Merrick & Company.
2480 W. 26th Ave B225
Denver, Colorado 80211
Tel: +1 303-964-3333
Fax: +1 303-964-3355

www.merrick.com

# MINUTES

## First Creek Tributaries

## Master Drainage Plan

Progress Meeting, Wednesday, January 23rd, 2019, 11:00 am – at UDFCD

Attendees:

| Name | Organization | Phone | Email |
|---|---|---|---|
| Teresa Patterson | UDFCD | 303 455 6277 | tpatterson@udfcd.org |
| Craig Perl | City of Aurora | 303 739 7532 | cperl@auroragov.org |
| Jon Villines | City of Aurora | 303 739 7646 | jvilline@auroragov.org |
| Stacey Thompson | SEMSWA | 303 858 8844 | sthompson@semswa.org |
| Sue Liu | Arapahoe County | 720 874 6500 | sliu@arapahoegov.com |
| Jeanne Boyle | Merrick | 303 800 9036 | jeanne.boyle@merrick.com |
| Clare Steninger | Merrick | 303 800 9074 | clare.steninger@merrick.com |

**Review of Hydrology Comments**

Overall, review comments were reasonable and made sense to Merrick. We will update the report and modeling based on these comments. Below is more in-depth discussion of several comments:

1. Sue Liu's (Arapahoe County) comments were not included in the complied list. They will be resent to Teresa and Merrick to be included in the comment response matrix.
2. Sensitivity Analysis - A roughness (Manning's n) or culvert blockage (sedimentation) analysis of hydraulic models to provide information of which reaches are more sensitive to changes could provide helpful information for long term O&M. However, it is not as critical for this study since most of the area is undeveloped. Could be included in future MDPs but won't be part of this scope.
3. Historic run (I=2%) – for studies in developing watersheds, a historic flow condition (i.e. I=2%) illustrates effect of development and helps future developers adhere to discharging at historic rates. A historic run will be included in this study for only the 100-year storm event per sponsor discussion.
4. 500-year storm event – this MDP will not have a FHAD associated with it so the 500-year event hydrology is not required. The 500-year scenario will be run but not used for subsequent phases of this MDP.
    a. For Baseline Hydrology, Merrick will provide the 500-year results in the peak flow and volume table but remove it from the peak flow profiles for clarity.
5. Sky Ranch Zoning – a Phase II drainage report for Sky Ranch shows different zoning/land use in the Monaghan tributary. This report has not been published yet.

a. Merrick will look at the differences in land use to determine if there are significant changes for what was used in this study (based on Arapahoe County Comp Plan). If there are significant changes, this will be discussed with the sponsors before changing in the modeling.

6. Sky Ranch Pond D –
    a. a comment mentioned that the stage-storage and discharge curves for Pond D were not the ones from the Phase III drainage report. This is incorrect. The curves used were the correct curves from the Phase III report – no changes needed for the model.
    b. Subwatershed 600 has greater area than what Pond D was sized for. Subwatershed 600 will be split into two subwatersheds about at the jurisdictional boundary (depending on development boundaries) so only the area tributary to Pond D will be included in the pond routing.
7. Sky Ranch culvert – there is an existing 4x6 RCBC culvert under Monaghan in the Sky Ranch area. This culvert will be added to the table of existing infrastructure but will not be modeled in the baseline hydrology SWMM model.
8. Future Sky Ranch Ponds – there are other proposed ponds in Sky Ranch that may be regional (Ponds C, G, H). Since they are not existing infrastructure, they aren't included in the baseline hydrology. They will be considered in the alternatives analysis.
9. Depression Storage – for existing and future conditions, subwatersheds with imperviousness less than 15% a value of 0.4 was used for depression storage and for greater than 15% 0.35 was used.
10. Tributary naming – some sponsors are not thrilled with naming tributaries after adjacent roadways as the alignments of the roads could change in the future and would not be unique to this watershed.
    a. A theme (native grasses, trees, crops, animals, etc.) with alphabetical names could make the tributary names more unique.
    b. For now, tributary names shall remain as they are (road based).

**Alternatives Analysis Considerations**

1. The target storm event for the alternatives is the 100-year.
2. Existing ponds – existing ponds could be considered to be included for maintenance eligibility/ publicly owned, it must show that including them significantly improves the existing infrastructure capacity.
3. Future ponds – include regional detention from Sky Ranch in alternatives. Also look at if there are any regional ponds from the First Creek (main channel) MDP that should be considered.
4. Harmony development – the channels and ponds proposed in Harmony's plans are not eligible for District maintenance. The channels may be too small because they rely on local detention.
    a. Merrick will look at reports and flows assumed as part of the alternatives analysis.
    b. Goal would be to give guidance for this area.

5. Traditions pipe system – since existing local ponds are not included in the hydrology model, it is likely that the pipe system through the Traditions development are undersized. The pipes may have been sized assuming a future detention pond upstream of the development (subwatershed 250). Merrick will analyze:
    a. The capacity of the pipe system (pipe and street flow) without existing or future ponds and what the cost and size pipe would be needed to convey the undetained flow.
        i. Identify sensitive areas for excessive street depths or impacts to properties, etc.
    b. Include existing ponds and how that impacts the alternative design of the pipe system.
    c. Include existing and future ponds (even if not regional) and impacts for the alternative design of the pipe system.

**Schedule**

1. Finalize Hydrology Report – mid-February 2019
    a. Will be posted on the project website after approval.
2. Alternatives – proposal for budget is almost completed and will be sent to UDFCD. Before Merrick begins work on alternatives, a discussion of approach and categories will be conducted with UDFCD and then distributed to the other sponsors.