mr. Maxim:

This letter summarizes our third-party geotechnical review for the proposed development at 5637 East Mercer Way, Mercer Island, Washington. The documents that we reviewed are listed at the end of this letter. Several documents were prepared as part of a previous geotechnical third-party review by Perrone Consulting, Inc. (Perrone). Additional geotechnical documents were issued by the Applicant's geotechnical engineer, Geo Group Northwest (GGNW) after Perrone completed their review.

The purpose of our review was to evaluate whether the geotechnical conclusions and recommendations meet the requirements in Mercer Island City Code (MICC) 19.07.060 for development in Geologic Hazard Areas.

HAZARD ASSESSMENT

The property is located within mapped landslide, erosion, and seismic hazard areas (Troost and Wisher, 2009a, 2009b, 2009c). Because of the geologic hazard designations, alterations resulting from the proposed development must meet the conditions in MICC 19.07.060 D(1) and the Applicant's geotechnical engineer must submit a Statement of Risk demonstrating that the one of the conditions in MICC 19.07.060 D(2) can be met.

GGNW provided a Statement of Risk in their geotechnical report (GGNW, 2015c) concluding that the proposed development, as it was planned when they issued the report in March 2015, met the following condition of MICC 19.07.060 D(2a).

"The geologic hazard area will be modified, or the development has been designed so that the risk to the lot and adjacent property is eliminated or mitigated such that the site is determined to be safe."

Perrone performed a third-party geotechnical review of the GGNW report. After several communications between Perrone and GGNW, we understand Perrone concluded their review with an email on May 3, 2016. In the email, Perrone stated that GGNW had adequately addressed their remaining geotechnical design issues and that there were no outstanding geotechnical issues.

After the Perrone review was completed, GGNW issued two documents in response to requests from the City. These requests were related to a proposed Reasonable Use Exemption and SEPA Determination.

- The first document is a Geotechnical Report Addendum with “Potential Adverse Impacts to Adjacent and Downhill Properties” in the subject line (GGNW, 2017). This addendum lists measures that “will improve the stability of the proposed development and have no adverse impacts on adjacent properties.” In our opinion, the proposed development does have potential adverse impacts, yet none are identified in the addendum.
- GGNW’s issued a second Geotechnical Report Addendum commenting on a change in the location of the proposed residence on the property (GGNW, 2018). We understand that the proposed location moved approximately 15 feet to the east to reduce wetland impacts. Finish floor elevations also changed based on site plans presented in Sewall (2018). These changes were made after Perrone completed their review. In this addendum, GGNW states that the conclusions in the first addendum (GGNW, 2017) “apply to the updated location” and “potential impacts to adjacent and downhill properties have been addressed in our report dated May 3, 2017 Geotechnical Report Addendum.” As stated above, it is our opinion that potential adverse impacts do exist, however, they are not identified in either addendum.

We acknowledge that GGNW has recommended several measures that address potential adverse impacts and mitigate risks from the geologic hazards. For example, the recommendation to support the proposed residence on pile foundations mitigates risks from seismic hazards, particularly liquefaction. These mitigation measures, however, are scattered among various documents. Most of these documents were prepared in response to the Perrone review, and these documents are not referenced in the recent GGNW addenda. Also, it is not evident that each of the mitigation measures recommended in previous documents, such as a catchment wall discussed in a GGNW letter (2016b), are appropriate for the revised location and elevation of the proposed residence.

Both addenda reference the GGNW Geotechnical Engineering Study (2015c). In our opinion, the Statement of Risk presented in that report is outdated because it was prepared before recent changes to the location and elevation of the proposed residence, nor does it

provide sufficient discussion to establish that the condition in MICC 19.07.060 D(2a) is met for the current design. Therefore,

1. We recommend that the Applicant's geotechnical engineer submit an updated Statement of Risk that addresses:
 - a. each of the geologic hazards present at the site (landslide, erosion, and seismic hazards),
 - b. potential adverse impacts (such as potential slope instability that could occur from excavation into a steep slope with groundwater seepage), and
 - c. the recommended measures that will eliminate or mitigate the risks.

The Statement of Risk should specifically state how the geologic hazard area will be modified, or how the development has been designed so that the risks to the lot and adjacent properties are eliminated or mitigated. These statements would support the claim that the proposed development meets the condition in MICC 19.07.060 D(2a), if that remains the position of the Applicant's geotechnical engineer.

ADDITIONAL COMMENTS

Based on our review, we have the following additional comments regarding geotechnical issues related to the proposed development.

2. Please confirm that the Site Plan dated August 9, 2018 by Healey Architects is the current version or provide updated design drawings if available. The drawings should show the location and elevation(s) of the proposed residence; elevation contours; excavation locations and depths; proposed fill areas and thicknesses, and retaining structure locations, types, and top/toe elevations.
3. Please state whether previous opinions, conclusions, and recommendations regarding slope stability on the subject property and adjacent properties, such as the probable slope failure mode, measures to maintain slope stability during construction, temporary excavation slopes, etc. are still valid given the design changes, or revise if necessary.
4. Describe proposed retaining walls and confirm that the lateral pressure and other wall recommendations made in previous documents are valid. Revise if necessary.
5. If not included in the updated Statement of Risk, please list each recommended mitigation measure, the geologic hazard the measure applies to, and the risk(s) it is intended to reduce or eliminate.

In our opinion, submittal of an updated Statement of Risk that provides the information requested above, and appropriate responses to the other comments listed in this letter, could be included as conditions of approval in a Mitigated Determination of Non-significance.

CLOSURE

We appreciate the opportunity to be of service. If you have questions, please contact us.

Sincerely,

SHANNON & WILSON



Steven R. McMullen, P.E.
Geotechnical Engineer

BWC:KLW:MWP:SRM/bwc

REVIEWED DOCUMENTS

- Core Design, 2019, Re: MI Treehouse CAO 15-001 and SEPA15-001 Reasonable Use Exception ESA Memorandum (12-06-2018), CORE Project No. 18039: Letter prepared February 21.
- MI Treehouse, LLC, 2019, Re: MI Treehouse Reasonable Use Exception Application CAO 15-001 and SEPA15-001: Letter prepared January 24.
- Sewall Wetland Consulting, Inc, 2019, 5637 East Mercer Way – Parcel #1924059312, City of Mercer Island, Washington, SWC Job#14-206: Letter prepared January 24.
- Mercer Island City Code, 2019, Geologic Hazard Areas, Section 19.07.060, 2 p., January 15.
- Versatile Drilling, Contractors, Inc., 2019, Proposed Residence – Pipe Piling, 5637 E. Mercer Way, Mercer Island, WA: Letter prepared January 21.
- Geo Group Northwest, Inc., 2018, Geotechnical Report Addendum, Response to City of Mercer Island Letter dated November 16, 2018; RE: Proposed Residence; 5637 East Mercer Way, Mercer Island, WA 98040: Letter prepared November 28.
- City of Mercer Island, 2018, RE: CAO15-001 and SEP15-001 – MI Treehouse Reasonable Use Exemption and SEPA Determination: Letter prepared November 16.
- Sewall Wetland Consulting, Inc, 2018, 5637 East Mercer Way – Parcel #1924059312, City of Mercer Island, Washington, Letter prepared August 23.
- Sewall Wetland Consulting, Inc, 2017, 5637 east Mercer Way – Parcel #1924059312, City of Mercer Island, Washington: Letter prepared December 1.
- City of Mercer Island, 2017a, RE: CAO15-001 and SEP15-001 – MI Treehouse Reasonable Use Exemption and SEPA Determination: Letter prepared July 17.
- Geo Group Northwest, Inc., 2017, Geotechnical Report Addendum, Potential Adverse Impacts to Adjacent and Downhill Properties, 5637 East Mercer Way, Mercer Island, WA 98040: Letter prepared May 3.
- Perrone Consulting, Inc., P.S, 2016a, 5637 E Mercer Way Geotechnical Review, Electronic mail message from Vincent Perrone to Travis Saunders: May 3.
- Geo Group Northwest, Inc., 2016a, Response to March 4, 2016, Third Party Review by Perrone Consulting Inc., 5637 E. Mercer Way, Mercer Island, WA: Letter prepared April 27.
- City of Mercer Island, 2017b, Determination of Significance (DS) and Request for Comments on Scope of EIS: Letter prepared March 20.

- Perrone Consulting, Inc., P.S, 2016b, Geotechnical Third-Party Review, Response to February 4, 2016 Geo Group NW Letter, 5637 E. Mercer Way, Mercer Island, Washington, Perrone Consulting Project #15124: Letter prepared March 16.
- Geo Group Northwest, Inc., 2016b, Response to November 18, 2015, Geotechnical Third-Party Review Comments, Proposed Residence, 5637 East Mercer Way, Mercer Island, Washington: Letter prepared February 4.
- Perrone Consulting, Inc., P.S, 2015a, Geotechnical Third-Party Review, 5637 E. Mercer Way, Mercer Island, Washington, Perrone Consulting Project #15124: Letter prepared November 18.
- Geo Group Northwest, Inc., 2015a, Response to September 3, 2015, Geotechnical Third-Party Review Comments, Proposed Residence, 5637 East Mercer Way, Mercer Island, Washington: Letter prepared October 28.
- Perrone Consulting, Inc., P.S, 2015b, Geotechnical Third-Party Review, 5637 E. Mercer Way, Mercer Island, Washington, Perrone Consulting Project #15124: Letter prepared September 3.
- Geo Group Northwest, Inc., 2015b, Response to Geotechnical Third-Party Review Comments, Proposed Residence, 5637 East Mercer Way, Mercer Island, Washington: Letter prepared July 30.
- Perrone Consulting, Inc., P.S, 2015c, Geotechnical Third-Party Review, 5637 E. Mercer Way, Mercer Island, Washington, Perrone Consulting Project #15124: Letter prepared June 12.
- Geo Group Northwest, Inc., 2015c, Geotechnical Engineering Study, Proposed Residence, 5637 East Mercer Way, Mercer Island, Washington: Report dated March 13.
- Troost, Kathy G. and Wisner, Aaron P., 2009a, Mercer Island Erosion Hazard Assessment: <http://www.mercergov.org/files/ErosionHazard2009.pdf>; April.
- Troost, Kathy G. and Wisner, Aaron P., 2009b, Mercer Island Landslide Hazard Assessment; <http://www.mercergov.org/files/LandslideHazard2009.pdf>; April.
- Troost, Kathy G. and Wisner, Aaron P., 2009c, Mercer Island Seismic Hazard Assessment, <http://www.mercergov.org/files/SeismicHazard2009.pdf>; April.