

January 8, 2020
Project No. 18-0787

Coast Construction Group
328 N. Olympic Avenue
Arlington, WA 98223

Attn.: Mr. Trevor Gaskin

Re: Addendum to Geotechnical Engineering Report
Proposed 7C's Swim Facility
SW Corner of North Creek Drive and Dumas Road
Mill Creek, WA 98012
(Parcel No. 28053100203700)

Dear Trevor:

GeoTest Services, Inc. (GeoTest) previously prepared a *Geotechnical Engineering Report* for the above referenced project, dated December 13, 2018. Since this report was written, TerraVista NW (Civil Engineer) has begun the preliminary civil design for this project, including stormwater management plans. The City of Mill Creek is requesting clarification on hydrologic soil units for the native soils underlying the subject property. In addition, the Client (Coast Construction) has requested clarification regarding the proposed pavement sections to be used on this project.

HYDROLOGIC SOIL TYPES

Based on the USDA Natural Resources Conservation Service map for Snohomish County Area, Washington, the subject property is mapped as two soil types:

- Alderwood Gravelly Sandy Loam (0 to 8 percent slopes), Soil Group B; and
- Everett Very Gravelly Sandy Loam (0 to 8 percent slopes), Soil Group A.

It should be noted that the information given in the Web Soil Survey is only intended to describe near-surface soils for agricultural purposes.

Per Chapter 7 of the National Engineering Handbook, Group A soils have low runoff potential when thoroughly wet. These soils have typically less than 10 percent clay and more than 90 percent sand and gravel and have gravel or sand textures. Group B soils have moderately low runoff potential when thoroughly wet. These soils typically have between 10 percent and 20 percent clay and 50 percent to 90 percent sand and have loamy sand or sandy loam textures.

The native, very dense, Glacial Till soils that were encountered in our subsurface explorations appear to contain about 90 percent sand based on the USDA textural classification. Thus, these

soils would typically be classified as Group A soils. Although these soils appear to have the material properties of a Group A soil, the native soils are still glacially consolidated. Preliminary infiltration rates that are calculated per the procedures given in the *Stormwater Management Manual for Western Washington* assume loose, unconsolidated soil and only take into account the material properties of the soil. Thus, it can reasonably be expected that loose soils would drain more efficiently than dense soils assuming the same sand and silt contents.

As the native soils were very dense and difficult to excavate in the field with a tracked excavator, GeoTest would typically apply a further reduction factor to calculated infiltration rates in these soils. GeoTest anticipates that perched groundwater seepage may be encountered atop very dense, glacially consolidated soils depending on the time of year. Furthermore, unweathered Glacial Till is typically classified as a Restriction Layer per the *Stormwater Manual*. Thus, it is GeoTest's opinion that the native Glacial Till soils encountered on this site are more indicative of a Group D soil based on the observed silt content, the dense to very dense, glacially consolidated nature of the soil, and the presence of wetlands to the north and east of the project area. Thus, the native soils do not appear to be suitable for conventional stormwater infiltration.

The drawings that GeoTest reviewed for this letter indicate that infiltration is not being considered for this project. However, if these plans change, GeoTest must be contacted to confirm the viability of our current recommendations.

PAVEMENT SECTION

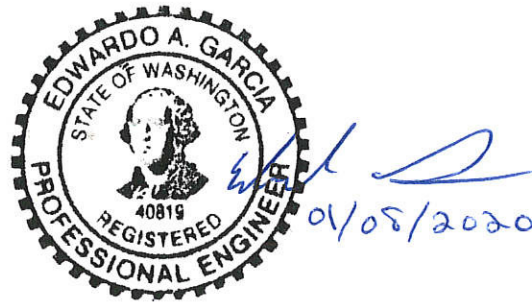
GeoTest also understands that the Client is requesting clarification regarding the two recommended pavement sections given in the December 2018 geotechnical report. The Client and Civil Engineer have requested that GeoTest provide an opinion as to the suitability of using one uniform pavement section for the entire development. GeoTest understands that the Client is proposing to use one uniform pavement section consisting of 3 inches of asphalt overlying 8 inches of crushed stabilized base course (CSBC). Based on discussions with the Civil Engineer, GeoTest understands that the drive lanes would only receive sporadic heavy traffic (ex. garbage trucks once a week). It is GeoTest's opinion that this revised pavement section should be acceptable, provided that the Client can accept potentially increased maintenance due to the reduced pavement thickness along the drive lanes. However, it is still GeoTest's opinion that the minimum 8-inch thickness of CSBC be maintained, due to the low permeability of the underlying Glacial Till soils.

GeoTest appreciates the opportunity to provide geotechnical services for this project. Should you have any further questions regarding the information contained within the letter, or if we may be of service in other regards, please contact the undersigned.

Respectfully,
GeoTest Services, Inc.



Gerry D. Bautista, Jr., P.E.
Project Geotechnical Engineer



Edwardo Garcia, P.E.
Geotechnical Department Manager

REFERENCES

Garipey, D., Graul, C., Heye, A., Howie, D., Labib, F., and Song, K. (n.d.), *2019 Stormwater Management Manual for Western Washington* (2019 SMMWW) (pp. 1-1108) (United States, Washington State Department of Ecology).

GeoTest Services, Inc., *Geotechnical Engineering Report, Proposed 7C's Swim Facility, SW Corner of North Creek Drive and Dumas Road, Mill Creek, WA*. Project No. 18-0787, December 13, 2018.

Part 630 National Engineering Handbook, Chapter 1 – Hydrologic Soil Groups. United States Department of Agriculture Natural Resources Conservation Service, May 2007.

Web Soil Survey for Snohomish County Area, Washington. United States Department of Agriculture Natural Resources Conservation Service. Retrieved on December 18, 2019.