Kimley-Horn
and Associates, Inc.

February 1, 2013

Suite 1000
12750 Merit Drive
Dallas, Texas
75251

Scott Lindebak
City of Wichita
455 N. Main
Wichita, Kansas 67202

Re: ***Sam's Club – Wichita, KS***

Dear Mr. Lindebak:

1. The locations of the Rinker water quality units on Line B and Line G-1 are in locations not assessable by a high pressure combination cleaner. For cleaning purposes, these units should be located within 15 feet of a paved road.

   The water quality units on Line B and Line G-1 have been moved within 15 feet of a paved road.

2. The water quality unit for Line G-1 appears to be located within public street right-of-way. It appears the unit could be installed within the proposed subdivision development.

   The water quality unit has been relocated to be within the proposed subdivision development.

3. The City will not permit the use of bends on stormwater sewer lines that are 12" in diameter or greater. Please replace the bends with a concrete manhole.

   The bends on stormwater sewer lines have been replaced with concrete manholes.

4. The stormwater sewer design plans should also include four pond plans, that provide typical details for pond bank slopes; stage storage discharges tables; list the design water surface elevations; if pond banks are to be seeded, the City will require the use of erosion control blankets; etc.

   Pond plans with the requested information have been provided for each pond.

5. No filling or grading for Pond 1 is allowed within the public street right-of-way, please match the existing grades at the property line.

   The detention and compensatory storage for Pond 1 is contained within the right-of-way. In order for the outfall to connect to the proposed system in Maize Road, fill must be placed in the right-of-way. Otherwise, the storm water from Pond 1 would flow over the hike and bike trail.

6. Stormwater sewers serving more than one platted lot, should be centered within a 20' drainage easement.

   Stormwater sewers serving more than one platted lot are centered within 20' drainage easements.

7. The ponds should be located within a platted reserve, with the subdivision platters text describing whom is responsible for the maintenance of the Reserves.

   The subdivision platters text has been added to the plat.

8. Sheet C-16, Basin B, 2.54 acres drains to north and east, towards the residents of Fox Ridge Addition. Install a stormwater sewer, concrete flume, and/or include a detailed grading plan to demonstrate the proposed development is handling its own runoff. The runoff should drain to the area inlet (City structure #4851-0137) located 78 LF northwest of #9925 W Westlakes Ct.

   The proposed development is handling its own runoff. A detailed grading plan has been provided. There is a concrete lined swale along the north and east boundaries of the proposed development.

9. A detailed grading plan shall be developed that drains runoff on the east side of the proposed large eastern berm to the area inlets identified as City structure #4851-0404 and #4851-0403.

   A detailed grading plan has been provided.

10. Sheet C-16, Basin B-4, 3.55 acres, the south face of the proposed berm located along the north line of Parcel 7 will not drain to the proposed detention pond as shown, please revise the basin boundaries or include additional grade elevations to support the basin boundary.

    Additional grade elevations have been provided to support the basin boundary.

11. Sheet C-03, it is unclear based on the overall site plan with the proposed contours how much stormwater runoff will be drained through the drive entrances without being treated for water quality or detention. Capture the runoff prior to leaving the site, if it is physically possible. The drive entrance included in DA-D2 could be collected within the proposed 27" RCP prior to draining into 29th Street. The runoff draining out of the drive entrance north of Pond 1 could be collected by Line D. Line F may need to have a pair of inlets over the top of the proposed 6x3 RCB to prevent runoff from draining out the drive approach on 29th Street North.

    Additional inlets have been added along the drive entrance north of Pond 1, the drive entrance between Ponds 2 and 3, and the drive entrance included in DA-D2. The intent is to drain the majority of the drive through a water quality unit or detention pond prior to discharging into offsite lines.

12. Sheet C-18, the proposed grated 3x3 area inlet located at station 7+07.01 does not appear to have the temporary inlet capacity for basin A-6, 6.39 acres. Please review and revise as necessary to reduce surcharging and possible bypass to the detention ponds.

    The proposed grated 3'x3' area inlets have been upsized to 4'x4' wye inlets.

13. The stormwater sewer pipe located in the public street right-of-way, west of Parcel 6 does not have a plan and profile assigned. Update the plan to include the proposed stormwater sewer within the design proposal.

    A plan and profile for this pipe has been provided within the design proposal.

14. The area inlets for sub-basins A-1 and A-2 appear to need more inlet capacity then what a 2x2 grate can achieve with the limited ponding depth (design head). A 2x2 needs at least 0.9 feet of ponding to serve 7.4 cfs. Check sub-basin D for the required design head to serve the proposed 3x3 area inlet.

    The proposed grated area inlets have been upsized to 4'x4' wye inlets.

15. Stormwater sewer lines A-1, A-2, A-3, A-4, A-5, A-6, B-1, B-2, B-3, B-4, B-5, C-1, and G-1 (pond 1's outfall) should have a plan and profile.

A plan and profile has been provided for each stormwater sewer line.

16. I don't believe the City of Wichita has a standard 5x3 RCB construction head wall detail.

The 5x3 RCBs have been replaced by 3 - 36" RCPs.

17. The design plans do not include an outfall design for Pond 3 as described in the report, page 3, Table 4, "Multistage Outfall: 12" Orifice, 12' Spillway, 27" Culvert". It is unclear how the multistage outfall relates to the proposed 6x3 RCB between Pond 2 and 3.

An outfall design has been provided in the design plans.

18. Pond 1 multistage outfall structure for Line G-1 is not shown, which includes a 18" Orifice and 20' Spillway, and 36" Culvert.

An outfall design has been provided in the design plans.

19. Pond 4 multistage outfall structure for Line B-4 is not shown, which includes a 6" Orifice, 12' spillway, and 36" Culvert.

An outfall design has been provided in the design plans.

20. The proposed ponds, elevation-area tables does not list the pond's volume by acre-ft as referenced on page 3. My calculations have determined each pond has the following storage based on its design water surface elevations, Pond 1, 1.38 ac-ft; Pond 2, 1.48 ac-ft; Pond 3, 2.92 ac-ft; and Pond 4, 0.40 ac-ft. The total storage provided is 6.18 ac-ft. Storage volume is to be measured from the pond's static pool to its 100-year design water surface elevation. KHA's technical memorandum states the required storage volume is 6.4 acre-feet and 5.3 acre-feet of compensatory storage. As noted, the City requires developments within Cadillac Lake to provide 10% additional detention storage. Based on the proposed development, it appears the development should provide 6.4*(1.1) + 5.3 = 12.34 ac-ft of storage for detention and floodplain fill. KHA's technical memorandum measured 11.2 ac-ft provided up to a 1354.0 MSL, however the City of Wichita does not count storage that is above the 100-year design storm elevation. Compensatory storage is not dependant on the hydrograph calculations. It appears the development must provide additional onsite detention and/or compensatory storage. As a comparison elsewhere within the City of Wichita, the following similar developments have provided these listed storage volumes:
A) Menards, 37th St N & N Maize Rd, 36.0 acre site in Cadillac Lake basin, provided 11.5 acre-feet of storage, that includes the additional 10% requirement. No compensatory storage was necessary for the development.
B) Wal-mart, W Central & N Maize Rd, 10.6 acres site, provided a total of 16.1 acre-feet, which included 14.8 acre-feet of compensatory storage and 1.3 acre-feet of detention.
C) Wal-mart, 53rd St N & N Meridian, 29.95 acre site, provided a total of 11.0 acre-feet, which included 8.02 acre-feet of detention and 2.94 acre-feet of additional storage due to limited downstream offsite pipe capacities.

Additional storage has been added in Pond 2 and Pond 3 to satisfy the city requirement. Please see the accompanying Technical Memorandum for additional details.

21. For Outfall locations A, C, and D, please determine the existing downstream public pipe capacities to verify the proposed development has limited the onsite runoff to a level to prevent additional downstream street flooding. The request goes beyond satisfying peak discharge requirements. For example, Outfall D drains to a 30" diameter stormwater sewer and the development proposed to

connect a 27" diameter stormwater sewer to the public system. It appears the development is taking a disproportionate share of the public stormwater sewer capacity that was planned for 29th Street and other adjacent properties. In my opinion, the development must provide more onsite detention and compensatory storage volume, in line with other similar developments.

Plans for the offsite storm sewer showing the proportion of capacity allotted to the subject tract were not available; therefore the ponds are designed to reduce the proposed condition peak discharge to less than existing condition for the 2- through 100-year storm event, including the 5-year event which is the typical design event for enclosed storm sewer systems. As such, the proposed development will not increase offsite street flooding compared to existing conditions.

22. The stormwater sewer plans need to identify the emergency overflow path when the pipe capacity is exceeded, especially for Storm Line B.

Emergency overflow paths are shown on the proposed grading plan for each pond.

23. Outfall B, DA-B does not drain overland as shown on the pre-development runoff map, see the attached pdf of the basin mark up.

The pre-development map has been updated.

24. The City will need to have a ERU plan sheet that delineates the amount of impervious area for stormwater billing purposes, copy of a signed NOI from KDHE, SWP3, Stormwater Permit Application, and Stormwater Operation & Maintenance Plan.

An ERU plan and documents have been included.