August 23, 2024

Town of Arlington, Massachusetts Conservation Commission
C/O Mr. Charles Tirone, Chair
730 Mass Ave. Annex
Arlington, MA 02476

VIA EMAIL

RE: Thorndike Place, Dorothy Road, Arlington, Massachusetts – Response to GZA Peer Review of Stormwater Mound Evaluation and Design Groundwater Elevation

Dear Chairman Tirone and Commission Members,

We have reviewed GZA GeoEnvironmental, Inc.'s (GZA's) August 1, 2024 peer review summary letter and are providing the following comments:

Groundwater/Stormwater Mounding Analysis:

GZA's review, like our own recent reviews, finds that BSC's groundwater mounding analysis improperly considers an infiltration volume much smaller than the actual volume that is proposed. They refer to this quantity as the "*required recharge volume*", which is the minimum amount of stormwater that they are required to infiltrate. However, due to the expansive size of the project and related impervious surfaces, the proposed stormwater system would attempt to infiltrate much larger volumes during storm events. As a result, BSC's groundwater mounding analysis is not useful. It does not demonstrate that the systems will operate as intended during storm events, nor does it provide any support for claimed compliance with Stormwater Standard 2 and the 72-hour drainage time requirement noted in the Massachusetts Stormwater Handbook (MSH).

In identifying this problem and assessing its implications, GZA correctly concludes the proposed infiltration systems must be redesigned. We fully support this overarching conclusion; however, we respectfully request clarification from GZA relative to the following statement: "*In GZA's opinion both the large main stormwater infiltration system and the smaller driveway infiltrations* (sic) *systems would need to be redesigned to account for the impacts of groundwater mounding during large storm events and to meet the MassDEP Stormwater Manual's maximum allowable drainage standard of 72-hours*". On Page 4 of their letter, GZA notes the following, which we interpret as a reference to Stormwater Standard 2, which addresses peak rate control: "*...redesign should also address peak flow rates that discharge to the stormwater outfall control system*". Thus, we feel it is important for GZA's conclusion(s) to be extended to specifically state that any new/updated design must comply with the Stormwater Standards—Standard 2, in particular—in addition to the 72-hour drainage time requirement defined within the MSH.

Seasonal High Groundwater Condition:

Relative to GZA's comments on the seasonal high groundwater condition proposed by BSC, we respectfully seek clarification on their approach and conclusion. GZA presents the MSH definition of seasonal high groundwater as "*the highest groundwater elevation*", yet their conclusion refers to BSC's proposed elevation of 4.0-feet as being "*above normal*" and thus finds it to be, in their opinion, "*suitable to be used for stormwater design for this project*". Is the 4.0-foot groundwater elevation viewed by GZA

as simply being "*above normal*", or is it the maximum/highest condition, which would be consistent with the MSH definition?

If the answer is "*above normal*", the pertinent follow up question would be: why is GZA's basis for "*suitable"* seemingly different from MassDEP's, as represented by the MSH? Conversely, if GZA does view the 4.0-foot elevation as "*the highest groundwater elevation*" at the site, how do they explain the results of correctly applying the so-called "Frimpter" adjustment method that specifically attempts to estimate a maximum site-specific groundwater elevation based on a historical record of measurements associated with a U.S. Geological Survey (USGS) index well? GZA should note that, to date, we have only used Frimpter method results to highlight BSC's methodological errors (i.e., in implementing their own Frimpter and generally illustrate the point that groundwater levels do exceed the proposed ESHGW elevation of 4.0-feet. Therefore, GZA's comments pertaining to the representativeness of certain USGS index wells are not germane, as any nearby index well would produce the same outcome (i.e., an adjusted seasonal high groundwater elevation exceeding 4.0-feet).

Furthermore, as reported in multiple prior comment letters, water level data have been collected at a nearby monitoring well that we installed on the adjacent town-owed parcel on Dorothy Road (approximately 100-feet from proposed primary stormwater infiltration system INF-1). The data collected from this well reflect a peak groundwater elevation during the March 19 – April 20 period of 4.4-feet occurring during March 29, 2024. BSC's groundwater level measurements were taken on April 1, 17, and 24 when water levels had receded relative to the peak condition.

To reach a resolution on this issue at the site, we believe one key question must be reasonably answered: how far above 4.0-feet does the highest groundwater elevation extend? Our position on this matter is simple—more information is needed to reliably identify "*the highest groundwater elevation*" in a manner consistent with the guidance presented in the MSH.

Sincerely,

Scott W. Horsley
Water Resources Consultant

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