

MEETING MINUTES

DATE/TIME: APRIL 10, 2019 @ 11:00 A.M.

LOCATION: UDFCD OFFICE

PROJECT: CHERRY CREEK TRIBUTARIES FHAD – FHAD MODEL

ATTENDEES:

Terri Fead - UDFCD

Dana Morris – UDFCD

Shea Thomas - UDFCD

Jonathan Villines – UDFCD

Allie Beikmann – Dewberry | J3

Danny Elsner – Dewberry | J3

Haley Heinemann – Dewberry | J3

DISCUSSION ITEMS

1. Introduction: Danny and Shea gave an overview of the study area.

2. General notes:

- **No FHAD Basins:** Confirmed no FHAD will be completed for Suhaka, Grove Ranch, Valley Club Acres, Tagawa, and 17-Mile tributaries.
- **Reach Centerlines:** UDFCD noted that reach centerlines must extend to the centerline of Cherry Creek or edge of CC Reservoir, where applicable. Areas not mapped due to location in Cherry Creek State Park, conveyance in a 100-Year storm culvert, etc. will be noted appropriately.
- **100-Year, 500-Year guidance:** Haley requested clarification on the new FHAD review steps. Shea noted that the guidelines direct modelers toward a working 100-Year model prior to evaluating the 500-Year, but that storm events can be analyzed simultaneously if easier. Terri also noted that checking the 500-year event during model construction assists in drawing appropriately sized cross-sections and other model components.
- **Fences within floodplain:** UDFCD advised using higher Manning's n for areas with fences. UDFCD noted that typical ranges of areas with obstructions, such as buildings, are between 0.1 and 0.2, and higher values correspond to highly urbanized areas. UDFCD recommended using their guidelines to identify values.

3. Little Raven

- **Limits:** Confirmed mapping limits are from Belleview Ave. to Havana St. (LR3).
- **Boundary Conditions:** Determined that the downstream condition will be normal depth downstream of Belleview's culvert crossing and the culvert will be modeled in HEC-RAS.

4. Joplin

- **Limits:** Confirmed mapping limits are from 10-year Cherry Creek floodplain to the storm sewer at J7/J8 confluence.
- **Boundary Conditions:** Determined the downstream-most cross-section will occur just downstream of the 10-Year Cherry Creek floodplain and the associated boundary condition will be the 10-Year known water surface elevation at that location.
- **Pond RB1-4**
 - **Downstream flow conditions:** Confirmed that downstream of the pond, the modeled flow rate will reflect the overflow rate from the pond quantified in SWMM. A cross-section will be added on the downstream side of Chambers Rd., which is located at the confluence of the overflow and storm sewer flow, to adjust the flow to the total flow rate.
 - **Upstream flow conditions:** Stream alignment will be continuous along Joplin Tributary and through the pond. Boundary conditions will be prescribed on either side of the pond to account for the known water surface elevations from SWMM rating curves at the embankment and the full SWMM flow will be used through the pond.
- **Street Capacity at J6 and J7**
 - Confirmed that flowpaths don't need to be shown if spills don't occur during the 100-Year event. Reaches where the storm sewer contains the 100-year event do not need to be mapped or modeled for the FHAD.

5. North Arapahoe

- **Limits:** Confirmed mapping limits are from 10-Year Cherry Creek floodplain to the storm sewer at N3/N4 confluence.
- **Boundary Conditions:** The downstream-most cross-section will be just downstream of the 10-Year Cherry Creek floodplain and the boundary condition will be the 10-Year known water surface elevation at that location.
- **Street Capacity at Arapahoe Rd.**
 - Confirmed that flowpaths don't need to be shown if spills don't occur during the 100-Year event. Reaches where the storm sewer contains the 100-year event do not need to be mapped or modeled for the FHAD.

- 100-Year Spill
 - 2D Model: Dewberry | J3 to send the 2D model with the initial FHAD model submittal and a screen shot showing the flow split as soon as available.
 - UDFCD advised to model the split flow @ Lewiston in HEC-RAS and the connection to South Arapahoe will be discussed following the first submittal. Flows downstream of Lewiston will reflect the loss of flow to South Arapahoe at the split.

6. South Arapahoe

- Culvert capacity: Dewberry | J3 to verify 100-Year containment along Arapahoe Rd. from Parker Road to Cherry Creek, and the pipe connecting the CDOT pond to the existing WQ pond.
- Limits: Depending on containment of the 100-Year flows, the downstream-most point mapped will be the upstream end of the culvert crossing at Lewiston Way and the upstream-most point will be the open channel at the S3/S4 confluence.
- Boundary Conditions: The downstream boundary condition will be the head water elevation at the culvert crossing of Lewiston Way found w/ CulvertMaster or HY8.

7. Chenango

- Limits: Confirmed mapping limits are from the 10-year Cherry Creek floodplain to downstream point of Subbasin C9.
- Boundary Conditions: Determined the downstream-most cross-section will occur just downstream of the 10-Year Cherry Creek floodplain and the associated boundary condition will be the 10-Year known water surface elevation at that location.
- Non-UDFCD pond modeling: Confirmed that the pond will be modeled with no attenuation and the centerline will follow the path of the emergency overflow discharge.

8. Kragelund

- Limits: Confirmed mapping limits are from the 10-year Cherry Creek floodplain to downstream point of Subbasin K7.
- Boundary Conditions: Confirmed the downstream-most cross-section will occur just downstream of the 10-Year Cherry Creek floodplain and the associated boundary condition will be the 10-Year known water surface elevation at that location.
- Undefined Channel: Confirmed that longer cross-sections in the area upstream of Parker Rd. is acceptable to capture flow trending in two directions. The centerline will be drawn along the south based on the 2D model with obstructions added to the cross-sections to prevent cross-flow that would not occur in actuality.
- Future Flows:
 - Dewberry | J3 noted that future peak flows are greater than 30% larger than existing peak flows and require additional considerations per FHAD requirements.

- UDFCD advised to use future flow rates for the FHAD to remain consistent with the rest of the project. UDFCD will discuss with SEMSWA whether existing flows also need to be modeled.
- UDFCD also noted that particular stormwater conveyance measures, specifically regional detention, have potential to change and thus any affects these may have on actual observed flows at points of interest are not certain enough to consider at this time.

9. Other Items

- Requested items:
 - UDFCD will request a survey for the upper-most culvert at Hinsdale on Chenango. SEMSWA's infrastructure shapefiles indicate the crossing is equipped with an 84" CMP.
 - UDFCD will request a stock list of acronyms and abbreviations from the surveyor.
 - UDFCD will request the layer package (ie discuss with Morgan Lynch) and send/update as available.
- UDFCD to send GIS review tool.

ACTION ITEMS

1. Dewberry | J3 to include 2D HEC-RAS models with the first submittal for North Arapahoe and Kragelund to UDFCD for review of split flows.
2. Dewberry | J3 to update HEC-RAS models per discussion items and provide information re: selected Manning's values.
3. UDFCD to send GIS layer package and review tool.
4. UDFCD to inquire about survey acronym/abbreviation sheet from surveyor.
5. UDFCD to request a survey at Hinsdale upstream of the dam along Chenango, which SEMSWA infrastructure data indicates is an 84" CMP.
6. UDFCD to talk with Stacey at SEWSWA regarding increased Manning's n in Action Item 2 vs. blocked obstructions.

PROJECT SCHEDULE

Dewberry Model Review Submittal	April 22, 2019
UDFCD Review Wrap-up	May 3, 2019