March 25, 2014

David Ellington, P.E.
Kimley-Horn and Associates, Inc.
1700 Willow Lawn Dr., Suite 200
Richmond, VA 23230

RE: GreenGate Phase I
12121 W. Broad Street
File #: 5159 POD. #: 2014-00091

Dear Mr. Ellington:

The Department of Public Utilities has completed a review of the water and sewer plans that are part of the plan of development submitted to the Planning Department on March 7, 2014.

DPU recommends approval of these plans by the Planning Commission.

Please address the following comments before submitting the construction plans for signature.

Sheet CV-101:

1. Change the title of the plan sheet from "Existing Conditions" to "Existing Conditions and Utility Abandonment"
2. Reference the CSB/CWB sheets in the bottom right corner of the plan sheet. See all utility sheets and the existing conditions plan sheets.
3. Are there any existing wells and septic tanks/drainfields onsite? If so, indicate clearly on the plan the location of any existing well and septic tanks/drainfields and provide a note that states that they will be abandoned in accordance VDH requirements.
4. Provide a note to ensure valves will be flushed to grade, all existing utilities will be protected and maintain minimum cover at all times during construction.
5. Provided a note on the plan that all utilities are to be abandoned in accordance with DPU Spec. 1.1.04C and 9.3.10.
6. Label the material type of the existing water and sewer mains shown on the plan. See the utility sheet as well.
7. Provide the CSB station, rim, and invert information for all existing manholes shown on the plan. See the utility sheet as well.
8. Show the location of the existing fire hydrants.
9. Several existing fire hydrants conflict with the proposed construction and road entrance. The existing fire hydrants that conflict will need to be shown to be abandoned on this sheet.

Sheet CG-501:

10. Show the location of the existing 20" sewer main and utility easement on the Outfall Plan.
11. Show the 20" sewer crossing on the Outfall Profile.

Sheet CU-101:

12. Provide four northing/easting points on the plan.
13. Since pavers will be installed onsite, where will the meters for the future buildings be installed? The meters cannot be installed within the pavers. Show the location of the future meters on the plan.
14. Could meters/hydrants be installed in the tree pits? Provide a detail of the proposed tree pits.
15. Will a back tap be necessary for the water main connection in West Broad Street? The valve that is part of the tapping sleeve & valve assembly may conflict with the existing fiber optic line.
16. Show the location of waterline adjustments in the water main by providing a bubble or circle around the adjustment area on the utility plan. Be sure to reference the sheet location of the waterline adjustment detail in the waterline adjustment callouts.
17. Label the distance from the proposed water main to either the proposed face of curb or back of curb on the utility plan.
18. Remove the bends in the fire hydrants leads. Fire hydrants should be installed in accordance with the fire hydrant detail D-200.
19. The size of the plug located at the end of the 12" water main is incorrect.
20. The 12" water main stub at the end of the water main in the ROW needs to be mechanically restrained. Clearly indicate the proposed 12" and 8" stubs will be mechanically restrained.
21. Fire hydrants should be installed every 500' in accordance with DPU Standards.
22. Buildings A and J do not meet hose lay requirements. Additional fire hydrants will be required for the site.
23. To prevent the fire hydrant located east of Building-A from being damaged by loading trucks, relocate the fire hydrant away from the loading area.
24. Provide note indicating valves will not be installed within the curb & gutter.
25. Change the solid line style to dash line style for all existing sewer mains shown on the plan.
26. Provide an internal angle at the proposed manhole connection.
27. Provide a 38° separation between the existing sewer main (inv in: 163.48) and the proposed manhole connection at MH-EX.
28. Provide the following core drill note on the plans, "***Connections to existing manholes without stubs or bricked-up openings shall be the equal of either Kor-N-Seal w/stainless steel expander ring or Press-Seal w/nylon expander sleeve installed by core drilling manhole and in strict accordance with manufacturer's specifications.***"
29. Provide benchmarks every 500' within the proposed sanitary sewer area in accordance with DPU Standards.

30. Change the material type of the proposed sewer main from MH-EX to MH-18 from "PVC" to DI".
31. Portion of MH-18 is within the pavement and grass area. Either place the manhole frame in the pavement or place it in the grass area.
32. Provide a note indicating that a 10' separation will be maintained between the water and sewer mains on the plan.
33. Monitoring manholes need to be installed such that they only capture flow from the building they are intended to monitor.
34. If the sewer main between MH-15 and MH-16 will solely serve Building A, then only a 6" line is required. A monitoring manhole can be installed on a 6" sewer line.
35. Monitoring manholes should be installed 5-7' deep and not be placed in parking spaces. They must be accessible at all times.
36. Relocate the monitoring manhole out of the busy travel roads for the safety of the monitoring crew.
37. There is a utility conflict with the 8" valve and sewer main between MH-12 and MH-15.
38. MH-14 cannot be installed within the parking space nor can it be installed within the curb & gutter.
39. Several manholes are shown to be installed in the curb & gutter. Relocate the manholes out of the curb & gutter.
40. Show the utility easement around the existing 20" sewer main and provide the deed book and page book number of the existing easements.
41. Subsurface rock has been encountered on recently constructed projects in the surrounding area. Be advised, a rock bore may be required for the installation of the proposed sewer main connection (tie-in?).

Sheet CU-201:

42. Provide a .10 fall across proposed manholes.
43. Why is a drop connection being installed at MH-6, MH-12 and MH-15? Tie the proposed sewer mains into the manhole benches. See Sheet CU-202 for MH-EX and MH-18.
44. Why is the sewer so deep between MH-1 and MH-9? Can the sewer be revised to reduce its depth?
45. Provide a sewer profile for the run of sewer between MH-2 and MH-3.
46. Change the material type of all sanitary sewer mains that will have 100%backfill form "PVC" to "DI". See Sheet CU-202 as well.

Sheet CU-202:

47. Be sure to match crowns with the existing 20" sewer main.
48. Sanitary sewer stationing should begin at the most downstream manhole and increase upstream with equalities at each junction manhole.
49. Manholes not installed in pavement and located in an inaccessible location should be installed 12" above the final grade.
50. The minimum depth of cover over sewer mains in easements should be 3.5' in accordance with DPU Standards. Revise the cover overtop of the sewer main between MH-18 and MH-19.

51. Label MH-19 as "vandalproof manhole" on the sanitary sewer profile.
52. Provide a match line for the continuation of the sanitary sewer profile of Sanitary Sewer Profile 1.

Sheet CU-203:

53. Provide 18" of clearance when the storm sewer crosses over the water main pipe.
54. Remove the four vertical bends between STA: 9+50 and STA: 10+50 and gradually bring the water line up after STA: 8+25 to go over the storm sewer crossing (B-38-UF1). A 12" clearance is acceptable when the waterline crosses over the storm sewer. See Sheet CU-204 as well.
55. The water main must have a minimum of 3.5' of cover. Review and revise the depth of the water line. See Water Line Profile 2 on Sheet CU-204 as well.
56. Why is the water line adjusting under the storm sewer crossing at STA: 14+75? Remove the vertical bends and install the water line overtop of the storm sewer pipe.

Sheet CU-204:

57. Show the existing fiber optic line crossing in W Broad Street on the water line profile.
58. The storm sewer crossing at STA: 0+25 is called out to have a clearance of 18" but not shown to have 18" clearance on the profile.
59. The two 8"45° bends at STA: 0+12 on Water Line Profile 4 are not needed based on the changes made per comment #54. Revise the depth of the water main in this location.
60. Install 4- 8"45° bends (per waterline adjustment detail) at the storm sewer crossing near STA: 2+50 and gradually bring the water line up to the proposed depth at STA: 3+50.

Sheet CR-100:

61. Is the existing structure (TOP: 186.04) in W. Broad Str. to be removed located directly over top of the existing sanitary sewer? Has this been field verified?
62. The existing fire hydrant called out to be removed and relocated should be shown on the utility abandonment plan to be abandoned.
63. The proposed storm sewer structures conflicts with the existing water main located in W. Broad Street.
64. Clearly show the existing water main in W. Broad Street by darkening the location of the water main.
65. Indicate the new distance from the existing water main to the proposed face or back of curb on the road plan.

Sheet CR-101:

66. The existing fire hydrant located east of STR- R4 conflicts with the road widening. Show the fire hydrant to be relocated on the utility plan and roadway improvement sheet.
67. The existing 24" water main appears to conflict with the STR-R1. What is the horizontal separation between the storm structure and water main? The structure should be located 10' from the water main

General

68. Provide the following no lead note on the cover sheet, "***"All water service accessories and fittings shall be lead-free in compliance with Section 1417 of the Safe Drinking Water Act, and NSF 61 approved."***
69. Revise Material Quantities in accordance with DPU comments
70. Provide a separate Overall Utility plan for the project. The Overall Utility Plan will need to be approved prior to approval of this plan.
71. A DEQ permit will be required for this project since this project will be serving more than 400 people.
72. The Local Review Form has been revised. Attached with plan comments is a copy of the new form. Update and resubmit the form to DPU for review.
73. The design basis for a commercial project should be evaluated using 250 GPD/100SF. Review and resubmit a revise the Review Checklist, Engineering Report and Sanitary Sewer Analysis as necessary.
74. The Peak Flow and Peaking Factor values on the Engineering Report and Sanitary Sewer Analysis are incorrect. The Peak Flow and Peaking Factor on the Sanitary Sewer Analysis. The Peak Flow is calculated by the following equation "$Q_{Peak} = 3.51 * Q_{Avg}^{0.8121}$". The Peaking Factor is the Peak Flow divided by the Average Design Flow.
75. Comments from DPU Monitoring and Compliance will be forwarded to the engineer once receive in this office.
76. An Information Sheet for Preparation of Agreements for Sewer Service is required but has not yet been submitted. Water and Sewer Agreements must be executed by the Owner and the County prior to approval of building permits or prior to the utility pre-construction meeting. DPU will authorize utility construction to proceed after the pre-con meeting.

If you have any questions concerning the above noted comments or the plans, please contact me at 501-4500 or Alice Thompson at 501-4508.

Sincerely,

Alvin Christian Jr, P.E.
Senior Engineer- Private Development

cc: Mark Kukoski, ME Nuckols LLC
bc: R. Claytor
J. Woodburn, DPW
A. Seal
Planner, Kevin Wilhite and Christina Goggin

ANT/cww

REVISED CONSTRUCTION PLANS REQUIRED