MILE HIGH FLOOD DISTRICT

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MAINTENANCE ELIGIBILITY PROGRAM (MEP)

MHFD Referral Review Comments

For Internal MHFD Use Only.	
MEP ID:	107845
Submittal ID:	10005742
Partner ID:	ZON-00224-2019
MEP Phase:	Referral

Date: March 23, 2021
To: Rob Zuccaro
(via email)
RE: MHFD Referral Review Comments

Project Name:	Redtail Ridge
Location:	Louisville
Drainageway:	Rock Creek Drainageway I

This letter is in response to the request for our comments concerning the referenced project. We have reviewed this proposal only as it relates to maintenance eligibility of major drainage features, in this case:

- Rock Creek Drainageway I

We have the following comments to offer:

1. Overall MHFD is supportive of this approach and the direction of this project, although there will be more detail required for MHFD to provide further comments. Additional comment will be provided when construction documents are available for review. MHFD requires responses to the provided comments.
   RESPONSE:

   Comment noted.

2. Previous Comment: Ownership and Maintenance Table: Please note that the City of Louisville will ultimately be responsible for maintenance of the drainageways. We will maintain them if requested by the City and if we have funds. Our services are performed on behalf of the City. Please modify the table accordingly.
   RESPONSE:

   Comment noted.

3. Previous Comment: Section IV. F. 5. HEC-RAS Modeling, Table 6, pg. 20: Note that the project does not currently meet District criteria for flow as mentioned in the last row of this table. It would appear that the 10% of the 100yr criteria would control the design. MHFD would like to discuss with the designer the impact of adhering to this criteria. At this time we have concerns

with the relatively minimal bankfull channel widths as minor clogs or vandalism could cause base flows to exit the armored channel section.
RESPONSE:

It does appear that the 10% of 100 YR flows are all larger than the 2-year flows for all 3 reaches. The design/geometry for the low flow channel within each reach will be updated with the next GDP submittal to have capacity for 10% of the 100 year versus the 2-year.

4. Previous Comment. Provide HEC-RAS profile plot with sections identified.
RESPONSE:

A HEC-RAS profile plot with sections identified is provided with the HEC-RAS results in the appendix of the Drainage Report with the HEC-RAS Results.

5. Drainage Report Section IV, F.2. It is discussed that the ponds will have spillways that a capable of passing the 100-yr storm events and a riprap protection size is presented. Please provide supporting riprap sizing calculations. Also, given that some of the ponds are removed from the main channel, please provide discussion regarding the overflow spill paths.
RESPONSE:

Riprap calculations for spillways will be included in the Appendix of the Master Drainage Report. Discussion of spillway paths will be discussed/documented in the body of the Master Drainage Report.

6. Drainage Report Section IV, F.4. The reach description indicates the presence of construction documents. MHFD is not aware of any CDs and detail for channel protections schemes discussed for the reaches are not available for review. Channel lining riprap sizing calculations will be needed with future submittals.
RESPONSE:

CD's will be sent to MHFD directly with the next GDP submittal. Riprap calculations are included in the appendix of the drainage report.

7. Drainage Report Section IV, F.4. Table 4. Note that the listed Developed 100yr flows do not appear to be supported by the SWMM output information in the appendix. The flows in the HEC-RAS modeling also appears to be in conflict. Please correlate the reported flows.
RESPONSE:

The flows listed in the Developed 100yr flows have been verified to match up with the SWMM output data and HEC-RAS Model.

8. Drainage Report Section IV, F.5. The report references Table 5, is this now Table 6?
RESPONSE:

The reference is now updated.

9. Drainage Report Section IV, F.5. Please document the HEC-RAS modeling naming scheme found in the appendix.
   RESPONSE:

   This section has been updated to the naming scheme of the HEC-RAS modeling.

10. Drainage Report Section IV, F.7. Table 7. Details from CDs are needed to confirm this geometry. The low flow channel sizing descriptions in section 4 appear to contradict Table 7.
    RESPONSE:

    This section of the drainage report has been updated with the recent changes to the channel geometry.

11. Please provide the standard SWMM generated input and output information for the referenced existing and proposed models. Can the SWMM routing scheme / nodes be added to the basin maps to clarify node locations? Also, if possible, please submit your actual CUHP and SWMM modeling with future packages to simplify review.
    RESPONSE:

    The SWMM generated input and output information for both the existing and proposed models is provided in the appendix of the drainage report. The SWMM labeling nomenclature follows the same nomenclature of the drainage plan. We will submit the digital SWMM/CUHP model files with the next submittal.

12. The routing diagram provided shows basin A-2 routing to Pond B-1, based on the provided contours it seems more likely that a portion of this basin will drain directly to Reach 1. In an effort to conservatively design the channel improvements, please consider if it is appropriate to segregate basin A-2 into an open space portion and a development portion. This would be a similar routing scheme to previous submittals.
    RESPONSE:

    Basin A-2 has been broken into two basins and the associated drainage plan, SWMM model, and HEC-RAS model have been updated with the updated hydrology and routing of this change to this basin.

13. (Courtesy Comment does not impact MHFD Maintenance) The jump from a peak outfall ratio of 2.2 to 0.8 for Pond C-1 seems odd, please verify the model if reflecting the design conditions.
    RESPONSE:

    We have updated the Outlet for pond C-2 so that the ratio is 1.2. These updates have been reflected in the drainage report, SWMM model and HEC-RAS models as well.

14. (Courtesy Comment does not impact MHFD Maintenance) Review all ponds for outfall ratios, Pond C-2 appears to underdetain at the 10/25/50 year events.
    RESPONSE:

Pond C-2 releases to the 48" RCP shown on the Grading Plan and Basin Delineation from the Via Varra & West Midway Improvements construction documents prepared by Drexell Barrell & company which shows a release of 80.5 CFS from the site. The excerpt of this report can be found in Appendix B. Pond C-2 is designed to provide water quality and release below the 80.5 CFS.

15. Please label the HEC-RAS cross sections with their station, without these it's difficult to fully review the model.
    RESPONSE:

    Cross Sections plots from HEC-RAS have been updated with station included on each.

16. Please document in the purpose of applying the flow jump from 197.43 cfs to 412.82 cfs at station 13+50, there does not seem to be any infrastructure in this area that would explain this jump, especially as it is modeled to take place over a 50ft span.
    RESPONSE:

    The HEC-RAS hydrology has been updated to include 4 flow change locations to model the flow inputs more accurately from the site and pond outfalls. These flow change locations follow the SWMM model nodes Reach 1 IN, Reach 2 IN, Reach 2 Out, and Reach 3 IN.

17. There are select HEC-RAS sections which report velocities and shear values that are relatively high. Please consider if the modeling in these areas is appropriate and or if additional channel protection measures are needed to protect against this.
    RESPONSE:

    The HEC-RAS model has been updated with the most recent changes to the geometry, flows and channel design. Consideration was taken to evaluate all areas of high shear stress and velocities to determine if erosion protection is required.

18. Does a 100yr High N (WSEL) proposed HEC-RAS model exist? Are the results of this model documented?
    RESPONSE:

    A 100yr High (manning's) n model exists and will be submitted with the next GDP submittal.

19. The proposed HEC-RAS modeling appears to have inconsistent use of the bank stations. Please explain why this is appropriate.
    RESPONSE:

    Bank stations have been updated. In areas of no channel grading, no bank stations are identified. In areas where the proposed channel will be graded into the surface, bank stations of the armored bankfull section will be used to model the difference in the manning's n between the overbank area.

We appreciate the opportunity to review this proposal. Please feel free to contact me with any questions or concerns.

Sincerely,

Jim Watt, PE, CFM
Project Manager, Watershed Services
Mile High Flood District