

April 14, 2021

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City of Lee's Summit
Development Services
220 SE Green Street
Lee's Summit, Missouri 64063

Attn: Shannon McGuire, Planner

Re:

Application Number: PL20211059
Application Type: Residential Preliminary Development Planning
Application Name: Summit Point 2nd Plat (Phase II)
Location: 510 NE Chipman road, Lee's Summit, MO 64063
Response to March 29, 2021 Comments

Shannon,

Below are responses to your comments dated March 29, 2021. We are resubmitting revised plans, Storm Study and HEC RAS study with this response letter.

Board of Directors:
Kenneth M. Blair, P.E.
Kevin K. Holland, P.E.
Daniel W. Holloway, P.E.
Lance W. Scott, P.E.
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Analysis of Residential Preliminary Development Plan:
Planning Review Shannon McGuire Planner Corrections
(816) 969-1237 Shannon.McGuire@cityofls.net

Associates:
Aaron J. Gaspers, P.E.
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Lucas W. Williams, P.E.

1. The standard parking space dimensions shall not be less than nine feet wide by 19 feet long. Where the head of the parking space abuts a six-foot wide sidewalk or curbed landscaped area, the length of the parking space may be reduced by two feet to allow for vehicle overhang. Such overhang shall be measured from the face of the curb. As proposed the parking stall are 17' & 17.5'. To ensure compliance with the UDO requirements please label the depth of adjacent sidewalks where the parking stalls are less than 19'.

Dimensions have been added to the plan.

Engineering Review Gene Williams, P.E. Senior Staff Engineering
(816) 969-1223 Gene.Williams@cityofls.net

1. The requested discussion and analysis of the ordinary high water mark (OHWM) and stream buffer delineation was incomplete. The preliminary stormwater study mentioned the stream buffer, but did not discuss the rationale behind the selection of the OHWM along stream channel. A note was provided on the PDP plan stating the OHWM locations were established "by field survey", with no explanation given within the preliminary stormwater study concerning the criteria used to establish the OHWM locations along the stream channel. *The Preliminary Stormwater Drainage Study has been revised to include a copy of the definition of the Ordinary High Water Mark as defined in the US Clean Water Act. Frank Norman (Norman Ecological), Kara Taylor and Kent Monter visited the site and verify the OHWM location shown on the plans.*
2. The Public Works - Environmental Group conducted a review of the proposed stream buffer in relation to the OHWM. According to their field investigation, it appears the stream buffer should be located further away from the alignment of the stream than shown. *Frank Norman conducted a field investigation at the site with City Public Works staff, and the Ordinary High Water Mark was confirmed. CFS has revised the stream buffer slightly to reflect the correct stream buffer location at the northeast corner of the proposed Summit Point site.*
3. The requested floodplain delineation appeared to be incomplete. The northeast corner of the site appeared to lack a CFS-calculated BFE line. It would appear the line will be located in a portion of the northeast detention basin dam. Any fill within the flood zone calculated by CFS would require a Floodplain Development Permit, and any fill would require compensatory storage to be provided elsewhere within the flood zone. It is not clear how compensatory storage could be provided for this site, therefore, the floodplain delineation using the CFS-calculated BFEs shall be better-defined in the northeast portion of the project prior to approval of the PDP. *The 100-year Base Flood Elevation line was based on the HEC-RAS analysis of the creek and the City's last set of review comments asking that the effects of the downstream culverts at NE Swann Circle be included in the model. The HEC-RAS Output Tables included the calculated water surface elevations from the 2, 10 and 100-year storms. The proposed embankment grading was set with the toe of slope above the 100-year base flood elevation to prevent adding fill inside the floodplain limits. A HEC-RAS report for the project has been completed and submitted with this resubmittal.*
4. The latest submittal shows Apartment building A2-2 with rear access walks at 3:1 slope. A retaining wall is likely needed, similar to that shown for C1-2. *Grading within the stream setback for the rear access walks has been removed.*
5. The requested HEC-RAS base flood study included within the preliminary stormwater study shall be considered "preliminary" at this time. We are concerned, however, that no analysis of the frequent storm event was presented within the report, which might help establish the location of the OHWM. *As mentioned in the response to Comment No. 3, calculations for the 2-year storm were done in the revised HEC-RAS model and the results of the water surface elevations included in the appendix of the report. The HEC-RAS report has been submitted as a separate document for review by the Flood Plain Administrator for final approval.*
6. The preliminary stormwater study states that "detention basins are allowed within stream buffers". While this statement may be partially correct, detention basins may be allowed on a case-by-case basis. Previous submittal of northwest detention basin included a proposal which would de-stabilize an existing channel, and would likely create a new fork in the channel. Therefore, this basin location was rejected. Please revise the report to reflect the case-by-case allowance of detention basins within stream buffers, which this particular detention basin would qualify based on the fact that fill for the dam will encroach into the buffer rather than the entire basin. *The Preliminary Drainage Study has been revised to clarify that the detention basins are allowed within stream buffers on a case-by-case basis with the allowance of the City (see the last paragraph on pg 9).*

7. Final review and approval of the calculated BFEs within the unnumbered A zone shall be performed by the Floodplain Administrator for the City of Lee's Summit, (i.e., the City Engineer). As previously discussed in this comment letter, the HEC-RAS analysis is considered preliminary, pending submittal of a final standalone report. We would recommend this report be submitted well in advance of the Final Development Plan. *The HEC-RAS Study has been submitted.*

8. Alternatively, the applicant may request a formal review of the BFE study prior to approval of the PDP. *CFS is requesting a formal review of the Base Flood Elevation at this time.*

9. Any formal review by the City Floodplain Administrator of the BFEs within this unnumbered A zone shall require the preparation of a separate standalone document, including HEC-RAS report, appendices, and an upload of digital HEC-RAS model files. Final report shall include recommendations for the proposed BFEs along selected cross-sections of the stream. *The HEC-RAS Study has been submitted.*

10. Fill is shown in within the stream buffer behind building C1-2 and A2-2. This is not allowed. *The fill inside the stream buffer has been removed at these locations.*

11. Grading Plan: It appears the CFS-calculated BFE layer was turned-off on this drawing. It is difficult to determine whether fill is shown within the floodplain. Please turn this layer on. *The drawing layer containing the calculated 100-year base flood elevation has been turned-on in the revised Grading Plan. No fill is shown within the floodplain.*

13. Grading Plan: Bldg. A2-2 proposes fill within the stream buffer, especially within the side channel buffer. This is not allowed. The bigger question is whether a buffer is needed on the side channel. Drainage area is less than 40 acres for the side channel? *The stream setback line is shown on the Grading Plan, but it is very near the property line and difficult to delineate. The fill has been removed. The drainage area is less than 40 acres. For the local drainage area, the plans show a 40' stream setback from the Ordinary High Water Mark of the swale. This has been verified by Frank Norman and City Staff.*

14. As previously requested, the emergency spillway location was not shown. Only the detail was provided. *The Grading Plan has been revised to show the location of the emergency spillway.*

15. Previous submittal included general location of interior storm lines, field inlets, junction boxes and curb inlets to properly drain the project. Latest submittal does not appear to show all of these features. In particular, where are the proposed discharge points to the basin? What inlets will direct stormwater to this basin? Although this is a preliminary plan, a preliminary concept for the storm system is required. *A preliminary storm sewer system is shown on Sheet C-5, and this information has been added to the revised grading plan as well.*

16. Previously-requested emergency spillway detail on Sheet C8 Details in the PDP shows the clogged condition will overtop the dam. The preliminary stormwater study appears to contradict this drawing, however. A minimum of 1 foot freeboard is required. It would appear the freeboard is achieved as per the preliminary stormwater study, but drawing on Sheet C8 contradicts the report. *The outlet structure detail on Sheet C8 has been revised. The 100-year storage depth was 1000.48', the spillway crest was set 6" higher at 1001.00', the peak 100-year inflow flowing over the 30' wide overflow spillway would be 1.01' deep at elev 1002.01', and the*

top of dam was set at 1003.25'. We have also added an overflow grate on the top of the outlet structure for additional flow.

17. Previously-requested location of detention basin outlet structure and discharge method was not shown on the grading plan. General location is shown on the utility plan, but omitted from the grading plan. It is difficult to determine whether this layout will work with the proposed grading, but it appears the pipe will be aerial toward the creek, which is not allowed. It would appear the outlet might be better suited to placement within the dam fill, similar to a culvert being installed within a roadway embankment, with appropriate energy dissipation measures installed at the end of pipe. *The Grading Plan has been revised to show the locations of the outlet structure and the emergency spillway. The outlet structure is located on the northern side of the embankment dam surrounding the detention basin, and riprap has been added to the inflow and outflow pipes.*

18. Previously-requested energy dissipation at the end of the discharge pipe was not shown. *The energy dissipation riprap blankets have been added to the storm sewer pipe outlets and shown on the revised Grading Plan.*

19. Water quality orifice was shown within the baffle wall of the outlet structure detail. We have seen designs where the water quality orifices are installed outside the outlet structure or with a perforated riser concept, with anti-clogging measures designed. As shown, this outlet structure would likely be a high-maintenance item within a confined space, with frequent unclogging necessary to drain the pond after frequent storm events. *Noted.*

20. The preliminary stormwater study was missing the PondPack output for the 10 and 100 year events. Only a summary was provided within the text of the report, but the associated appendices (as were provided for the 2 year event) were missing. *The PondPack output tables included the results for the 2-year, 10-year and 100-year storms.*

21. The elevations of the water quality orifice and the 34 inch orifice on Sheet C8 Details do not match what is shown in the preliminary stormwater report. *The report and details have been checked and revised. See the response to comment No. 16.*

22. Sheet C8: The outlet structure configuration does not appear to be designed for the 100 year event. A 34 inch orifice is shown within what appears to be a baffle wall, which is connected to a 42 inch outlet pipe. It is our understanding the 42 inch discharge pipe is designed for the 100 year event, but the 34 inch orifice will limit the outflow to that of a 34 inch equivalent pipe (plus the minor effects of adding the 2.25 inch water quality orifice). *The peak 100-year inflow rate was approximately 89 cfs, and a preliminary pipe size of 36" was used to allow for stormwater runoff to freely enter into the detention basin. The 27" wide rectangular outlet weir was sized to meter the 2-10-100 year outflows from the detention basin in conjunction with the undetained runoff from the site so that the total release was less than the allowable rates required by the City (in the previous set of review comments, it was emphasized that the City would not recommend any waivers for the outflow rate to exceed the allowable due to reports of downstream flooding problems). A 42" outlet pipe was preliminarily sized to allow for the free outflow of water exiting the 27" wide rectangular outlet weir in a 100-year design storm event.*

23. Emergency Spillway: Emergency spillways do not necessarily need to be installed along the dam fill. They may be incorporated into the primary outlet works. If this option is desired, the primary outlet works for the

clogged condition/zero available storage would include the weir/orifice combinations prior to the 42 inch exit pipe. The top of the outlet structure could be left open, as long as stormwater can enter the top without clogging of the primary outlet works. A domed grate or other anti-clogging measure would be required on the top of this open structure. Regardless of the method for providing emergency release of stormwater, this emergency spillway shall be designed to only function in the event of primary outlet structure (i.e., the weir/orifice combination within the outlet structure) clogging. It should not be designed to manage the 100 year "unclogged" event, which appears this was the case for the proposed geometry of the outlet structure. *The peak 100-year WSEL in the detention basin and the outlet structure was calculated at 1000.48'. The top of the outlet structure was designed with an open grate cover at elevation 1001.00' to match the crest of the overflow spillway. A 27" wide rectangular spillway with a crest elevation of 996.75' was set inside of the outlet structure to meter the regular storm outflow from the detention basin. The 100-year peak WSEL was calculated to be 1000.48' during the "unclogged event." During an extreme "clogged event," the peak 100 year inflow routed over the emergency spillway was calculated to be 86.74 cfs, and a 30 ft rectangular overflow spillway was sized to pass the flow at a depth of 1.01' to WSEL 1002.01'. The top of dam elevation would be set at 1003.25' to provide adequate freeboard.*

24. Elevation Certificates shall be required for each habitable structure constructed with this project (to be submitted prior to building permits and post-construction). These certificates shall be based on the BFEs established for the unnumbered A zone. *Noted*

25. As requested in the previous applicant letter, please provide elevations at selected intervals on the grading plan. It is difficult to ascertain the contour interval and elevations without making assumptions. We assumed a one foot contour interval, and made some assumptions based on what appeared to be correct. However, it would be beneficial to provide key elevations to ensure there are no misunderstandings. *Additional contour labels have been added to the revised Grading Plan.*

26. As previously discussed, the downstream triple culvert at Swann Cir. is acting as the outlet structure for a detention basin and should have been discussed within the preliminary stormwater study in the context of a detention basin. *The existing culverts at Swann Circle have been modeled in the HEC-RAS calculations to account for the increased tailwater depth at the northeast corner of the Summit Point site.*

Fire Department Comment

1. IFC 903.3.7 – Fire Department Connections. *The location of the fire department connections shall be approved by the fire code official. Connections shall be a 4 inch Storz type fitting and located within 100 feet of a fire hydrant, or as approved by the code official. Revised sheets A104, A105 and A106 show the proposed locations of the fire sprinkler closets on each building type A, B and C. These are approximate locations at this time and will be finalized to stay within 100 feet of the fire hydrants on site (re:Civil)*

Respectfully,

Cook Flatt & Strobel Engineers, P.A.



Lance W. Scott, P.E.
Vice President