# GOLF COURSE HYDROLOGY/FHAD MODEL MEETING MINUTES

**Brantner Gulch MDP and FHAD**
**Wednesday, February 10, 2021**
**9:00 am via Microsoft Teams**

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The meeting was held to discuss FLO-2D results in the golf course area, how they compare with the 1D results, and discuss how to model this area. This summary is intended to reflect the key points raised, issues for further consideration, and action items resulting from the discussions.

## Comment Discussion Items

Brantner Gulch Watershed Boundary

a. Southern basin boundary is in question since water spills south.
b. One option is to put a "Limit of Study."
c. DFA 0054 is the southernmost watershed that has been studied, but the north boundary is at 120th Avenue. The area between the Brantner Gulch watershed and the DFA 0054 watershed is considered South Platte Tributary Area, and there is no known study available.
d. Mann Lakes #1, #2, and #3 are located south of Henderson Road. Mann Lake #1 is adjacent to the South Platte River, Mann Lake #2 is between Riverdale Road and Mann Lake #1, and Mann Lake #3 is located south of these two lakes. The initial FLO-2D results show flows spilling into Mann Lake #2. Adams County noted that there was damage to Mann Lake #1 from flooding.
   Todd Creek Village Metro District through an IGA with Adams County will also be installing the outlet pump station at the northeastern corner of Mann Lake #1. There is currently a small electrical building there that is half finished that will provide the power for those future pumps. There is also a gravity outlet (RCP) at that same northeastern corner (directly across the river from the South Platte Henderson Gauge).

Mann Lakes #1, #2, and #3 are hydraulically connected with low flow pipes and an overflow pipe under Park Boulevard An inlet structure from the South Platte River allows for water to be pumped into the cells individually.

i. If these hydraulics are accurate, then a split flow model can be added all the way to the South Platte River.

e. Including the two lakes would be beneficial to the sponsors, as there are projects planned for the future within Mann Lake #1.
f. The hydrology will be updated to include the tributary area into Mann Lakes #1, #2, and #3. The Brantner Gulch and DFA 0054 watershed boundaries will be used to delineate this overall watershed, and then it will be subdivided as needed to meet criteria.

Brantner Gulch Modeling

g. In the 1D HEC-RAS model, lateral structures will be added to the north and south of the channel and the split flows will be optimized concurrently.
    i. Calculate the split flow in the 2D model, then adjust the weir coefficient in the 1D model to calibrate to the 2D model results.
    ii. Once the total flow leaving Brantner Gulch is determined, Olsson will send the sponsors this information to decide whether the full flows should be modeled in Brantner Gulch, or if the flows should be subtracted from Brantner Gulch downstream of the spills.

SPR Tributary 6

a. For the north spill out of Brantner Gulch, consider doing outside calculations to map the floodplain to the SPR Tributary 6 reach instead of doing a split flow. Hand calculations would likely be sufficient, as those flows would likely be eliminated instead of modified with the improvements shown in the Regional Park Master Plan.
b. Potential exists for a railroad to be placed in between Mann Nyholt lake and the South Platte River as part of the museum.
c. Jim noted following the meeting that the subdivision to the northwest has constructed the infrastructure to connect SPR 6 flow into the culvert within Yosemite, and constructed a roadway entrance that will stop high flows from propagating south along the west side of Yosemite.

For the Alternatives Phase:

a. Is there any option for SPR Tributary 6 to combine with Brantner Gulch? If there are improvements needed in the area where SPR 6 meanders through the golf course, it may make sense for the county to invest in additional improvements to Brantner Gulch to account for the SPR Tributary 6 flow. Brantner Gulch improvement plans from 2006 show the expansion of the channel to contain an approximate 50-year event for Brantner Gulch based on the updated hydrology in this study. These options will be discussed with Adams County and should complement their vision for the golf course.
b. The golf course does not like the flows coming through the course at the Yosemite intersection. A low flow pipe that connects to Brantner Gulch was installed to help alleviate the frequent flows through the golf course. This low flow pipe was accounted for in the hydrology phase of this study.
c. Adams County is currently planning on installation of a fairly elaborate Veteran's Memorial at the small parking lot (peninsula) north of Henderson Rd at Mann-Nyholt Lake.

SPR Tributaries 6 and 7

a. Model cross sections do not need to contain a lot of detail, as long as they generally agree with the 2D model results.

Northern Portion of Golf Course

a. The Regional Park area will be added to the HEC-RAS model starting upstream of Riverdale Road for the MDP. This reach will not be included in the FHAD. Olsson will include a map with the next submittal showing the MDP and FHAD model limits.

FLO-2D

a. Currently 75-ft cells. Recommend reducing the grid size to use these results to extract the flow splits. Perhaps use around 25 feet.
b. Use a steady flow method.
c. Assume all irrigation ditches are full.
d. Olsson will follow up with an updated FLO-2D model, with annotated figures denoting flows, velocities, and flow depths at the split flows. Velocities will be broken into 1 ft/s increments.

Action Items:

Olsson:

1. Update FLO-2D with smaller cell size and blocking off canal.

2. Prepare figures with callouts of flow splits, and include velocity and depth ranges.

MHFD:

1. Send DFA 0054 hydrology documents. *Completed*

**Please contact Olsson at 303-237-2072 or email with changes or questions regarding these meeting minutes. These minutes will be considered final unless comments are received within seven days of distribution. Although comments will be incorporated, as appropriate, only major revisions will be redistributed.**

**Minutes prepared by: Hannah Pring**
**cc: Attendees, File**