

PROGRESS MEETING MINUTES

**Basin 4100 and DFA 0056 OSP
Monday, January 29, 2018
11:00 am at Urban Drainage and Flood Control District**

Attendees:

| Name | Representing | E-mail |
|----------------|---|--------------------------------|
| Brooke Seymour | Urban Drainage and Flood Control District (UDFCD) | bseymour@udfcd.org |
| Dave Skuodas | UDFCD | dskuodas@udfcd.org |
| Jim Kaiser | City of Thornton (Thornton) | Jim.Kaiser@cityofthornton.net |
| Matt Eberly | Thornton | Matt.Eberly@cityofthornton.net |
| Russ Nelson | Adams County | RNelson@adcogov.org |
| Amy Gabor | Olsson Associates (Olsson) | agabor@olssonassociates.com |
| Deb Ohlinger | Olsson | dohlinger@olssonassociates.com |
| Hannah Heberd | Olsson | hheberd@olssonassociates.com |

Discussion Items:

The meeting was held to discuss the draft hydrology analysis and report and direction for beginning the alternatives analysis. While this summary is not intended to represent a comprehensive account of the meeting, it is intended to represent a comprehensive account of the meeting, it is intended to reflect the key points raised and issues for further consideration and to identify the action items resulting from the discussions.

- 1) Draft hydrology comments
 - a) Reservoirs
 - i) Downstream infrastructure – verify
 - (1) Comment was for Thornton internal use only.
 - b) Planned Construction
 - i) School Tributary UDFCD project status
 - (1) CIP completed west of Monroe and daylights into open space.
 - (2) This OSP should confirm Merrick hydraulic analysis of downstream constraint.
 - (3) OSP to highlight acre-feet of detention required to attenuate 100-year flow.
 - c) Land Use
 - i) 88th and 104th Station Area Master Plans – Thornton will provide
 - d) Outfall Descriptions and Major Crossing Structure Inventory Table to be completed with next phase of the project
 - i) The Outfall Descriptions section will include a description of the School Tributary projects.
 - e) Design Rainfall
 - i) Depth reduction factors (DRFs) should be used for 2-15 square mile (sm) watersheds for the 2-, 5, and 10-year storm events. Based on Table 5-3 in USDCM, 2 sm is not adjusted, and 5 sm is adjusted. CUHP will interpolate factors between 2 and 5 square miles. Based on conversations with UDFCD on other projects regarding how many different models need to be run with the DRFs, we

- did not apply the factor for this study because all design points have tributary areas below 5 sm, which is the first column in Table 5-3 with a correction factor. The largest tributary area is 2.6 sm. Is this approach acceptable for this study?
- (1) Approach was found to be acceptable.
- f) Subwatershed Delineation
 - i) Discuss – Subwatershed boundaries reflect the major storm event conditions and generally do not include storm drain systems, with the exception of detention pond outlets.
 - (1) Consider re-wording to clarify that only minor storm systems were ignored, and pond outlets and major storm systems were included in the model.
 - (2) Intersection of Thornton Parkway and Colorado is shown to go to the south in the hydrology.
 - ii) Discuss – Subwatersheds were delineated to avoid shapes with elongated tails and very narrow and long shapes, in accordance with modeling guidance.
 - g) Hydrograph Routing
 - i) Will use USDCM Eq. 6-8 for Manning's n where streams may provide more substantial attenuation. Otherwise will increase Manning's n by 25%.
 - (1) Olsson will review Manning's n values and clarify text.
 - h) Previous Studies
 - i) Future percent imperviousness difference of 7%.
 - (1) Include more description on what caused the difference. Note that the previous studies assigned the reservoirs an imperviousness value of 2%. Current modeling techniques would recommend that the reservoirs be assigned a value of 100% imperviousness. 100% was used for all reservoirs.
 - (2) Imperviousness values were developed from using the National Land Cover Database, so this difference could also account for differences in the previous study.
 - (3) Olsson will provide separate comparisons for Basin 4100 and DFA 0056.
 - ii) Additional watershed acreage difference from 2002 OSP is due to delineating the basins based on LiDAR.
 - (1) The largest difference is for sub-basins 44 and 55, previously numbered 38 and 42, respectively. Delineation was done using LiDAR data, and differences were due to changes that have since been made in the watershed. A figure comparing the old study watershed areas and this study was presented during the meeting is included in the meeting minutes.
 - i) Pond Sensitivity Analysis
 - i) Sub-basin 43 ponding
 - (1) Route Subbasin 43 to Subbasin 55 in ditch.
 - ii) Pond 350
 - (1) Pond 350 minor storm routing versus overflow will be considered during the alternative analysis. No changes will be made to the baseline hydrology.
 - iii) Future road to change flow path – include in baseline hydrology?
 - (1) Road construction has not occurred yet, but West Spratt Platte Lake has already had work done to fill in the southern finger of the lake. The boundary between 53 and 47 will be altered to represent this construction and the future changes.
 - iv) Spillways
 - (1) Future South Platte River spillways in and out of the gravel pits were discussed. The hydraulics between the gravel pits and the South Platte River will not be considered for this study. No changes will be made to baseline hydrology and routing.

- v) Sub-basin 53 drainage
 - (1) Boundary between sub-basins 53 and 47 will be re-delineated to reflect changes to the West Spratt Platte Lake where the finger was filled in.
- j) SWMM Routing
 - i) Figure B-2C – future change?
 - (1) Boundary between sub-basins 53 and 47 will be re-delineated as previously described.
- 2) Problem areas and alternatives analysis
 - a) Basin 4100 outfall, what should the existing CMP and Trail Bridge be replaced with? The waterline location in the old Riverdale Road will be considered when determining alternatives.
 - b) Could the area near the Basin 4100 outfall a potential water quality location? If so, what would be the best implementation? Generally, on-line water quality is not recommended. If it is implemented, it is best to size a water quality pond for the entire tributary area to avoid upstream treated flows to fill up the available area for water quality downstream. Thornton would like to evaluate the amount of water quality capture volume needed for School Tributary and the Basin 4100 drainageway downstream of the railroad. No detention is needed there, just controlled discharge.
 - c) Consider the Welby Station area plans and potential detention.
 - d) Consider the 100th & McKay design Olsson completed several years ago.
- 3) Schedule – submit final hydrology report on February 19, 2018
- 4) Website
 - a) Website is complete and Olsson will provide a link to it today.

Action Items:

- Thornton
 - Provide project record drawings for School Tributary project.
 - Provide 88th and 104th Station Area Master Plans
 - Provide Merrick School Tributary downstream hydraulic analysis.
- Olsson:
 - Provide link to website

Please contact Olsson at 303-237-2072 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 Hebbard
cc: Attendees, Shea Thomas, Marc Pedrucci, File

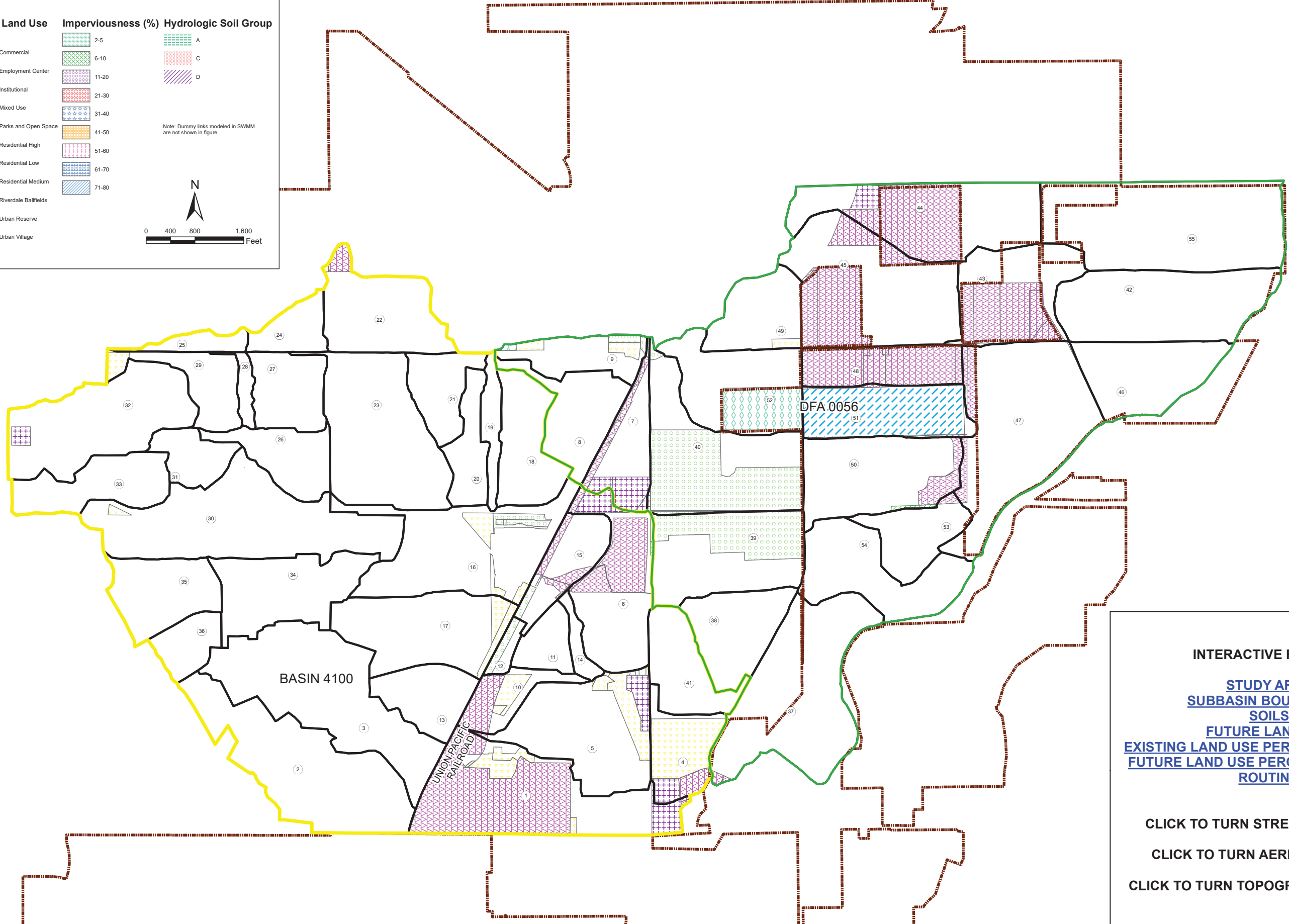
Legend

| | | | |
|------------------------|------------------------|---------------------------|------------------------------|
| DFA 0056 | Future Land Use | Imperviousness (%) | Hydrologic Soil Group |
| Basin 4100 | FULU | 2-5 | A |
| ID | Commercial | 6-10 | C |
| Large Basin ID | Employment Center | 11-20 | D |
| Design Point | Institutional | 21-30 | |
| Storage Unit | Mixed Use | 31-40 | |
| Conveyance Element | Parks and Open Space | 41-50 | |
| Subbasins | Residential High | 51-60 | |
| Contours | Residential Low | 61-70 | |
| Drainageway | Residential Medium | 71-80 | |
| Water Body | Riverdale Ballfields | | |
| Thornton City Boundary | Urban Reserve | | |
| Roads | Urban Village | | |

Note: Dummy links modeled in SWMM are not shown in figure.

0 400 800 1,600 Feet

N



INTERACTIVE FIGURES

[STUDY AREA](#)

[SUBBASIN BOUNDARIES](#)

[SOILS](#)

[FUTURE LAND USE](#)

[EXISTING LAND USE PERCENT IMPERVIOUS](#)

[FUTURE LAND USE PERCENT IMPERVIOUS](#)

[ROUTING](#)

CLICK TO TURN STREETS [ON](#) OR [OFF](#)

CLICK TO TURN AERIAL [ON](#) OR [OFF](#)

CLICK TO TURN TOPOGRAPHY [ON](#) OR [OFF](#)

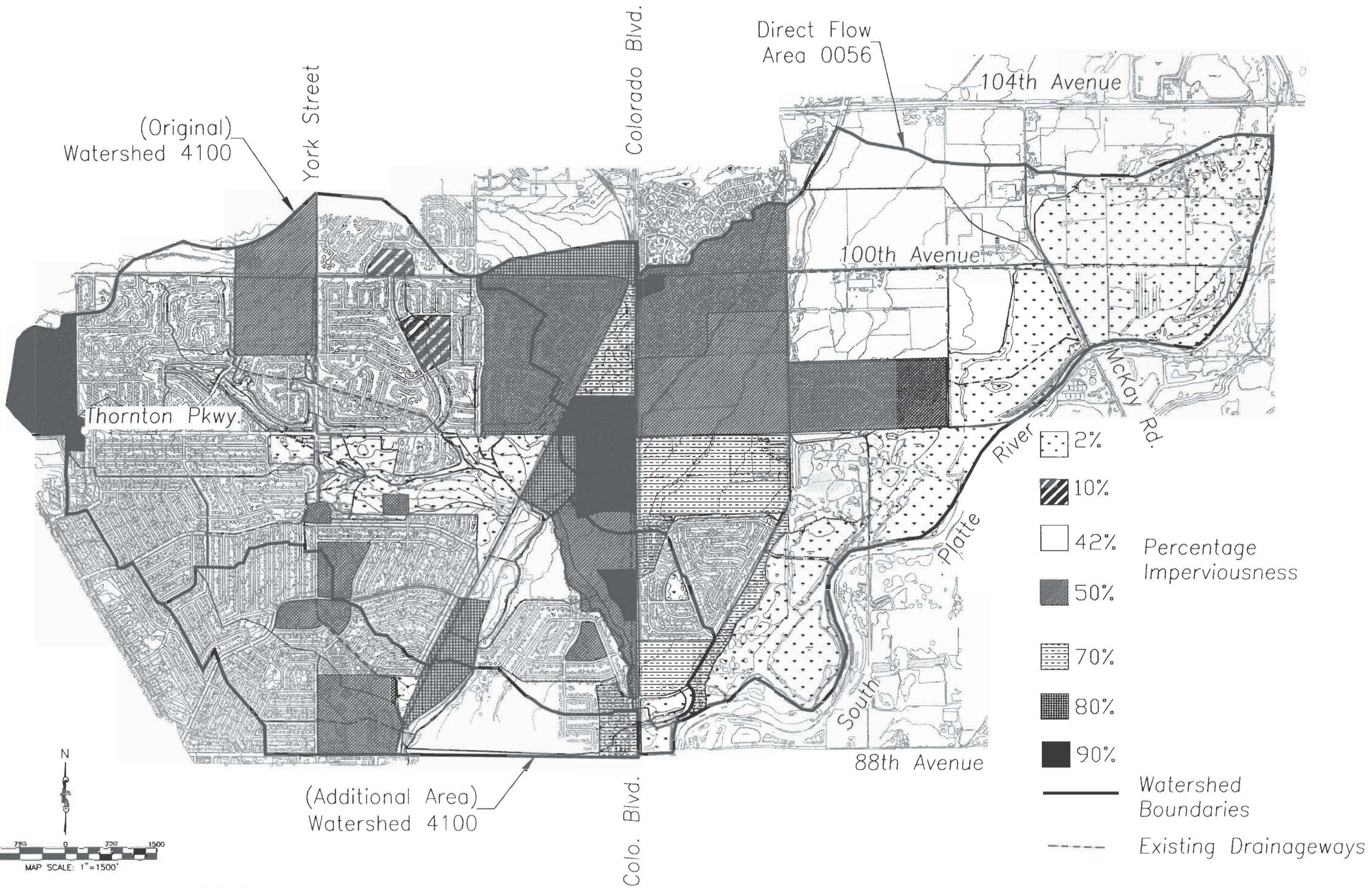
PROJECT: 017-2321
 DRAWN BY: HH
 DATE: 012/2017

URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

**BASIN 4100 AND DFA 0056
 HYDROLOGY WORKMAP**

OLSSON ASSOCIATES
 4690 Table Mountain Drive
 Suite 200
 Golden, CO 80403
 TEL: 303.237.2072
 FAX: 303.237.2659
 www.olssonassociates.com

FIGURE
B-1



ALL ELEVATIONS ARE MEAN SEA LEVEL DATUM
 MAP AND AUTOCAD FILE PRODUCED BY:
 LAKEMOOD MAPPING LTD., 7500 WEST MISSISSIPPI AVE., SUITE 21
 LAKEWOOD, COLORADO 80232 PHONE: (303)922-2417 FAX: (303)922-2866
 DATE OF PHOTOGRAPHY: MAY 26, 1999
 CONTOUR INTERVAL: 10'

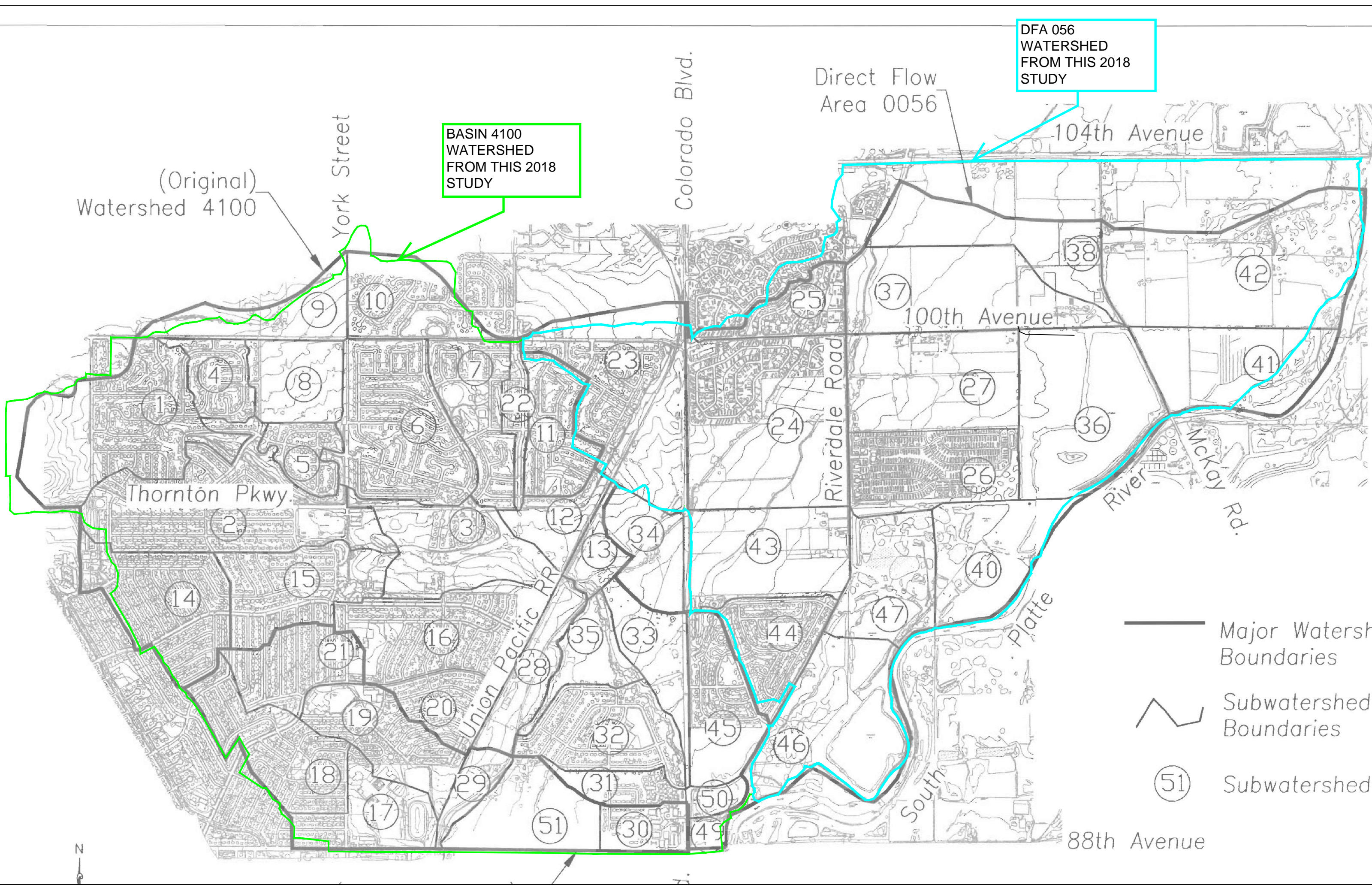
Kiowa Engineering Corporation
 1776 South Jackson Street, Suite 1120
 Denver, Colorado 80210
 (303)-692-0369

CITY OF THORNTON
 ADAMS COUNTY
 URBAN DRAINAGE AND FLOOD CONTROL DISTRICT

OUTFALL SYSTEMS PLANNING STUDY
 WATERSHED 4100 AND DIRECT FLOW AREA 0056

FUTURE IMPERVIOUSNESS

FIGURE 3



DFA 056
WATERSHED
FROM THIS 2018
STUDY

BASIN 4100
WATERSHED
FROM THIS 2018
STUDY

(Original)
Watershed 4100

Direct Flow
Area 0056

104th Avenue

100th Avenue

Thornton Pkwy.

Union Pacific RR

Riverdale Road

Platte
River

N. McKay
Rd.

— Major Watershed
Boundaries

— Subwatershed
Boundaries

⑤1 Subwatershed

88th Avenue

