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SUBJECT: SF-17-024 –Sterling Ranch MDDP - First Submittal - Response Letter

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MDDP

1. Address ECM Section I.7.2.A - Four Step Process and how these steps will be provided for on this site. Specifically address LID concepts to be used in the diverted basin area.

The four step process has been added into the MDDP for future development practices.

2. The proposed diversion of flows from the East Fork to DP63 needs to be handled with a deviation request in regard to ECM Section 3.2.6 and DCM Section 1.2.6.

A Deviation request has been submitted for approval of the basin transfer.

   a. Verify the diverted area acreage of flows from the East Fork to DP63 – it appears that it is about 279 acres. The updated acreage is included within the revised MDDP.
   b. Show the current East Fork basin boundary on both plans. The basin boundary is now shown on both plans.
   c. Address what types of improvements would be required to release flows in the historic manner and quantity along the south property line and why the improvements would not be feasible. FSD or any time of control of develop flows will address discharge offsite. future developments along the south and east boundary. A discussion was added to the MDDP.

3. Regarding the proposed increase in flows at DP56/8:
   a. Address why the flows cannot be reduced to historic rates by the use of FSD throughout the East Fork basin. Flows can be reduced to historic rates or DBPS rates IF, downstream improvements are in place. It is unknown if the southern property will be developed in EPC or annexed into the City, and what their drainage facilities will be.
   b. Address sizing and design of a downstream conveyance to a suitable outfall. Sizing is given in the SCDBPS for the downstream property for SCDBPS flows. If historic flows are released, they are substantially less than SCDBPS flows. See SCDBPS maps.
   c. Address City and property owner approval of increased flows at Woodmen Road and downstream and the extent of offsite drainage easements necessary. (Note: the City is in the procurement process for a Sand Creek DBPS update.) There is no intent to increase discharged flows offsite unless there are suitable outfalls, and/or easements. The MDDP suggests FSD ponds to control all off-site discharge.

4. With the updated drainage criteria it is acceptable to use the AMCII conditions and sub-regional FSD facilities; however, the following also need to be addressed:

a. Updates to NOAA precipitation values (Atlas 14), project area (see redlines and attachment) need to be used. The rainfall values are slightly lower for the more frequent design storms and higher for the less frequent storms (>10-year). Per our meeting, NOAA values will not be used in this MDDP.
b. The proposed model layout including future upstream FSD ponds is generally fine if labeled as an "ultimate" developed plan; however, an "interim" developed plan needs to be provided and modeled without the upstream FSD ponds, assuming existing flows from those sub-basins. Once the TimberRidge Preliminary Drainage Report is approved, those FSD ponds may be included on the "interim" plan with appropriate notations that they don't exist yet. The MDDP has been updated to coincide with Timber Ridge drainage. Pre-Developed, Developed, and Existing models have been provided.
c. Provide a model and plan with the higher of FEMA flows or "emergency condition" flows (DCM Update 6.12.0). Upon determination of final flow values, preliminary hydraulic modeling of Sand Creek may be required, either in the MDDP or as a separate addendum. The emergency model was analyzed. It was determined that the in emergency condition, the flows are less than the developed flow and less than the LOMR model flows which have been mapped as floodplain within the existing channel.

5. Diversion of the Holiday Hills area previously shown to discharge to Sand Creek from the northwest side of Vollmer Road needs to be specifically addressed including the adequacy of downstream facilities it will discharge to. Holiday Hills is shown in the Wilson Report to drain southerly and not to the east, and this MDDP is in agreement. Therefore, the previous diversion of Holiday Hills is not proposed.
6. Provide a clear overlay map of all DBPS reaches, flows and improvements from at least DP77 to DP61 through Sterling Ranch. Complete.
7. Regarding City Pond 3 (MDDP 53A):
    a. Make it clear that Pond 3 is not modeled and is used as a comparison point for flows entering the pond from the north. Language has been added to the report to verify that City Pond 3 was not modeled.
    b. The MDDP needs to address in general how Pond 3 will function and how much detention volume may be required and is provided. If the City requests this modeling it may be required. The flows at DP 60A, & 53 match the flows used in the design by Kiowa Engineering for City Pond 3. The Wilson Report was/is used as a basis for both this MDDP and the design of City Pond W3.
    c. If capacity in Pond 3 is needed for the Sterling Ranch development's runoff volume, the developer's responsibility to provide that capacity also needs to be addressed. The Wilson Study, which includes developed Sterling Ranch, was used for design of City Pond 3. Additional capacity should not be necessary since Sterling Ranch is matching flow rate in the Sand Creek Channel as previously anticipated in the City Pond 3 design.
8. More detail is necessary to confirm the conceptual design for Pond W-3:
    a. Attenuation of increased flows and volumes from both higher development intensity and the diverted East Fork flows need to be thoroughly addressed. The deviation request for the diversion needs to include this information. The sole reason of Pond W3 is for this purpose. The description of the conceptual design is to address this proposed condition. The deviation request also discusses the purpose and solution.
    b. Approval of the MDDP does not imply approval of conceptual design details for this pond. The pond should be revised not to use the road as an embankment unless the outlet structure is designed to handle undetained developed flows. The preliminary design of Pond W-3 anticipates using the embankment outlet structure to handle undetained developed flows. The design in the MDDP is considered conceptual.
    c. The report states that the pond is online; additional detail will be required addressing SB15-212/ §37-92-602(8) CRS Compliance rules in regard to the facility being in the Fountain Creek basin. The purpose of Pond W3 is for detention to attenuate the

increase flows from the proposed diversion only. Therefore, no water quality facilities are proposed in the conceptual design. All facilities will be design to comply with state water rights statues

9. See MDDP redlines, including those specified below, for additional cursory comments, further revisions and clarification of these comments. Additional comments may result from revisions.
    a. Label DBPS design points and flows on both existing and proposed plans. Done
    b. Label FEMA flows at least at the property lines. Done
    c. Adjust the anticipated upstream FSD pond locations based on the current TimberRidge plans. Done, the MDDP has been updated to reflect the latest Timber Ridge Preliminary Drainage Report.
    d. Verify CN values based on DCM Update Table 6-9 and soil types for existing condition undeveloped basins (some seem high). Some of the CN values have been modified. The CN values have been cross referenced with Tables 6-9 & 6-10.
10. Note: The request that certain facilities be reimbursable is not being approved with this MDDP review and will need to occur through the separate DBPS/fee amendment process. Noted.
11. Provide the electronic HEC-HMS model. Note: modeling parameters including updated CN values will be verified on the next review. Noted.