

March 2, 2018

Friendship Alliance

Carlos Torres-Verdin

Subject: MBWV Development plans- February Update

Dear Carlos,

The purpose of this letter is to provide my response to the updated plans prepared by Kimley- Horn, dated December 2017, and re-sealed by their Engineer, Andrew Evans, on February 26, 2018. K-H updated their plans, at the request of the City Engineer, Mr. Chad Gilpin, P.E., on February 19, 2018. Based on my review of their “comment-response” letter, it is clear that they do not intend to make any changes to their designs that would address our concerns for water quality and erosion.

The following summary outlines my concerns with the drainage analyses and designs for stormwater control.

1. K-H response Item 4 corresponds to my letter to Carlos (February 19), Review comment No.4, which points out that their drainage analysis does not properly select points of analysis for their comparison of pre- and post-development peak flows. The Engineer’s analysis diminishes the effects of the added impervious cover. The K-H response Item 4, provides a set of hydrographs intended to illustrate their design calculations. However, the hydrographs indicate peak runoff values that do not correspond to the values shown in the updated tables shown on plan sheets: 24-25.
2. More importantly, the Engineer’s comparison of pre- and post-development peak flow rates relies on broad assumptions about the effects of future upland landscaping upon the estimated peak discharge rates at various points along the creek channel – Not on the site drainage ways where these changes would have the greatest effect. The Engineer’s selected points of analysis (along the downstream creek channel) are too far from the drainage systems that would be most affected by the proposed development. The drainage channels immediately below the developed site will be subject to larger volumes of runoff, over longer flow durations as a consequence of the added impervious cover. ***The City’s water quality code (22.05.019 (e) is written to protect these on-site drainage ways from the erosive effects of the increase flow volumes and velocities.*** The Engineer’s updated plans do not comply with this code requirement. His original calculation was not done per code as outlined in my original review comments (Feb 19), and this comment was not addressed in his recent (Feb 26) response.

Applying this WQ code, we estimate a much lower allowable peak flowrate than the Engineer for K-H estimates, by a factor of 10. In my opinion, the natural drainage channel in Drainage Area 2 (PR-2) will be subject to a significantly higher erosion potential under the proposed conditions than under today’s conditions. If drainage analysis was conducted using standard procedures (City of Austin drainage criteria, LCRA manuals, etc.) the points of analysis would include the natural channel on site.

3. The Engineer’s response also provides description of the input variables (NRCS curve numbers) used in his calculation, which attempts to explain why there is no difference between the pre- and post-developed condition peak flow estimates. His pre- and post-condition analysis relies on averaging curve numbers rather than averaging the computed flowrates from the various (and very different) land uses. His approach disregards the guidance published in the National

Engineering Handbook for comparing runoff results for areas that have widely differing land cover (i.e.; lands converted from rural to urbanized (paved) areas).

4. The Item 4 response also includes a statement that all proposed roof areas will capture and store runoff. The Engineer concludes that this measure helps explain why they estimate less peak runoff for the developed conditions than under today's undeveloped condition. While the proposed storage tanks are large and should limit runoff volume on an annual basis, rain storage is not allowed as a mitigating factor when considering peak storm runoff conditions. See City WQ Code: 22.05.016 (e).

The analysis and comparison of peak flows for pre- and post-development conditions is intended to evaluate the flooding and erosion potential during specific design storm events. As an engineering safety practice, we must assume that all runoff storage facilities are full at the start of the storm, and therefore, these facilities should not be assumed to have any effect on peak flows. Therefore, the engineer's conclusion is miss-applied and incorrect in its assumed effectiveness for controlling peak flow runoff from the site.

5. The depiction of temporary sedimentation basins is confusing and potentially mis-leading regarding their feasibility to effectively control sediment discharges. I believe there is a more cost-effective way to control sediment discharges from the site; one that presents less risk of sediment discharges to Bear Creek. My concerns with the feasibility of the proposed basin plans are as follows:
  - a. The Water Pollution Abatement Plan (WPAP) document approved by the Texas Commission on Environmental Quality (TCEQ) states that the sedimentation basins will be four feet deep and be fitted with skimmer type flow controls. As shown this design volume cannot be achieved without constructing embankments higher than 10 feet. Such embankments would define these temporary impoundments as dams per TCEQ Dam Safety definitions. The TCSS Manual requires dams to meet dam safety criteria.
  - b. Furthermore, no basin drainage controls are indicated on the plans. In fact, there are no inflow and outflow controls shown. According to the City of Austin DCM and Environmental Control Manuals (ECM), these temporary erosion and sedimentation controls must be in place before commencement of construction. Therefore, a design submittal from the contractor should be provided and approved by the City before issuing a permit for construction of the temporary sedimentation basins shown on these plans.

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- c. The City of Austin **SWM pond criteria in DCM Section 8.3.4**, require design of an open channel to convey basin discharges for both temporary and permanent SWM ponds. The plans simply state that the contractor will be responsible for the pond design. The success of the sedimentation controls is critical for protecting the recharge zone features below the site. These designs must be worked out and approved before start of construction.

Please contact me if you have questions.

Thank you,



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JSK