



Preliminary Drainage Report
Southeast Commons, Filing No. 3
Lot 1, Block 1 of Southeast Commons, Filing No. 3
14383 East Evans Drive
Aurora, Colorado 80014

Prepared for:

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Approved For One Year From This Date	
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<hr/> City Engineer	<hr/> Date
<hr/> Water Department	<hr/> Date

July 2022

RRCE Job#921-1

Engineer's Certification

"I hereby certify that this report (plan) for the Preliminary Drainage Report of Southeast Commons, Filing No. 3 was prepared by me (or under my direct supervision) in accordance with the provisions of the City of Aurora drainage criteria for the owners thereof."



Registered Professional Engineer
State of Colorado No. 37162

Table of Contents

A. Introduction	4
B. Historical Drainage	5
C. Design Criteria	7
D. Drainage Plan	8
E. Conclusions	11
F. List of References	12
G. Appendix	
1. Hydrologic Computations	
2. Hydraulic Computations	
3. Soil Characteristics	
4. FEMA FIRMette	
5. Stormwater Detention & Infiltration Design Data Sheet	
6. Historic Drainage Plan	

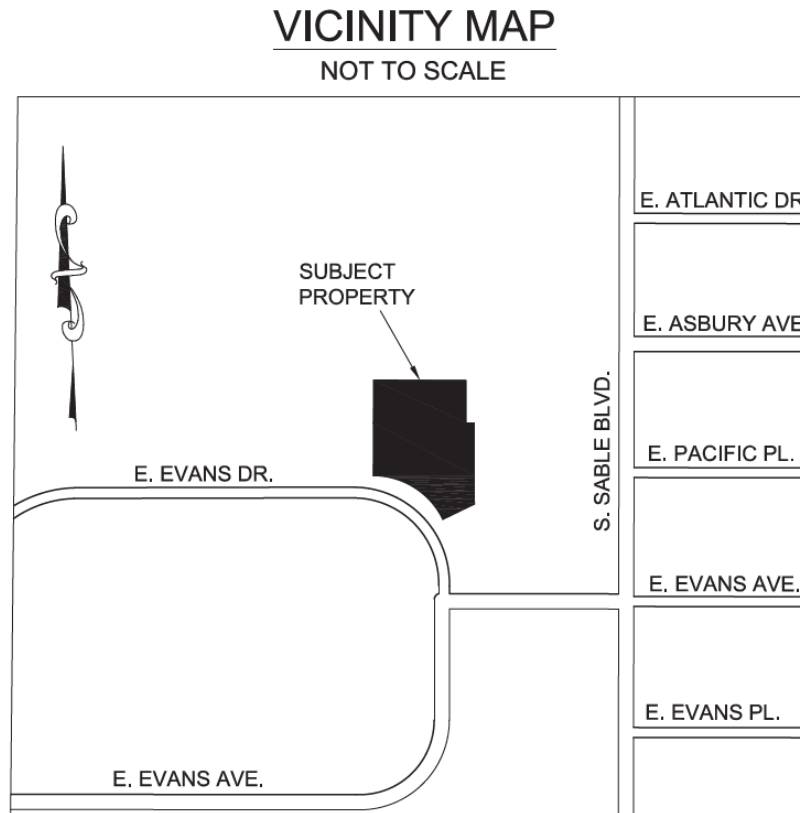
A. Introduction

1. Location

- a. Adjacent streets, subdivision name, lot and block, site plan name

This report is for improvements to Southeast Commons – Filing No. 3, Lot 1 Block 1, at 14383 East Evans Drive. The site is bounded on the north by Interplaza 225 Subdivision Filing No. 1 and on the west by Lot 1, Block 1 of The Landing at Southeast Commons Filing No. 1. To the South it is bounded by E. Evans Drive Right-of-way (ROW) and to the east by Lot 2, Block 1 of Southeast Commons Filing No. 3. A vicinity map is included with this report.

- b. Vicinity map



2. Proposed Development

- a. Property description - soils, topography, hydrologic soil groups.

The property has an area of 1.7 acres with slopes ranging between 3 to 5%. The soils are primarily classified by the United States Department of Agriculture Soil Survey as Bresser-Truckton sandy loams BvC consisting of 55% Bresser

Hydrologic Soil Group B, 30% Truckton Hydrologic Soil Group A, 15% others not specified.

- b. Type of development: Use, proposed density, composite percent of impervious area

The proposed site includes a Condominium building in the center of the site of the site with an asphalt loop around it, with some areas for parking spaces, landscape areas and a detention/water quality pond. The proposed site is estimated to have 59.0% imperviousness based on the proposed layout and City of Aurora's Impervious percentages for the different surfaces.

- c. Requested variances from this Storm Drainage and Technical Criteria Manual, which may include exemption requests for stormwater detention or the use of stormwater BMPs onsite.

No variances from the Storm Drainage and Technical Criteria Manual are being requested at this point.

B. Historic Drainage

1. Overall Basin Description

a. Offsite Basins

This property does not have any offsite basins that drain into it.

Historically, this property can be divided internally in two basins.

Basin HW has 1.23 acres and sheet-flows southwest draining through the adjacent property to the east of the site. The historic flows from this basin are 0.58 cfs (2-yr) and 1.90 (100-yr).

Basin HE has 0.47 acres and sheet-flows southeast draining through the adjacent property to the west of the site. The historic flows from this basin are 0.22 cfs (2-yr) and 0.73 (100-yr).

b. Major Drainage Ways

This site, located in the City of Aurora, Arapahoe County, is predominantly surrounded to the east and west by other developed properties that mainly consist of a building with asphalt roads around them. At the north is surrounded by a vacant lot and the south by E. Evans Drive. This property is located near Woodrim Tributary. The project site lies outside of the 100-year floodplain per FIRM map number 08005C0187K (Arapahoe County) revision date of December 17, 2010. This map is printed in the Appendix.

Around 70% of the property sheet-flows southwest through the adjacent property to the west while approximately 30% of the property sheet-flows southeast, then through the adjacent property to the east.

c. Drainage Patterns Through Property

Historically, around 80% of the site sheet flows in a southwest direction at an average of 3% slope onto the adjacent development to the west, while around 30% of the property flows southeast onto the adjacent development to the east. The site has an existing imperviousness of 5%.

There are not any existing major irrigation facilities such as ditches and canals on the property or within 100-feet of the property, that will influence or be influenced by the local drainage.

d. Outfalls Downstream from Property

Around 70% of the property sheet-flows southwest through the adjacent property to the west while approximately 30% of the property sheet-flows southeast, then through the adjacent property to the east. This property is located near the Woodrim Tributary of City of Aurora which flows northeast.

C. Design Criteria

1. List References

- a. Existing drainage reports for surrounding properties.

N/A

- b. Urban Storm Drainage Criteria Manual (USDCM)

Drainage criteria used for this project was in conformance with the Urban Drainage and Flood Control District's Storm Drainage Criteria Manual (USDCM -Volumes I, II & III).

- c. City Master Plan and floodplain studies

The drainage design concepts of this project are intended to be in conformance with the City of Aurora Storm Drainage and Technical Criteria Manual. (SDDTC)

2. Hydrologic Criteria

- a. Rainfall source and P1 identified

The hour point precipitation values were obtained from RA1-6 in the USDCM per SDDTC 5.22.

- b. Calculation method

The Hydrologic Criteria used for this Report is the Rational Method as described in the USDCM.

- c. Detention volume computation method

The USDCM UD-Detention 3.07 Excel software was used to calculate the detention volumes and worksheets are included in the Appendix.

- d. Design frequencies

The design frequencies utilized for the report were 10-year for the minor storm and 100-year for the major storm.

3. Hydraulic Criteria

- a. Reference sources other than USDCM

The drainage design concepts of this project are intended to be in conformance with the City of Aurora Storm Drainage and Technical Criteria Manual. (SDDTC)

- b. Identify design storm frequencies used for pipes and inlets, either public or private – sizing is not required and shall be submitted with the final drainage report

The Hydraulic Criteria used for sizing the outlet pipe for the detention pond was the 100-year storm frequency.

c. Water surface profile method

Hydraulic calculations were performed using AutoCAD Civil 3D 2019 analysis software.

d. Major drainageways

N/A

D. Drainage Plan

1. General Concept

a. Conveyance of off-site drainage; proposed downstream outfall

The proposed site has been designed to drain the runoff from Major and Minor storm event. It is proposed to sheet flow into a proposed detention/water quality pond located in the south center side of the property. Release rates from this detention/water quality pond are released to a proposed outfall storm sewer which will be connected to a private Type R inlet located on the adjacent property to the east.

There are no offsite basins that flow across this property.

b. Coordination requirements with surrounding developments.

The proposed project will tie into existing grades at all the adjacent property lines; therefore, no changes or coordination is required with adjacent owners.

c. Detention ponding/water quality BMP plan, identify ownership/maintenance responsibilities

All the storm drainage components in the project including drainage swales, detention/water quality pond, concrete trickle pans, outlet structure, outlet pipe and emergency spillway, are private and will be owned and maintained by the property owner.

The emergency access: the emergency access shall be maintained in perpetuity by the owners of the property to the standards as determined by the fire code official/fire department.

The onsite drainage pans, chase drains, detention/water quality pond, outlet structure, outlet pipe and outfall storm sewer will be maintained and operated by the owner.

2. Specific Details

- a. Discuss each basin or sub-basin including land use and minor and major storm flow patterns through the basin.

The proposed drainage plan for this project involves several basins.

Basin A is the main basin and it has 0.53 acres. It includes most of the center-east of the site, including the east third of the proposed building, parking sites, drives and some landscape areas around the east of the proposed building. Runoff sheet flows into the proposed curb and gutter, and concrete pans into the proposed double type 13 inlet 5 at DP3, which finally conveys it into the detention/water quality pond.

Basin B has 0.23 acres. It includes most of the west half of the proposed building and parking area west of the building. Runoff sheet flows north into the curb and gutter, then south through a 3' concrete trickle pan into proposed single type 13 inlet 2 at DP7, which finally conveys it into the detention/water quality pond.

Basin C has 0.25 acres. It is located at the west side of the property. It includes mainly asphalt private drive, asphalt parking sites and landscape areas. Runoff sheet flows into the sites west curb and gutter which conveys it south into single type 13 inlet 1 at DP8 which finally drains it east into the detention/water quality pond.

Basin D has 0.14 acres and it is located at the northeast side of the development. It includes some east parking sites and landscape areas. Runoff sheet flows west into the private concrete pan then the curb and gutter where it is conveyed south into the proposed single type 13 inlet 4 at DP5 which finally conveys them west into the detention/water quality pond.

Basin E has 0.04 acres. It includes a landscape area along the southeast side of the development. This basin sheets flow west into the curb and gutter then south into single type 13 inlet 3 at DP4 which finally conveys it west into the detention/water quality pond.

Basin P is the detention/water quality pond which also includes a south portion of the building's roof, concrete sidewalks south of the building and landscape areas around. It has an area of 0.29 acres. Runoff from this basin flows directly into the detention/water quality pond from different locations around it.

There are 4 offsite basins which consists of small edges of the property that due to grading coordination and tie-ins with adjacent property grades cannot be conveyed into the detention pond they have to flow offsite per historical drainage.

Basin OSS is only 0.07 acres and it consists of the small stretch of landscape that flows south then west to E. Evans Dr ROW curb and gutter then it flows east and west through the public curb and gutter.

Basin OSE has an area of 0.11 acres and it consists of a small area of landscape located on the east side of the property. This basin flows east to the adjacent property landscape area into the curb and gutter systems with conveys them through their storm sewer system. This small runoff is only landscape area and will continue flowing east through the neighbor's property maintaining the historical drainage pattern.

Basin OSW has an area of 0.03 acres and it consists of the small stretch of landscape at the west side of the property. This small runoff is only landscape area and will continue flowing west through the neighbor's property maintaining the historical drainage pattern.

Basin OSN has an area of 0.01 acres and it consists of the small stretch of landscape north of the proposed north CMU wall that can't be diverted into the detention pond due to minimum grading slopes. This small runoff is only landscape area and will continue flowing north through the adjacent vacant property maintaining the historical drainage pattern.

b. TOD and Urban Center developments

N/A

c. Detention pond location and outfall.

A proposed onsite detention pond has been designed to mitigate the increase in runoff from the proposed improvements, and limit release rates to those historically seen. The onsite detention pond is sized to provide water quality and detain the required 10 and 100-year storm volumes for the site. An emergency spillway has been proposed in the northwest corner of the detention/water quality pond. Runoff from the proposed site 100-yr storm has been designed to pass over the emergency spillway into E. Evans Drive north curb and gutter, then flowing east through the public curb and gutter per historical pattern.

d. Emergency overflow paths for sump inlets and detention ponds.

Emergency overflow goes through the emergency spillway on the south-center of the detention/water quality pond. Then it goes across the riprap apron into the north curb & gutter of E. Evans Drive where it flows east per historical drainage pattern.

e. Solutions to problems encountered.

N/A

f. Discuss the proposed permanent BMPs.

The principal form of water quality is the implementation of Extended Detention Basin. A detention pond has been included in the proposed development to mitigate additional runoff from the increased imperviousness of the site. Runoff from the majority of the proposed site will flow through the proposed detention/water quality pond where release rates will be limited to at or below historical rates.

The proposed pond has been designed to provide the Water Quality Capture Volume (WQCV), 10-year detention volume and 100-year detention volume. An emergency spillway has been designed to pass runoff from the proposed site 100-yr storm safely from the site in the event the pond fails.

A drainage easement is being dedicated per separate instrument. This drainage easement includes all the detention/water quality pond area, and it also includes the emergency access path from the ROW to the proposed detention/water quality pond.

- g. Phasing of construction and provisions for drainage during phasing.

N/A

- h. Discuss open channel concepts, whether they preserve an undisturbed cross-section or are an improved channel.

N/A

- i. Discuss stabilization requirements for any roadside ditches.

N/A

- j. Discuss how the requirements set forth in the approved Outfall Systems Plan have been met

Runoff from the detention/water quality pond, will be discharged per historical rates into the adjacent property's storm sewer system at the northeast corner of the property. Emergency Overflow will be constructed along the top of the south-center berm of the detention pond into E. Evans Dr. north curb and gutter and then east per historical drainage.

- k. Any other information deemed necessary to the project.

N/A

E. Conclusion

1. Compliance with Standards

The drainage concepts for this project are consistent with current policies and practices for storm drainage management as outlined in the City of Aurora Design Criteria and City Code and the Urban Drainage and Flood Control District's Storm Drainage Criteria Manual.

2. Summary of Concept

a. Degree of protection to existing site

The concepts presented for this project are also consistent with current policy and practices that allow the continued release of historic runoff while mitigating hazards of flooding.

b. Measures taken to provide adequate on-site drainage and enhancement to stormwater quality

An extended detention basin is being proposed in order to provide water quality and detention requirements.

c. Effect of proposed development on adjacent, upstream, and downstream sites under both existing and future buildout conditions

There will be no detriment to the adjacent, upstream, or downstream sites.

The future detention pond was sized for the 100-year developed storm. The site will maintain the flow patterns and release rates as have been historically seen from this Site.

F. List of References

Urban Drainage and Flood Control District (USCDM). March 2017. Drainage Criteria Manual, Volume I, II & III.

City of Aurora. October 2010. Storm Drainage and Technical Criteria Manual.

The FEMA Flood Map Service Center (MSC) msc.fema.gov/portal/home

USDA United States Department of Agriculture NRCS Natural Resources Conservation Service

G. APPENDIX

1. HYDROLOGIC COMPUTATIONS

TABLE 1 (continued)

RUNOFF COEFFICIENTS AND PERCENTS IMPERVIOUS

LAND USE OR SURFACE CHARACTERISTICS	PERCENT IMPERVIOUS	FREQUENCY			
		2	5	10	100
<u>Streets:</u>					
Paved	100	.87	.88	.90	.93
Gravel	40	.15	.25	.35	.65
<u>Concrete Drive and Walks</u>	96	.87	.87	.88	.89
<u>Roofs</u>	90	.80	.85	.90	.90
<u>Lawns, Sandy Soil (A and B Soils):</u>	2				
2% Slope		.05	.06	.08	.10
2-7% Slope		.10	.11	.13	.15
>7% Slope		.15	.16	.18	.20
<u>Lawns, Clay Soil (C and D Soils):</u>	5				
2% Slope		.13	.14	.15	.17
2-7% Slope		.18	.19	.20	.22
>7% Slope		.25	.27	.30	.35

NOTE: These Rational Formula coefficients may not be valid for large basins

(*)See Figures RO-3 through RO-5 of USDCM Volume 1 for percent impervious.

(**)Up to 5 units per acre. Single-family with more than 5 units per acre, use values for multi-unit/detached

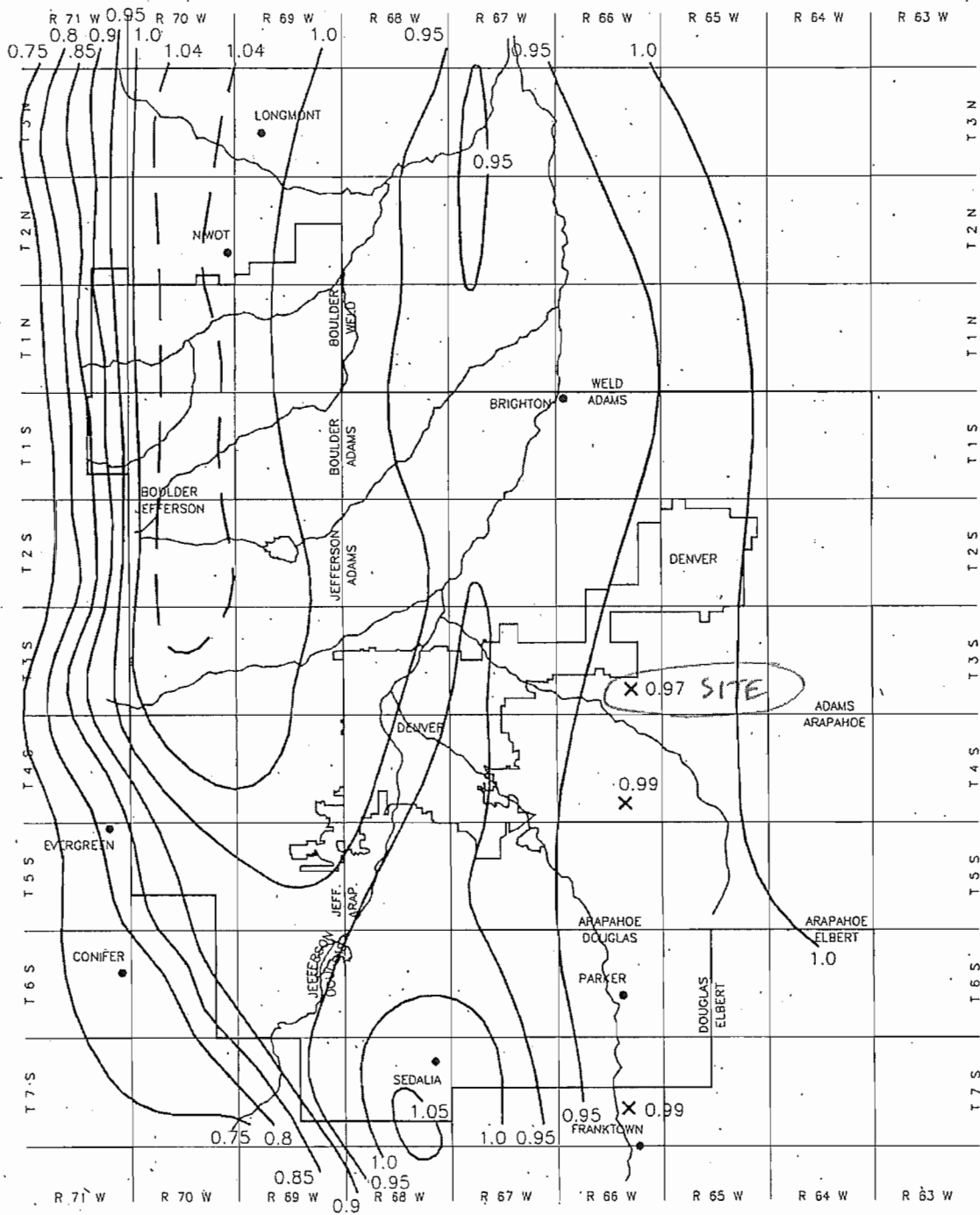


FIGURE RA-1

Rainfall Depth-Duration-Frequency: 2-Year, 1-Hour Rainfall

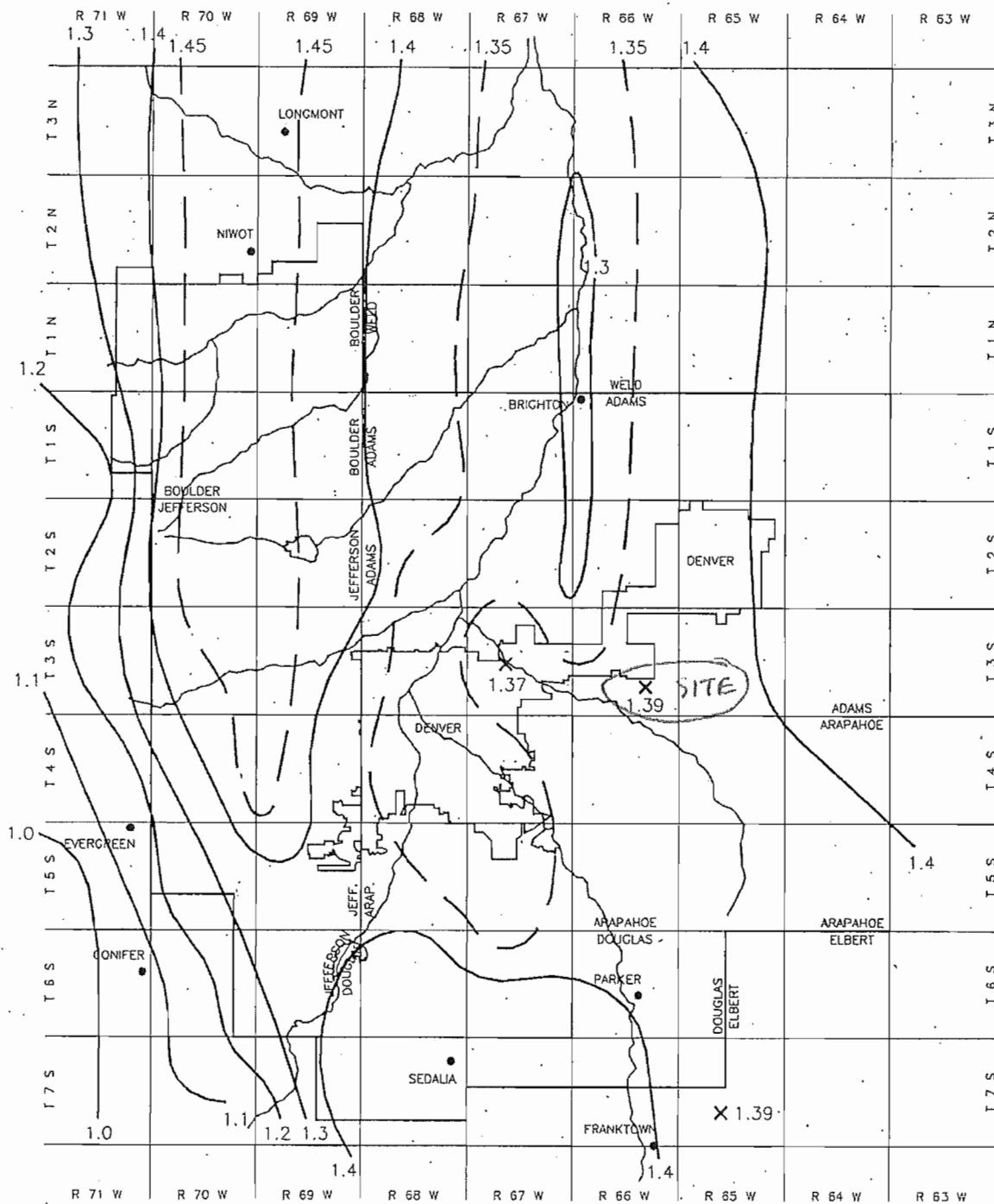


FIGURE RA-2

Rainfall Depth-Duration-Frequency: 5-Year, 1-Hour Rainfall

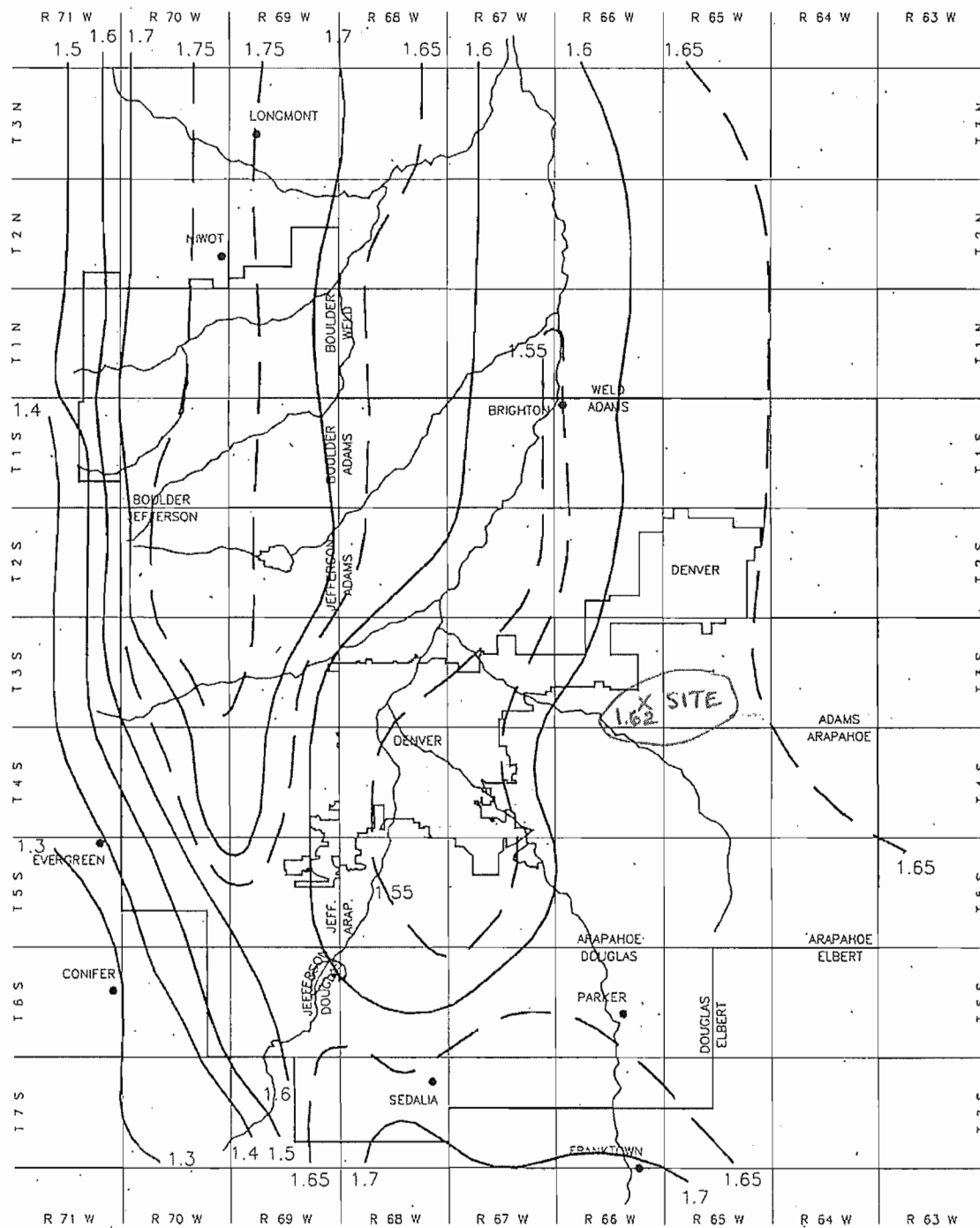


FIGURE RA-3

Rainfall Depth-Duration-Frequency: 10-Year, 1-Hour Rainfall

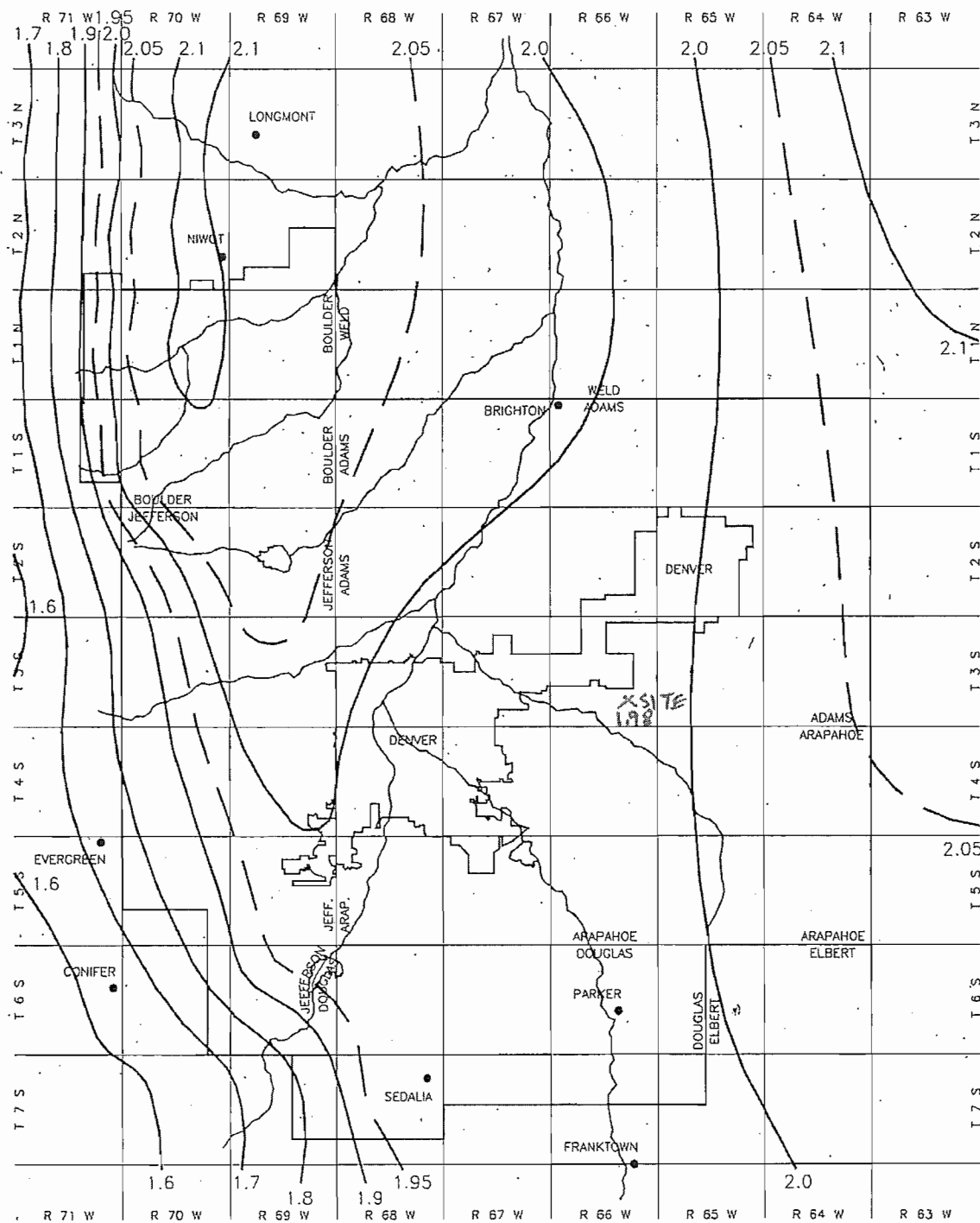


FIGURE RA-4

Rainfall Depth-Duration-Frequency: 25-Year, 1-Hour Rainfall

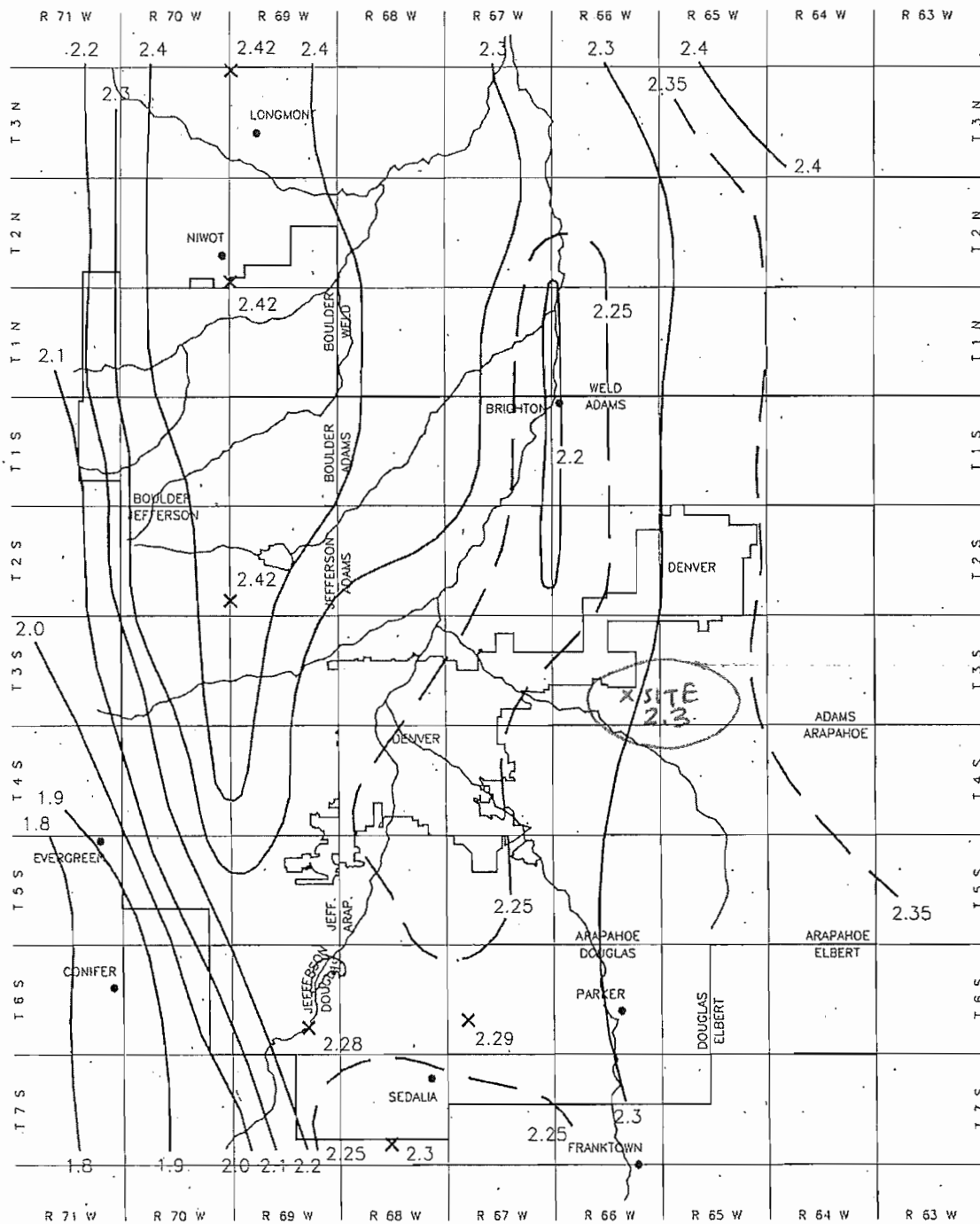


FIGURE RA-5

Rainfall Depth-Duration-Frequency: 50-Year, 1-Hour Rainfall

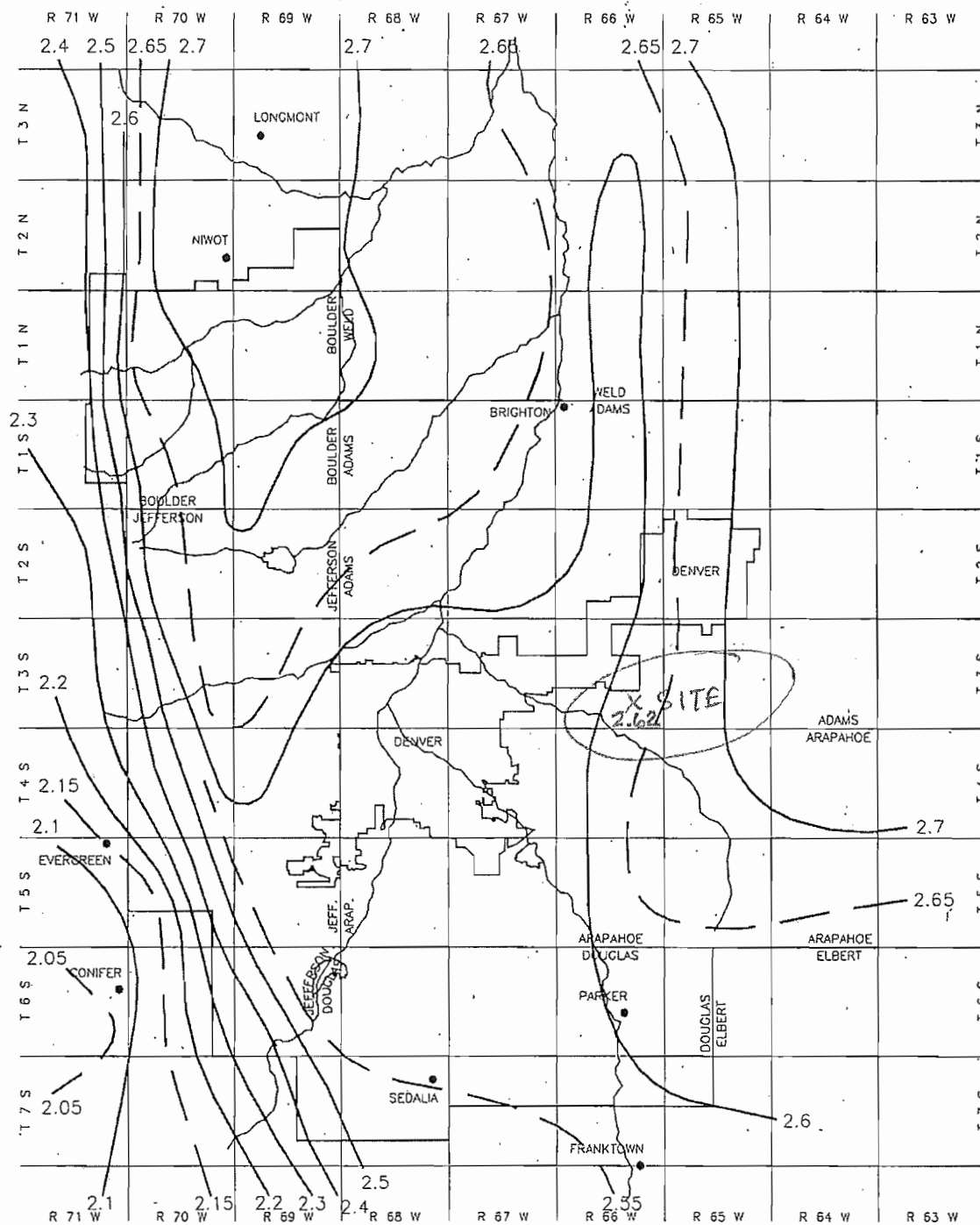


FIGURE RA-6

Rainfall Depth-Duration-Frequency: 100-Year, 1-Hour Rainfall

C factors & Impervious % - Proposed

14383 East Evans Drive

JN - 921-1

ALL	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	74052	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area (Includes Offsite Basins)	
C5=	0.19	1.70 ac	74,052 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

BASIN HW	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	53579	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area	
C5=	0.19	1.23 ac	53,579 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

BASIN HE	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	20473	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area	
C5=	0.19	0.47 ac	20,473 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

C factors & Impervious % - Proposed

14383 East Evans Drive

JN - 921-1

ALL	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	24306	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	632	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	4051	0.87	0.87	0.88	0.89	96
ROOFS	15409	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	29653	0.18	0.19	0.20	0.22	5

C2=	0.58	Total Basin Area (Includes Offsite Basins)	
C5=	0.60	1.70 ac	74,052 sq.ft.
C10=	0.62	Basin Impervious	
C100=	0.64	59%	

BASIN A	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	10389	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	577	0.87	0.87	0.88	0.89	96
ROOFS	7503	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	4617	0.18	0.19	0.20	0.22	5

C2=	0.71	Total Basin Area	
C5=	0.73	0.53 ac	23,087 sq.ft.
C10=	0.76	Basin Impervious	
C100=	0.78	78%	

BASIN B	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	3507	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	250	0.87	0.87	0.88	0.89	96
ROOFS	6011	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	250	0.18	0.19	0.20	0.22	5

C2=	0.81	Total Basin Area	
C5=	0.84	0.23 ac	10,019 sq.ft.
C10=	0.88	Basin Impervious	
C100=	0.89	92%	

BASIN C	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	7623	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	272	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	2995	0.18	0.19	0.20	0.22	5

C2=	0.68	Total Basin Area	
C5=	0.69	0.25 ac	10,890 sq.ft.
C10=	0.71	Basin Impervious	
C100=	0.73	74%	

C factors & Impervious % - Proposed

14383 East Evans Drive

JN - 921-1

BASIN D	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	2592	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	152	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	3354	0.18	0.19	0.20	0.22	5

C2=	0.49	Total Basin Area	
C5=	0.50	0.14 ac	6,098 sq.ft.
C10=	0.51	Basin Impervious	
C100=	0.54	48%	

BASIN E	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	43.56	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	43.56	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	1655.28	0.18	0.19	0.20	0.22	5

C2=	0.21	Total Basin Area	
C5=	0.22	0.04 ac	1,742 sq.ft.
C10=	0.23	Basin Impervious	
C100=	0.25	10%	

BASIN P	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	631.62	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	315.81	0.87	0.87	0.88	0.89	96
ROOFS	1894.86	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	9790.11	0.18	0.19	0.20	0.22	5

C2=	0.30	Total Basin Area	
C5=	0.33	0.29 ac	12,632 sq.ft.
C10=	0.35	Basin Impervious	
C100=	0.38	22%	

BASIN OSW	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	1306.8	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area	
C5=	0.19	0.03 ac	1,307 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

BASIN OSN	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	435.6	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area	
C5=	0.19	0.01 ac	436 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

C factors & Impervious % - Proposed

14383 East Evans Drive

JN - 921-1

<u>BASIN OSE</u>	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	0	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	0	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	4791.6	0.18	0.19	0.20	0.22	5

C2=	0.18	Total Basin Area	
C5=	0.19	0.11 ac	4,792 sq.ft.
C10=	0.20	Basin Impervious	
C100=	0.22	5%	

<u>BASIN OSS</u>	AREA (sf)	C2	C5	C10	C100	% IMPERV
ASPHALT PAVEMENT	152	0.87	0.88	0.90	0.93	100
GRAVEL ROAD	0	0.15	0.25	0.35	0.65	40
DRIVES & WALKS (PAVED)	2439	0.87	0.87	0.88	0.89	96
ROOFS	0	0.80	0.85	0.90	0.90	90
LAWNS (CLAYEY)	457.38	0.18	0.19	0.20	0.22	5

C2=	0.77	Total Basin Area	
C5=	0.77	0.07 ac	3,049 sq.ft.
C10=	0.78	Basin Impervious	
C100=	0.79	83%	

WQ-Det-Release Rates - Proposed

14383 East Evans Drive
JN - 743-1

7/11/2022

Project: Evans Condos
Project #: 921-1

Water Quality

I=	59 %
A=	1.70 acres
a=	1

The WQCV is calculated as a function of imperviousness and BMP drain time using Equation 3-1, and as shown in Figure 3-2:

$$WQCV = a(0.91I^2 - 1.19I^2 + 0.78I) \quad \text{Equation 3-1}$$

Where:

WQCV = Water Quality Capture Volume (watershed inches)

a = Coefficient corresponding to WQCV drain time (Table 3-2)

I = Imperviousness (%/100) (see Figures 3-3 through 3-5 [single family land use] and /or the *Runoff* chapter of Volume 1 [other typical land uses])

Table 3-2. Drain Time Coefficients for WQCV Calculations

Drain Time (hrs)	Coefficient, a
12 hours	0.8
24 hours	0.9
40 hours	1.0

WQCV: 0.033 acre-ft 0.234 watershed inches

Figure 3-2, which illustrates the relationship between imperviousness and WQCV for various drain times, is appropriate for use in Colorado's high plains near the foothills. For other portions of Colorado or United States, the WQCV obtained from this figure can be adjusted using the following relationships:

$$WQCV_{other} = d_s \left(\frac{WQCV}{0.43} \right) \quad \text{Equation 3-2}$$

Where:

WQCV = WQCV calculated using Equation 3-1 or Figure 3-2 (watershed inches)

WQCV_{other} = WQCV outside of Denver region (watershed inches)

d_s = depth of average runoff producing storm from Figure 3-1 (watershed inches)

WQ-Det-Release Rates - Proposed

14383 East Evans Drive
JN - 743-1

7/11/2022

Once the WQCV in watershed inches is found from Figure 3-2 or using Equation 3-1 and/or 3-2, the required BMP storage volume in acre-feet can be calculated as follows:

$$V = \left(\frac{WQCV}{12} \right) A \quad \text{Equation 3-3}$$

Where:

V = required storage volume (acre-ft)

A = tributary catchment area upstream (acres)

WQCV = Water Quality Capture Volume (watershed inches)

WQCV: 0.033 acre-ft 0.234 watershed inches

1.2*WQCV:	0.040 acre-ft	0.281 watershed inches
------------------	----------------------	-------------------------------

Detention Volumes:

6.33 Volume and Release Rates

- a) When the detention facility discharges into an existing storm sewer, street, or improved drainageway, the minimum detention volume shall be determined using the following equation (see Paragraph c) for additional limitations):

$$V = KA$$

For the 100-year, $K_{100} = (1.78I - 0.002I^2 - 3.56)/900$ (6.1)

For the 10-year, $K_{10} = (0.95I - 1.90)/1000$ (6.2)

Where V = required volume for the 100- or 10-year storm (acre-feet)

I = Developed basin imperviousness (%)

A = Tributary area (acres)

Detention Volume 10yr:	0.092 acre-ft	4,020 cu.ft.
Detention Volume 100yr:	0.179 acre-ft	7,794 cu.ft.

Detention Volumes per FAA:

From UD-Detention_3.07:

Detention Volume 10yr:	0.110 acre-ft	4,773 cu.ft.	*
Detention Volume 100yr:	0.180 acre-ft	7,836 cu.ft.	*

These values prevail as they are higher than equations 6.1 & 6.2

Detention Volume 10yr:	0.110 acre-ft	4,773 cu.ft.
Detention Volume 100yr:	0.180 acre-ft	7,836 cu.ft.

1.2WQCV+100yr Detention Volume:	0.220 acre-ft	9,568 cu.ft.
--	----------------------	---------------------

WQ-Det-Release Rates - Proposed
14383 East Evans Drive
JN - 743-1

7/11/2022

Allowable Release Rates:

Allowable release rates for detention ponds - CFS/ACRE

Storm Frequency	SCS Hydrologic Soil Group		
	A	B	C&D
10-year	0.13	0.23	0.30
100-year	0.50	0.85	1.00

The predominant soil group for the total basin area tributary to the detention pond shall be used for determining the allowable release rate.

Predominant Soil Type:

10-yr:	0.39 cfs
100-yr:	1.45 cfs

Adjusted release rates from the Water Quality/Detention Pond:

10-yr:	0.39 cfs
100-yr:	1.45 cfs

2. HYDRAULIC COMPUTATIONS

Calculation of Peak Runoff using Rational Method									
--	--	--	--	--	--	--	--	--	--

$$Q(cfs) = CIA$$
[illegible]

Calculation of Peak Runoff using Rational Method

Designer: Jose Ramirez

Company: Rocky Ridge Civil Engineering

Date: 7/11/2022

Project: 921-1 - Evans Condos - Developed

Location: 14383 E. Evans Dr, Aurora, CO

Version 2.00 released May 2017

Cells of this color are for required user-input

Cells of this color are for optional override values

Cells of this color are for calculated results based on overrides

$$t_t = \frac{0.395(1.1 - C_s)\sqrt{L_t}}{S^{0.33}}$$
$$t_t = \frac{L_t}{60K\sqrt{S_t}} = \frac{L_t}{60V_t}$$

Computed $t_c = t_t + t_e$

Regional $t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$

$t_{\text{minimum}} = 5 \text{ (urban)}$ $t_{\text{minimum}} = 10 \text{ (non-urban)}$

Selected $t_c = \max\{t_{\text{minimum}}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

1-hour rainfall depth, P1 (in) =

2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
0.96	1.36	1.61	2.00	2.28	2.60	3.14

Rainfall Intensity Equation Coefficients =

a	b	c
28.50	10.00	0.786

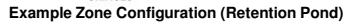
$I(in/hr) = \frac{a * P_1}{(b + t_c)^c}$

$Q(cfs) = CIA$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time						Time of Concentration			Rainfall Intensity, I (in/hr)								Peak Flow, Q (cfs)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S _t (ft/ft)	Overland Flow Time t _t (min)	Channelized Flow Length L _t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S _t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V _t (ft/sec)	Channelized Flow Time t _t (min)	Computed t _c (min)	Regional t _c (min)	Selected t _c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
BASIN A	0.53	B	77.7	0.62	0.65	0.68	0.74	0.76	0.79	0.82	20.00			0.250	1.25	325.00			0.050	20	4.47	1.21	2.46	14.02	5.00	3.26	4.61	5.46	6.78	7.73	8.82	10.65	1.07	1.59	1.98	2.65	3.12	3.68	4.63																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BASIN B	0.23	B	91.5	0.75	0.78	0.80	0.82	0.84	0.85	0.87	24.00			0.250	0.98	240.00			0.005	20	1.41	2.83	3.81	13.03	5.00	3.26	4.61	5.46	6.78	7.73	8.82	10.65	0.56	0.83	1.00	1.29	1.49	1.73	2.13																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BASIN C	0.25	B	73.8	0.59	0.62	0.65	0.71	0.74	0.77	0.81	23.00			0.250	1.45	285.00			0.005	20	1.41	3.36	4.81	16.93	5.00	3.26	4.61	5.46	6.78	7.73	8.82	10.65	0.48	0.71	0.89	1.21	1.43	1.70	2.15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BASIN D	0.14	B	47.7	0.35	0.38	0.44	0.55	0.59	0.65	0.71	22.00			0.250	2.10	195.00			0.005	20	1.41	2.30	4.40	20.83	5.00	3.26	4.61	5.46	6.78	7.73	8.82	10.65	0.16	0.25	0.34	0.52	0.64	0.80	1.06																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BASIN E	0.04	B	9.7	0.05	0.07	0.13	0.31	0.38	0.47	0.57	26.00			0.250	3.29	202.00			0.050	20	4.47	0.75	4.04	25.81	10.00	2.60	3.68	4.36	5.41	6.17	7.03	8.50	0.01	0.01	0.02	0.07	0.09	0.13	0.19																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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BASIN P	0.29	B	21.8	0.14	0.16	0.23	0.39	0.45	0.53	0.62	15.00			0.250	2.26	45.00			0.050	20	4.47	0.17	2.43	22.58	5.00	3.26	4.61	5.46	6.78	7.73	8.82	10.65	0.13	0.22	0.37	0.76	1.01	1.35	1.90																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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MHFD-Detention, Version 4.02 (February 2020)

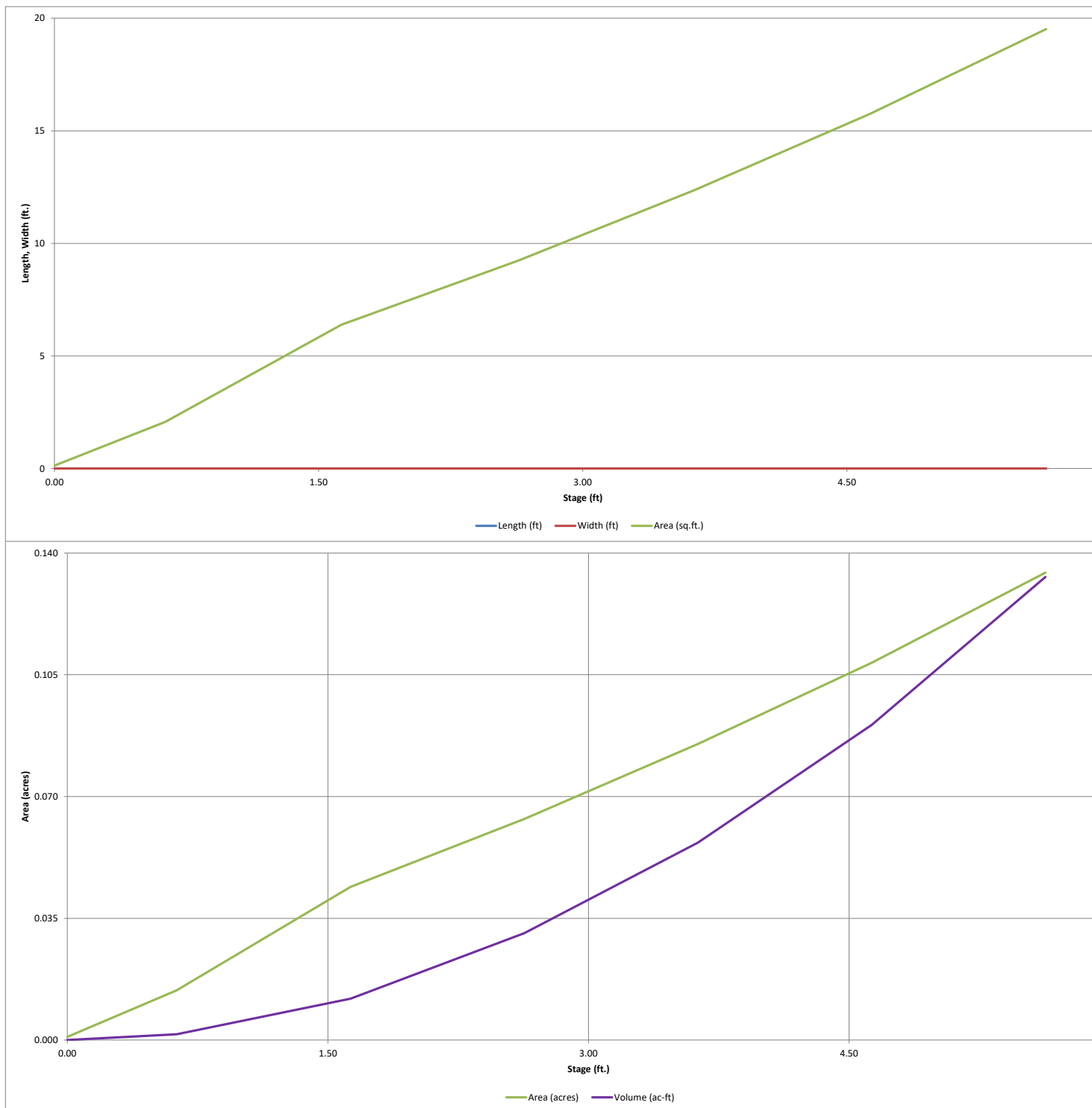
Basin ID: DEVELOPED



7/11/2022, 3:00 PM

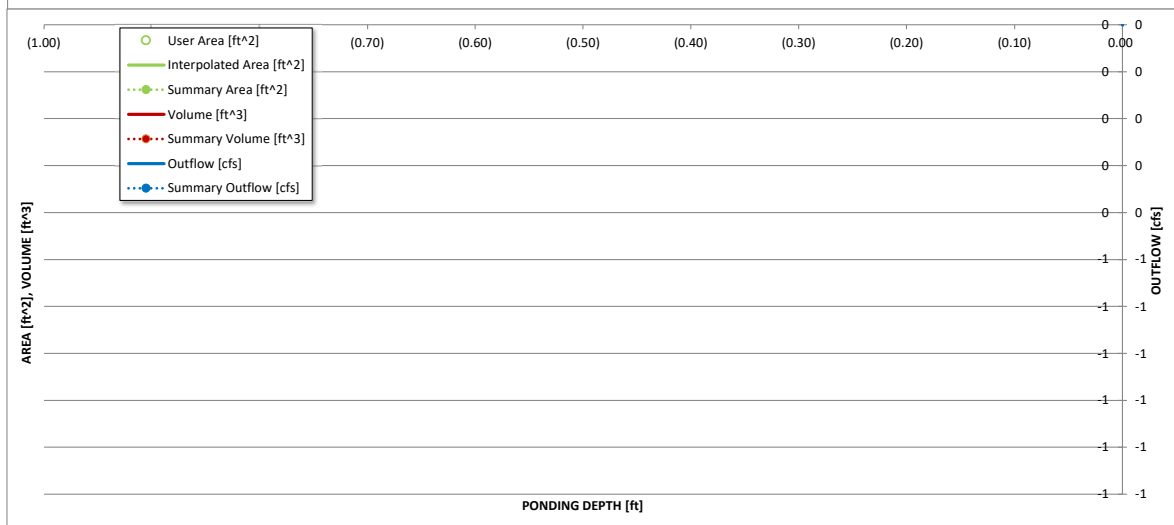
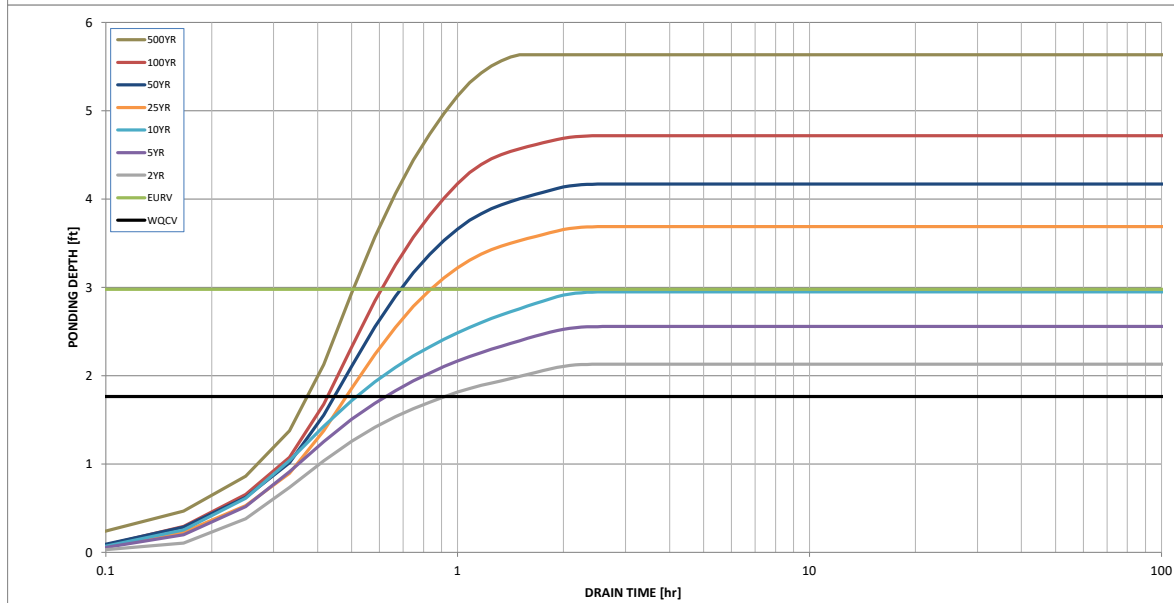
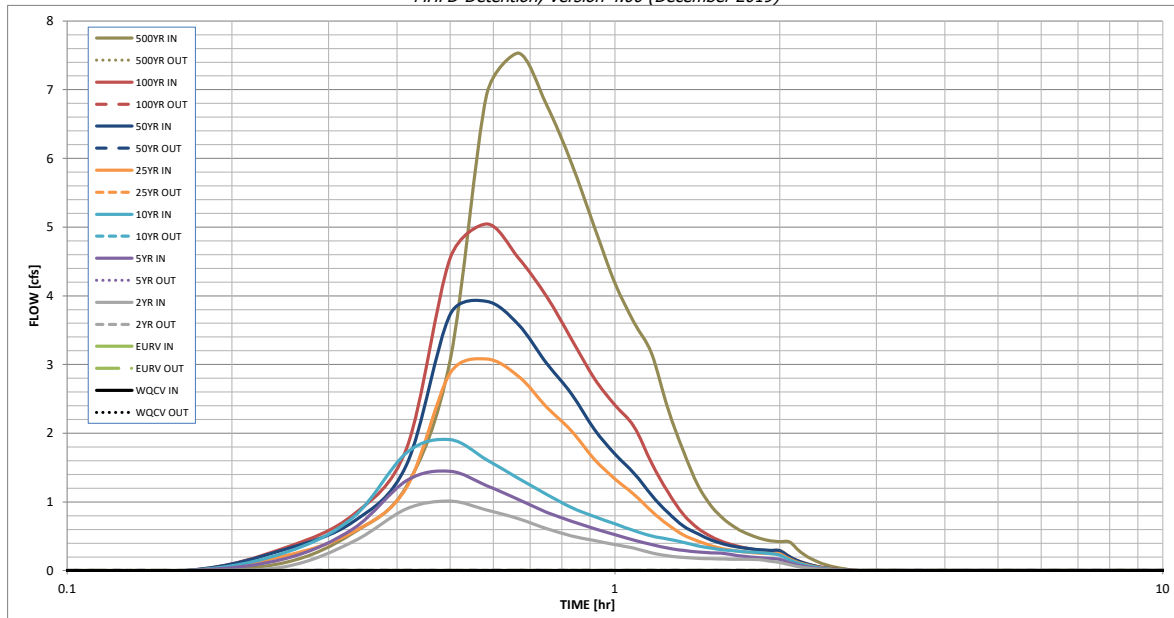
DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.02 (February 2020)



DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-*Detention, Version 4.00 (December 2019)*



S-A-V-D Chart Axis Override	X-axis	Left Y-Axis	Right Y-Axis
minimum bound			
maximum bound			

DETENTION BASIN OUTLET STRUCTURE DESIGN

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

[illegible]

3. SOIL CHARACTERISTICS



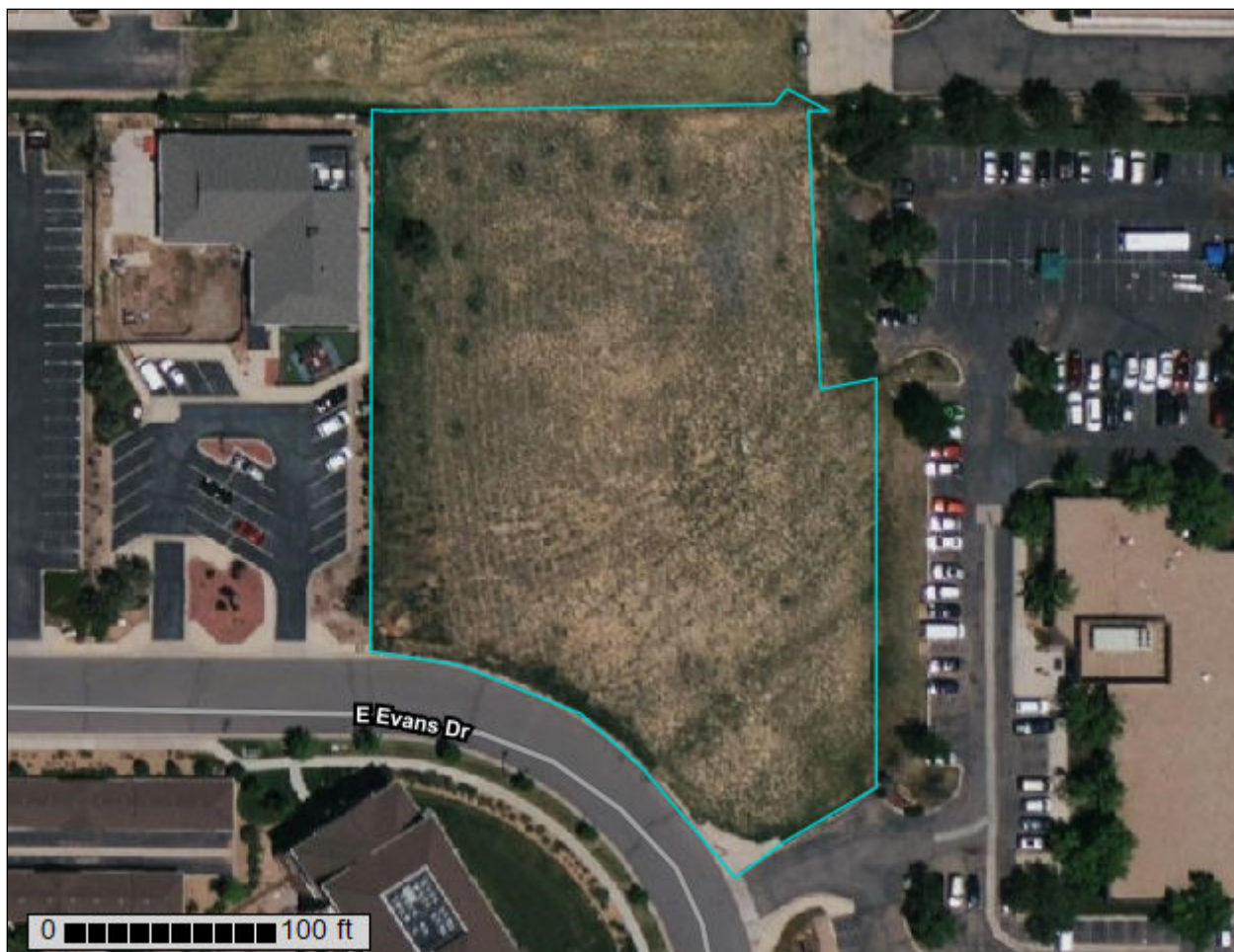
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Arapahoe County, Colorado



July 11, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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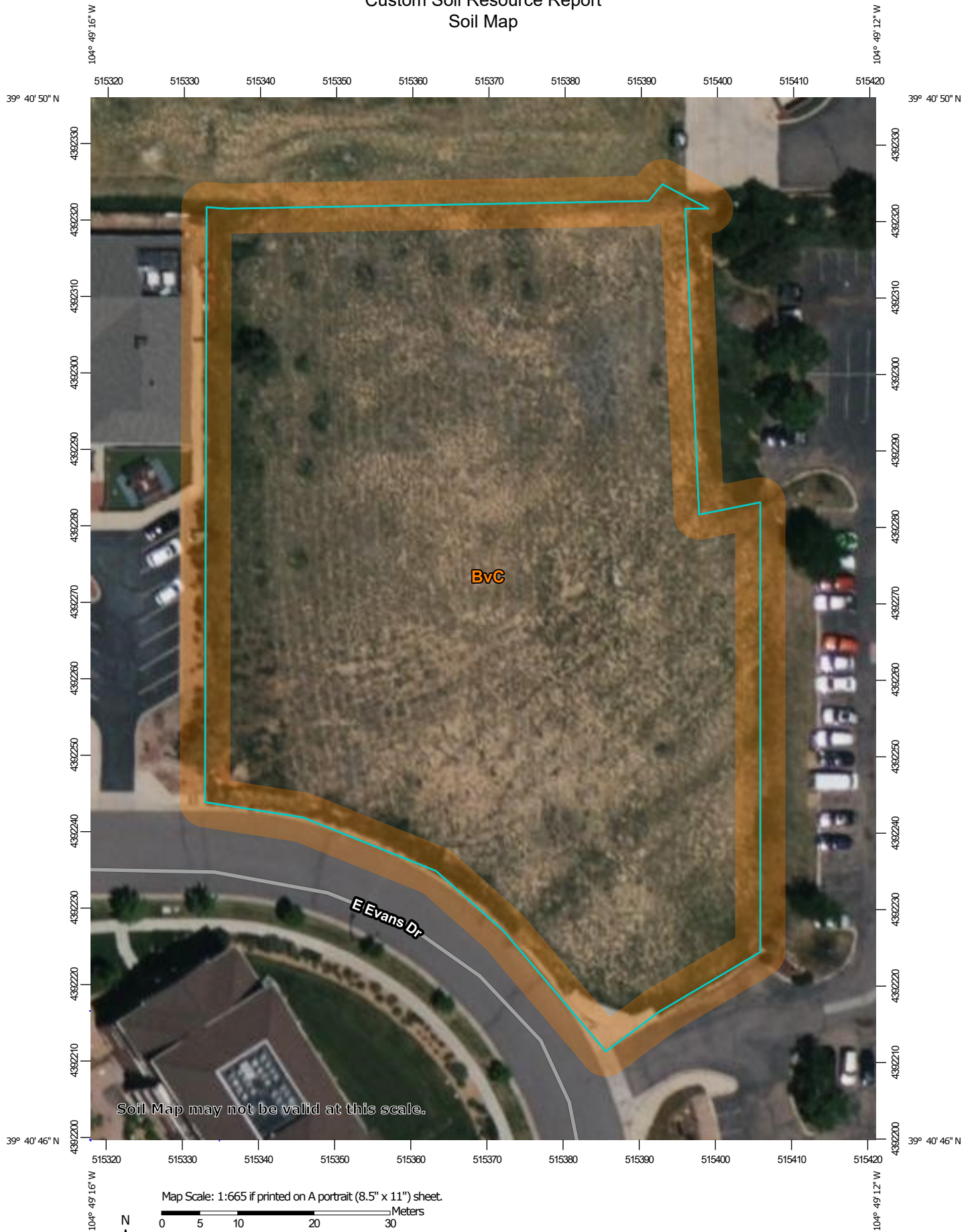
Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Arapahoe County, Colorado.....	10
BvC—Bresser-Truckton sandy loams, 3 to 5 percent slopes.....	10

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot


 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole

 Slide or Slip

 Sodic Spot


 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Arapahoe County, Colorado
Survey Area Data: Version 17, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BvC	Bresser-Truckton sandy loams, 3 to 5 percent slopes	1.6	100.0%
Totals for Area of Interest		1.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Custom Soil Resource Report

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Arapahoe County, Colorado

BvC—Bresser-Truckton sandy loams, 3 to 5 percent slopes

Map Unit Setting

National map unit symbol: 34y5

Elevation: 4,500 to 6,800 feet

Mean annual precipitation: 12 to 18 inches

Mean annual air temperature: 46 to 52 degrees F

Frost-free period: 125 to 180 days

Farmland classification: Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60

Map Unit Composition

Bresser and similar soils: 55 percent

Truckton and similar soils: 30 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bresser

Setting

Landform: Playas, drainageways, stream terraces

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Noncalcareous sandy alluvium and/or noncalcareous sandy eolian deposits

Typical profile

H1 - 0 to 6 inches: sandy loam

H2 - 6 to 26 inches: sandy clay loam

H3 - 26 to 32 inches: gravelly sandy loam

H4 - 32 to 60 inches: gravelly loamy coarse sand

Properties and qualities

Slope: 3 to 5 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 10 percent

Available water supply, 0 to 60 inches: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Ecological site: R049XB210CO - Sandy Foothill

Hydric soil rating: No

Description of Truckton

Setting

Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Typical profile

H1 - 0 to 5 inches: sandy loam
H2 - 5 to 20 inches: sandy loam
H3 - 20 to 60 inches: sandy loam

Properties and qualities

Slope: 3 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

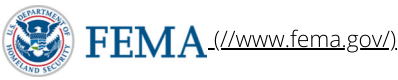
Nunn

Percent of map unit: 8 percent
Hydric soil rating: No

Ascalon

Percent of map unit: 7 percent
Hydric soil rating: No

4. FEMA FIRMETTE



Navigation

Search

Languages

MSC Home (/portal/)

MSC Search by Address (/portal/search)

MSC Search All Products
(/portal/advanceSearch)

▼ MSC Products and Tools
(/portal/resources/productsandtools)

Hazus (/portal/resources/hazus)

LOMC Batch Files
(/portal/resources/lomc)

Product Availability
(/portal/productAvailability)

MSC Frequently Asked Questions (FAQs)
(/portal/resources/faq)

MSC Email Subscriptions
(/portal/subscriptionHome)

Contact MSC Help
(/portal/resources/contact)

FEMA Flood Map Service Center: Search By Address

Enter an address, place, or coordinates: ?

14383 E. Evans Drive, Aurora, CO 80022

Search

Whether you are in a high risk zone or not, you may need [flood insurance \(https://www.fema.gov/national-flood-insurance-program\)](https://www.fema.gov/national-flood-insurance-program) because most homeowners insurance doesn't cover flood damage. If you live in an area with low or moderate flood risk, you are 5 times more likely to experience flood than a fire in your home over the next 30 years. For many, a National Flood Insurance Program's flood insurance policy could cost less than \$400 per year. Call your insurance agent today and protect what you've built.

Learn more about [steps you can take \(https://www.fema.gov/what-mitigation\)](https://www.fema.gov/what-mitigation) to reduce flood risk damage.

Search Results—Products for AURORA, CITY OF

Show ALL Products » (https://msc.fema.gov/portal/availabilitySearch?addcommunity=080002&communityName=AURORA, CITY OF#searchresultsanchor)

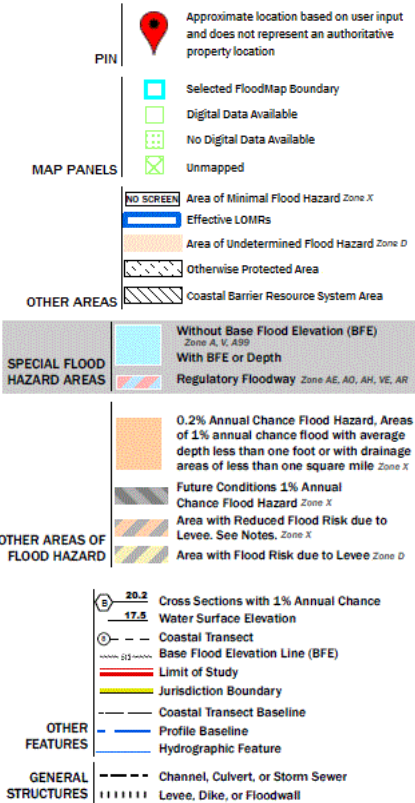
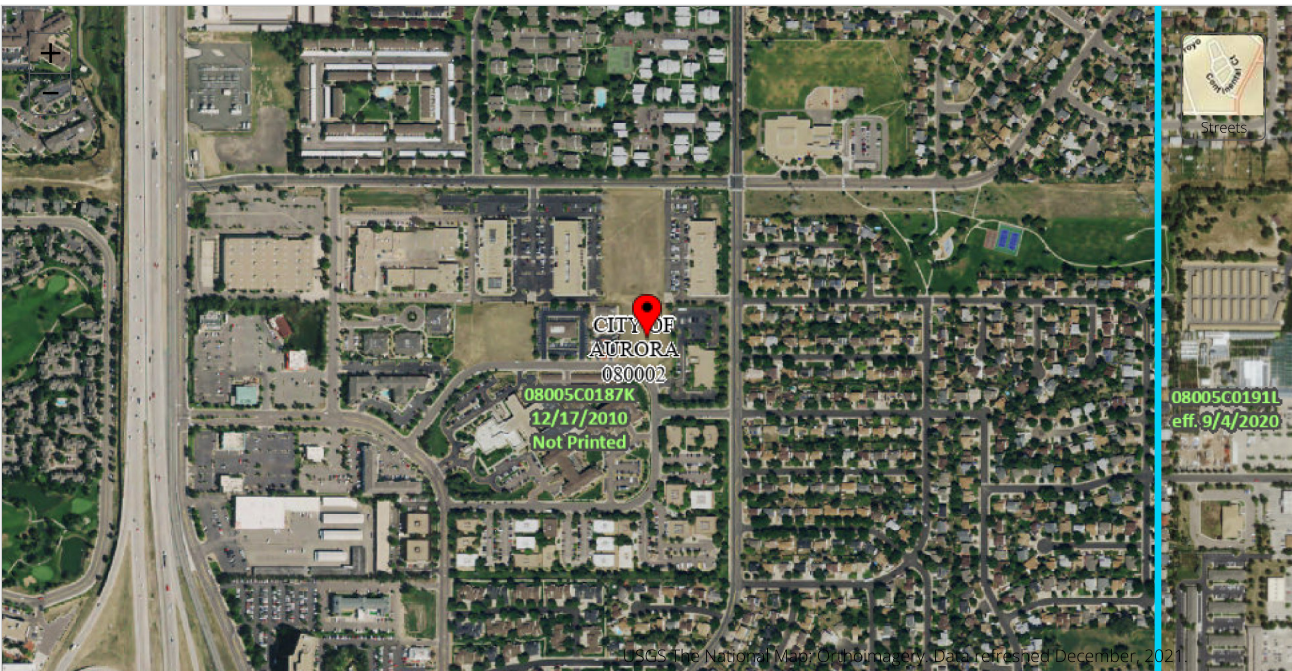
The flood map for the selected area is number 08005C0187K. The flood map for this location has a status of "not printed". This means that the entire area of the panel is in a single flood zone, so FEMA chose to economize and not create a printable image for this location. However, the flood zone data is viewable on the interactive map below and you can print a map for your location using the "FIRMette" button

DYNAMIC MAP



You can choose a new flood map or move the location pin by selecting a different location on the locator map below or by entering a new location in the search field above. It may take a minute or more during peak hours to generate a dynamic FIRMette. If you are a person with a disability, are blind, or have low vision, and need assistance, please contact a map specialist (https://msc.fema.gov/portal/resources/contact).

Go To NFHL Viewer » (https://hazards-fema.maps.arcgis.com/apps/webappviewer/index.html?id=8b0adb51996444d4879338b5529aa9cd&extent=-104.831



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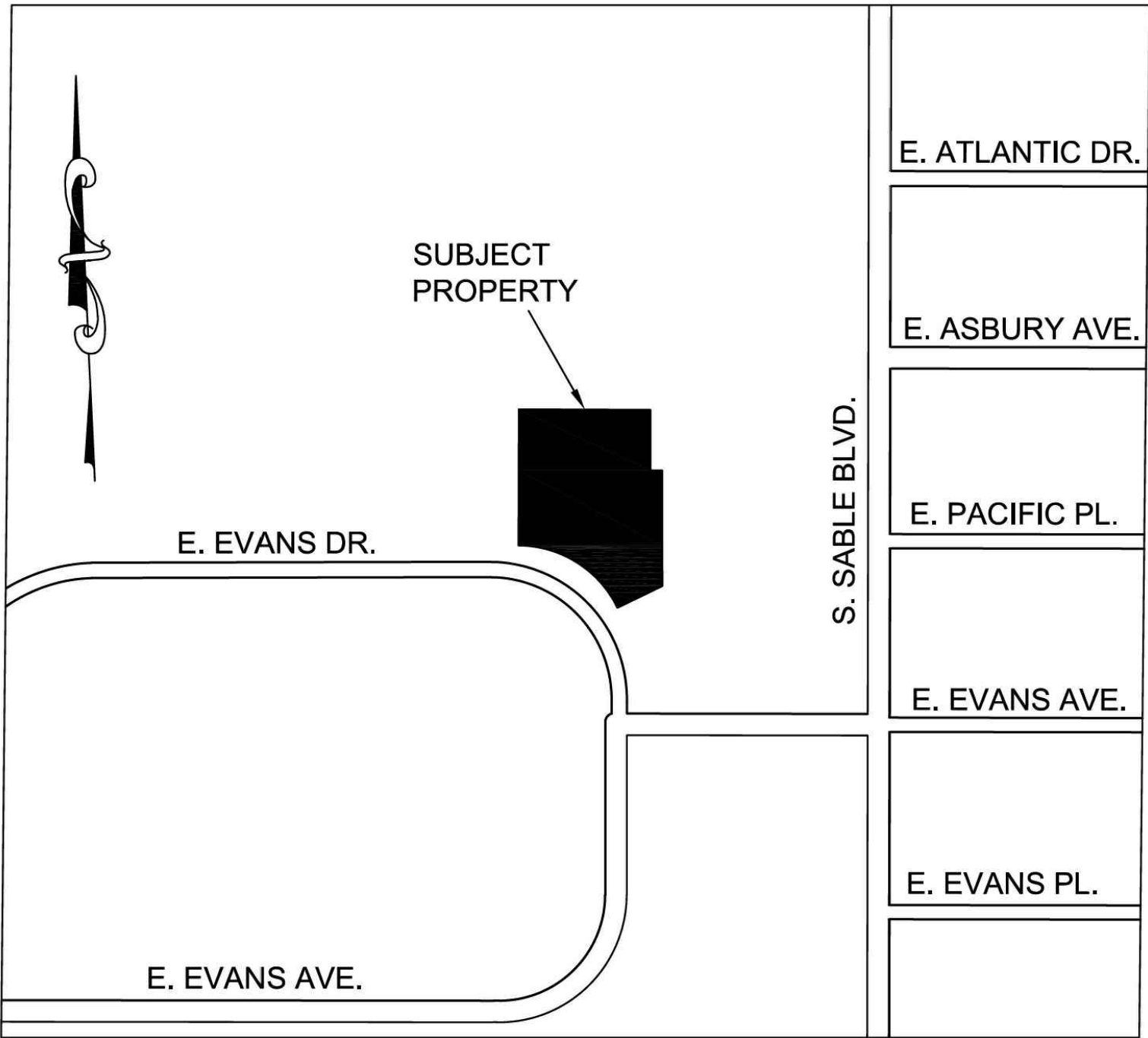
[Home \(/www.fema.gov/\)](https://www.fema.gov/) [Download Plug-ins \(/www.fema.gov/download-plugin-ins\)](https://www.fema.gov/download-plugin-ins) [About Us \(/www.fema.gov/about-agency\)](https://www.fema.gov/about-agency) [Privacy Policy \(/www.fema.gov/privacy-policy\)](https://www.fema.gov/privacy-policy) [FOIA \(/www.fema.gov/foia\)](https://www.fema.gov/foia) [Office of the Inspector General \(/www.oig.dhs.gov/\)](https://www.oig.dhs.gov/) [Strategic Plan \(/www.fema.gov/fema-strategic-plan\)](https://www.fema.gov/fema-strategic-plan) [Whitehouse.gov \(/www.whitehouse.gov\)](https://www.whitehouse.gov/) [DHS.gov \(/www.dhs.gov\)](https://www.dhs.gov/) [Ready.gov \(/www.ready.gov\)](https://www.ready.gov/) [USA.gov \(/www.usa.gov\)](https://www.usa.gov/) [DisasterAssistance.gov \(/www.disasterassistance.gov/\)](https://www.disasterassistance.gov/)



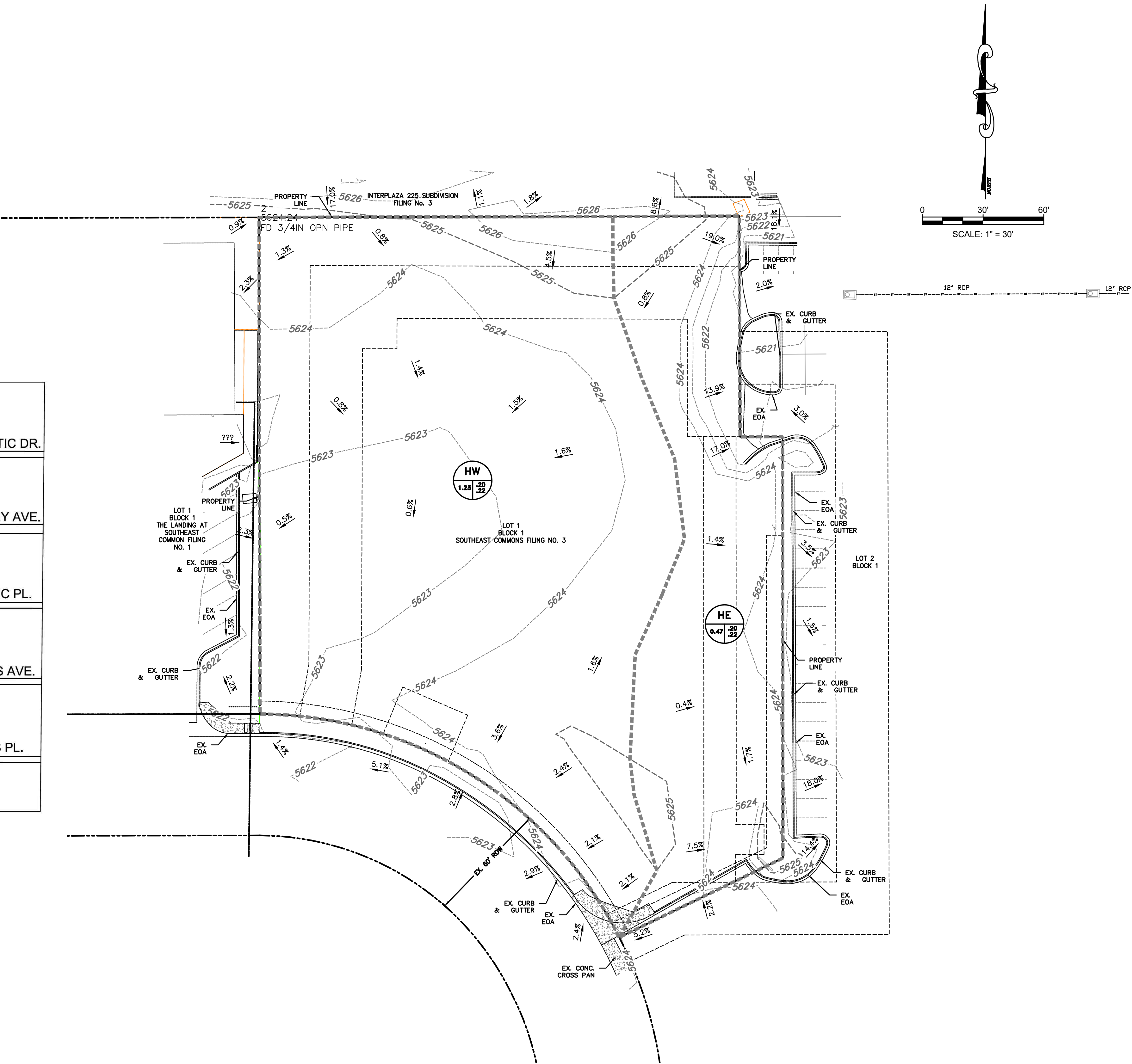
6. Historic Drainage Plan

SOUTHEAST COMMONS SUBDIVISION, FILING No. 3
LOT 1, BLOCK 1 OF SOUTHEAST COMMONS SUBDIVISION, FILING No. 3
CITY OF AURORA, ARAPAHOE COUNTY, COLORADO

VICINITY MAP
NOT TO SCALE



VICINITY MAP
SCALE: 500' = 1"



DRAINAGE LEGEND

N

AREA (ACRES)

13.0

.45

.65

1

BASIN OR SUB-BASIN

C VALUE 10-YR STORM

C VALUE 100-YR STORM

DESIGN POINT

BASIN LIMIT

0.50%

RUNOFF FLOW DIRECTION

EXISTING CONTOUR MAJOR

EXISTING CONTOUR MINOR

EXISTING CONTOUR LABEL

PROPOSED CONTOUR LABEL

SOUTHEAST COMMONS SUBDIVISION, FILING No. 3, LOT 1, BLOCK 1				SHEET NO	
HISTORIC DRAINAGE PLAN				H1	
14383 E. EVANS DRIVE					
AURORA, CO					
DATE					
07/11/22					
JOB NO					
9211BASE					
921-1					
NO					
DATE					
DESCRIPTION					
BY					

Rocky Ridge Civil Engineering

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http://rockyridgecivil.com