March 4, 2019

Evan Maxim
Director of Community Planning and Development
City of Mercer Island
9611 S.E. 36th Street
Mercer Island, WA 98040

Re: CAO 15-001, SEP 15-001, VAR 18-002
Containment Wall Requirement

Dear Mr. Maxim,

On July 25, 2018, you and City Attorney Kari Sand were kind enough to meet with neighbors from the vicinity of the proposed residence. At that time, I raised a number of points including my concern that the then applicable plan for the residence did not include a containment wall which satisfactorily resolves the landslide risk for the future owners of the proposed residence. In reviewing the documents subsequently produced by the City to me, I see that the latest plan also does not correct this problem. Because of this, I am again raising this problem which involves the issue of safety. I am writing a separate letter on this matter as it involves a narrow and discrete point that is not closely related to other issues. I plan to write to you shortly concerning the other issues.

In discussing this, it is helpful to review the correspondence by the Treehouse expert GEO Group Northwest, Inc. ("GEO") and peer reviewer Perrone Consulting Inc. ("Perrone"). This correspondence is found in Exhibits 10a-e and Exhibits 11a-e in the hearing before the Hearing Examiner. In Perrone's initial comments dated June 12, 2015, the recommendation is made that GEO address the question as to whether "additional protections such as a debris catchment wall will be required to protect the proposed structure." In this regard, Perrone points out that GEO incorrectly referred to the steep ravine slopes as a "potential" landslide area when it was in fact a "known" landslide area and could pose a threat.

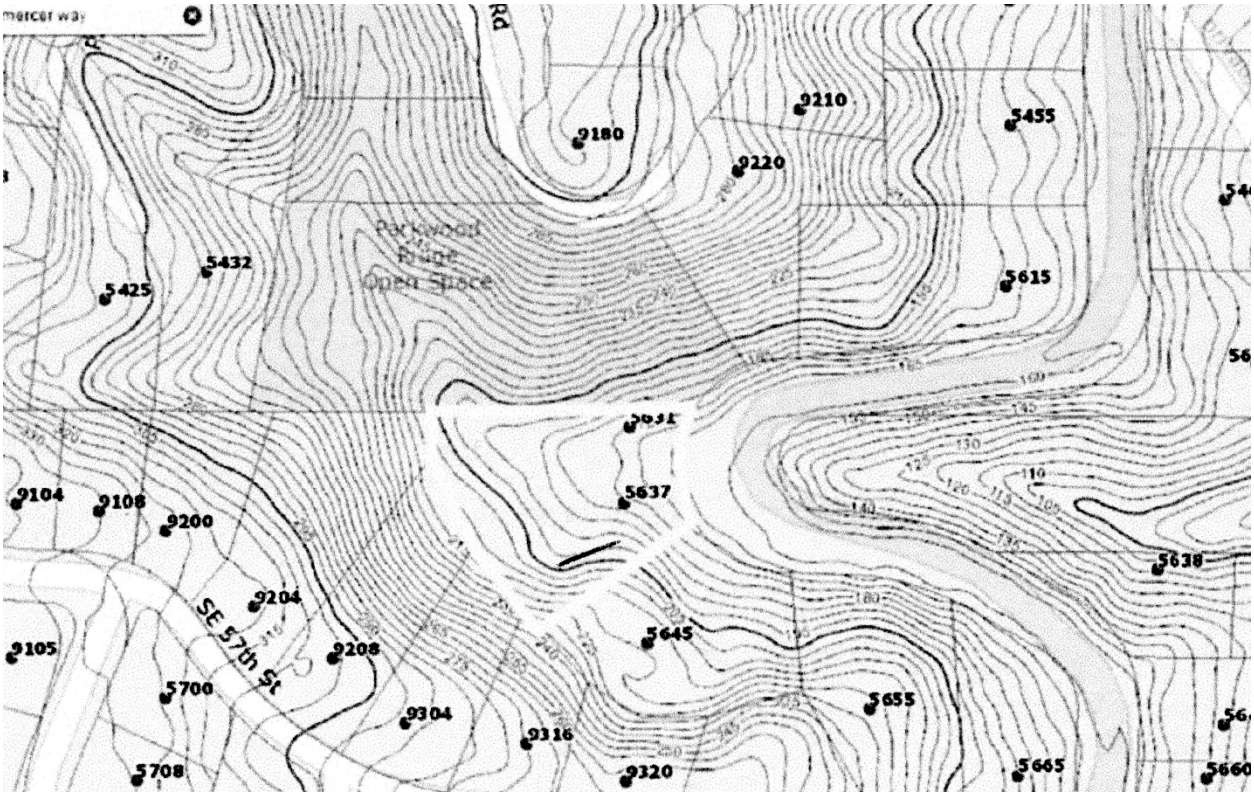
GEO on July 30, 2015, responded with a number of recommendations including one that provides that "the bottom 4 feet of the above-grade portion of the exterior southeast wall of the residence be designed as a catchment wall to retain potential debris in the unlikely event of significant slope movement." The Perrone letter of September 3, 2015, then opined that the GEO "geotechnical engineering conclusions and recommendations are based on insufficient subsurface information." It also stated: "The large thickness of loose, wet soil on the lower portions of the steep slope suggests a significant risk of landsliding that should be evaluated and quantified."

On October 2, 2015, GEO directed the drilling of a new exploratory soil boring which was in addition to the two boring that had been performed years earlier in 1999. With this new information, GEO described in its letter of October 28, 2015, a greater risk that it had previously.

It stated: “However, there is a potential for failure of the loose sandy soils in the slope over the long term, particularly in high-intensity seismic events or if exceptionally high groundwater levels develop in the sandy soils up the slope.” It is very important to note that in view of the higher risk, GEO no longer advocated using the exterior southeast wall of the residence as a catchment wall. Rather, it makes the following recommendation at page 4 of its letter:

> Protection of the residence from slope failure of the types identified from the slope stability analysis results can be provided by constructing an engineered catchment/retaining wall at or near the base of the steep slope **south and southwest** [emphasis added] of the proposed residence location. We recommend that the wall have a minimum height of 6 feet above final grade as measured on its upper slope.

The reference to the “steep slope south and southwest of the proposed residence” is clearly understandable as the steepest slopes are in those directions. This can be seen by the topographic map of the area found in the GEO letter of February 4, 2016, at page 3 and shown below:




The black line superimposed on the map is the approximate location of the southeast wall of the proposed residence. The slope to the southeast of the residence is relatively mild compared to the very steep slopes south and southwest of the residence.

Perrone responded to the GEO letter of October 28, 2015, on November 18, 2015. Perrone found that the horizontal seismic coefficient factor used by GEO was not correct. It therefore recommended that the seismic slope stability analysis be revised and used to provide the catchment wall design parameters including wall height needed to contain the unstable volume of landslide material. Based on the revised calculations, GEO in its letter of February 4, 2016, raised the minimum height of the catchment wall from six to eight feet. It stated that the wall should be placed "at or near the base of the steep slope." It also stated that "the wall alignment should run south of the residence and continue around the southwest corner a distance of another approximately 20 feet."

In a letter dated April 27, 2016, GEO refers to a catchment wall being incorporated into the building. However, there is no reference in the letter to the direction in which the catchment wall should be aligned. The GEO letter of October 2, 2015, refers to placing the wall "at or near the base of the steep slope south and southwest of the proposed residence location." As shown by the topographic map above, the very steep slopes are to the southwest and south of the residence, and **not** to the southeast.

The plan submitted by Treehouse subsequent to the hearing shows a catchment wall built into the southeast wall of the residence facing the slope to the southeast. GEO had originally proposed in its letter of July 30, 2015, a catchment wall for the southeast wall of the residence, but this idea was subsequently abandoned. Rather, GEO recommended that "the wall alignment should run south of the residence **and continue around the southwest corner a distance of another approximately 20 feet**." [Emphasis added.] Using the southeast wall of the residence as a catchment wall simply does not comply with this requirement. The proposed residence remains exposed to landslides from the steep slopes to the southwest and south of the residence. Aside from the topographic map, one can readily see from a visit to the site that the slopes to the southwest and south of the residence are far steeper, more precipitous, and much higher than the slope to the southeast.

Based on the foregoing, it is submitted that the current plan for the proposed residence does not comply with the safety criterion specified in 19.07.030(B)(3)(e). This is simply one of many reasons why the Treehouse application should not be supported by the City.

Sincerely yours,

Peter M. Anderson