

Cushing Terrell

DRAINAGE LETTER

LOT 8A, CHAMBERS AND HESS SUBDIVISION



**Lot 8 of Douglas 234 Filing 6, Amendment 1, Reception No. 2022004920
Parker, CO 80227**

Prepared For:

SFP-E, LLC
PO Box 5350
20900 Cooley Road
Bend, OR 97701

Prepared By:

Cushing Terrell

Cushing Terrell
303 E 17th St. #105
Denver, CO 80203
720.359.1416
www.cushingterrell.com

Cushing Terrell Project No. LSCO_21PARKER

September 15, 2023

Michael White, PE

1.0 Purpose

The purpose of this Drainage Letter is to identify On-Site and Off-Site drainage patterns and to design the proposed storm sewer and inlet locations. This letter will also identify acceptable volumes to be received at the existing water quality facilities for Lot 8A of Chambers and Hess Filing No. 1. The findings of this letter are in compliance with the approved Final Drainage Report (FDR) titled "Final Drainage Report for Chambers and Hess Filing No. 1" by Rick Engineering Company dated January 25, 2021.

The proposed Les Schwab Tire Center is Lot 8A of the Chambers and Hess Subdivision and is identified as Basin A11 and parts of Basin A5 of the Chambers and Hess Basin in the Chambers and Hess FDR, which has been included in Appendix C. A future commercial development by others will consume the remainder of Basin A5. No deviation from the Final Drainage Report is expected from that future development by others.

The project site is located to the northwest of the intersection of Chambers and Hess Road in Parker, Colorado. Lot 8A sits to the north of Sliceroo Drive, a new street that runs through the subdivision. The proposed site is defined as Lot 8 of Douglas 234 Filing 6, Amendment 1, According to the Plat Thereof Recorded January 21, 2022, at Reception No. 2022004920, County of Douglas, State of Colorado. Lot 8A is currently bounded by a multi-use easement to the east, Lot 9 to the west, Lot 10 to the north, and Sliceroo Drive to the south. The developed site will include approximately 9,540 square feet (SF) of building and an additional 29,779 SF of parking and landscape area. Lot 8A is 0.903 acres in existing conditions. All 0.903 acres of the site will be disturbed during construction.

2.0 Storm Drainage Requirements and Methodologies

Site storm drainage improvements and designs are in compliance with the approved and finalized FDR for Chambers and Hess Filing No. 1 by Rick Engineering Company dated January 25, 2021. On the "Post-Development Drainage Map for Chambers & Hess Filing No. 1" plan in said report, Basin A11 was calculated to have a 100-year runoff coefficient 0.79 which yields an impervious area percentage of 68.6% using the USDCM Table 6-4 formula.

Urban Drainage and Flood Control District Denver, CO Version 2.00 spreadsheet was utilized to model the site hydrology under post-development conditions.

Storm Event Calculations: The Rational Method was selected to determine the initial runoff flows associated to the various subbasins within the subdivision. The initial design of the Permanent Control Measures (PCM) was previously approved with the Chambers and Hess FDR; conservative factors were selected based on the assumption that future sites would include small urban areas with short times of concentration. The parameters were defined and can be noted in Chapter VI: Drainage Facility Design within the Final Drainage Report for Chambers and Hess Filing No. 1 by Rick Engineering Company Dated January 25, 2021.

3.0 Existing and Pre-Development Conditions

Existing conditions of the proposed development are completely confined within Sub-Basin A11 and A5 of the Chambers and Hess FDR. The lot and basin lines shown in Appendix C of the FDR are from previous parcel boundaries. However, drainage characteristics of these lots and basins are not expected to change.

Within the approved FDR, Sub-Basin A11 was designed for future improvements with the following runoff values: 2.2 CFS for a minor 5-year storm event and 5.0 CFS for a major 100-year storm event.

Within the approved FDR, Sub-Basin A5 was designed for future improvements with the following runoff values: 2.5 CFS for a minor 5-year storm event and 5.7 CFS for a major 100-year storm event.

Both Basins A11 and A5 eventually convey water to the outfall location of Design Point 13 as seen in Appendix C in the finalized FDR. Future development of the site will provide no negative impact to downstream infrastructure, surface waters, or properties. The site contains no presence of protected waters or flood zones. Soils encountered on this site provide good infiltration and maintain a hydraulic soil rating of B.

4.0 Post-Development Conditions

Within Lot 8A, three onsite (A, B, and C) and one offsite (OS-1) drainage basins are proposed. In interim site conditions, these offsite basins will convey runoff to several proposed onsite basins until future development on neighboring lots can take place. These offsite basins will then convey water through drainage structures on their new respective lots. Impervious area only in Basins A, B, and C should be considered for Lot 8A. Basin OS-1 include portions of the proposed shared access drive on neighboring Lots 9A and 10A which are slated for future development. At time of development of these lots they will be required to maintain a 95% or lower impervious value including these lots. The flows from these basins where however included in the inlet capacity calculations to ensure the site will function in the temporary condition.

Table 4.1: Post-Development Impervious Area and Runoff Coefficients

Basin Name	Area (AC)	NRCS Hydrologic Soil Group	Pavement	Roofs	Landscape	Percent Impervious	*C ₅	*C ₁₀₀
			100%	90%	0%			
A	0.58	B	0.52	0.00	0.06	0.90	0.76	0.85
B	0.39	B	0.00	0.23	0.17	0.53	0.43	0.68
C	0.16	B	0.02	0.00	0.15	0.11	0.08	0.48
OS-1	0.36	B	0.22	0.00	0.14	0.61	0.50	0.71
Total =						0.65	0.54	0.73

Subbasin A was designed for future improvements with the following runoff values: 2.09 CFS for a minor 5-year storm event and 4.33 CFS for a major 100-year storm event.

Subbasin B was designed for future improvements with the following runoff values: 0.56 CFS for a minor 5-year storm event and 1.63 CFS for a major 100-year storm event.

Subbasin C was designed for future improvements with the following runoff values: 0.05 CFS for a minor 5-year storm event and 0.63 CFS for a major 100-year storm event.

5-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
A	0.58	0.76	5.00	4.71	2.09
B	0.39	0.43	13.57	3.30	0.56
C	0.16	0.08	6.29	4.42	0.05
OS-1	0.36	0.50	5.00	4.71	0.85

Table 4.2: Post-Development 24-hr Runoff (5-YR Event)

100-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
A	0.58	0.85	5.00	8.82	4.33
B	0.39	0.68	13.57	6.18	1.63
C	0.16	0.48	6.29	8.27	0.63
OS-1	0.36	0.71	5.00	8.82	2.26

Table 4.3: Post-Development 24-hr Runoff (100-YR Event)

5.0 Conclusion

In conclusion, when referencing the existing and proposed state as defined within the approved FDR, percent imperviousness allowed, and designed runoff demonstrated in the initial Chambers and Hess Subdivision design, the proposed Lot 8A development follows all requirements established in previous studies and will not create adverse effects to associated downstream waters or infrastructure. The Lot 8A and a portion of the Lot 9 post-development conditions result in a percent impervious of 65%, a 5-year minor storm runoff of 2.70 CFS, and a 100-year major storm runoff of 6.59 CFS. The proposed design is less than the assumed condition for future development within the approved existing Chambers and Hess FDR of 68.6% imperviousness, 4.70 CFS for the 5-year minor storm, and 10.70 CFS for the 100-year major storm event.

Sincerely,

Ian Graham, PE
Project Engineer
Cushing Terrell

Appendices

Appendix A – Vicinity Map

Appendix B – Drainage Maps

Appendix C– Historic Basin Analysis

Appendix D – Proposed Basin Analysis

Appendix E – FEMA FIRMette

Appendix A: Vicinity Map



0 500 1000 2000

VICINITY MAP



SCALE: 1" = 1000'

DENVER, CO
p 720.359.1416
f 720.359.1417

**Cushing
Terrell**

CHAMBERS & HESS RD
PARKER, CO 80134
LES SCHWAB TIRE CENTER

©2023 | ALL RIGHTS RESERVED

07.05.2023

TAG

REVISION

LES SCHWAB TIRE CENTER

CHECKED BY
WALKER

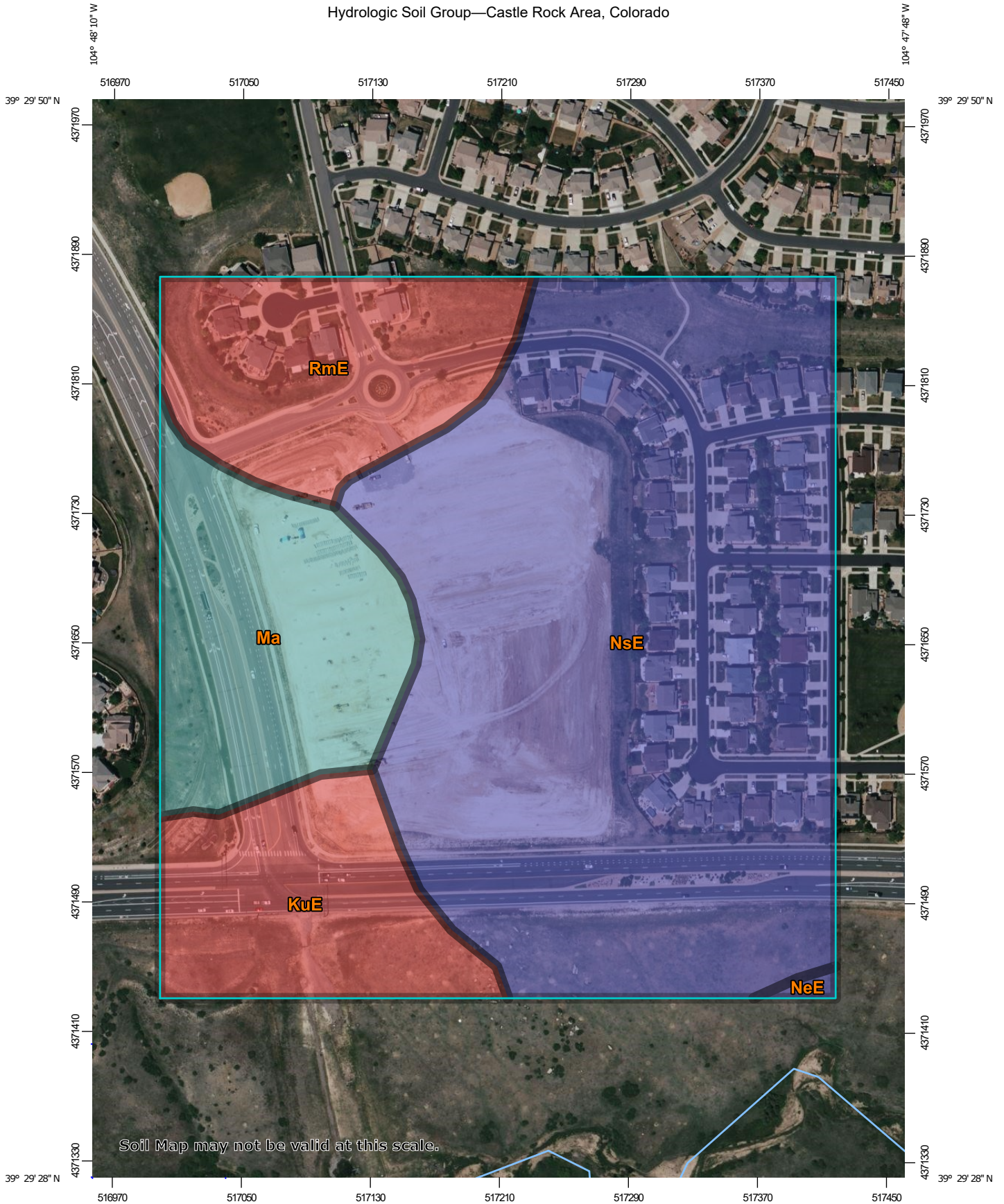
REF SHEET

SHEET NAME

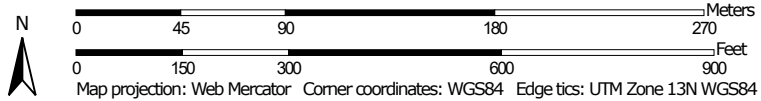
VC

Appendix B: Drainage Maps

Hydrologic Soil Group—Castle Rock Area, Colorado




Map Scale: 1:3,250 if printed on A portrait (8.5" x 11") sheet.




MAP LEGEND

Area of Interest (AOI)









 Area of Interest (AOI)

Soils

Soil Rating Polygons





 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines


 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points






 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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: Castle Rock Area, Colorado
 Survey Area Data: Version 15, Sep 1, 2022

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
KuE	Kutch clay loam, 8 to 20 percent slopes	D	5.4	11.6%
Ma	Manzanola clay loam	C	6.9	15.0%
NeE	Newlin gravelly sandy loam, 8 to 30 percent slopes	B	0.1	0.3%
NsE	Newlin-Satanta complex, 5 to 20 percent slopes	B	27.9	60.3%
RmE	Renohill-Buick complex, 5 to 25 percent slopes	D	6.0	12.9%
Totals for Area of Interest			46.3	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

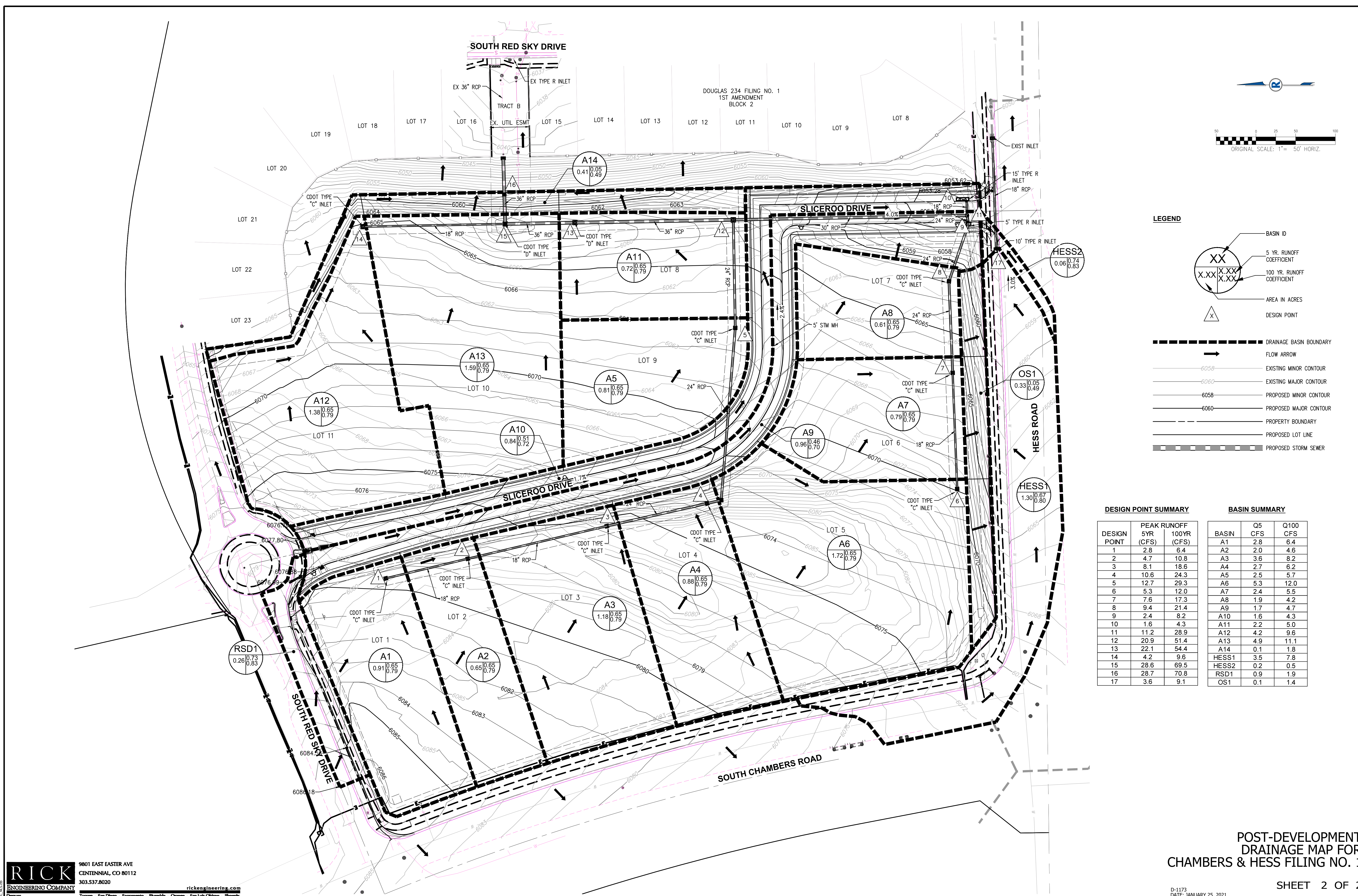
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



LEGEND

- XX BASIN ID
- X.XX 5 YR. RUNOFF COEFFICIENT
- X.XX 100 YR. RUNOFF COEFFICIENT
- X.XX AREA IN ACRES
- X DESIGN POINT
- DRAINAGE BASIN BOUNDARY
- FLOW ARROW
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- PROPOSED LOT LINE
- PROPOSED STORM SEWER

DESIGN POINT SUMMARY

DESIGN POINT	PEAK RUNOFF	
	5YR (CFS)	100YR (CFS)
1	2.8	6.4
2	4.7	10.8
3	8.1	18.6
4	10.6	24.3
5	12.7	29.3
6	5.3	12.0
7	7.6	17.3
8	9.4	21.4
9	2.4	8.2
10	1.6	4.3
11	11.2	28.9
12	20.9	51.4
13	22.1	54.4
14	4.2	9.6
15	28.6	69.5
16	28.7	70.8
17	3.6	9.1

BASIN SUMMARY

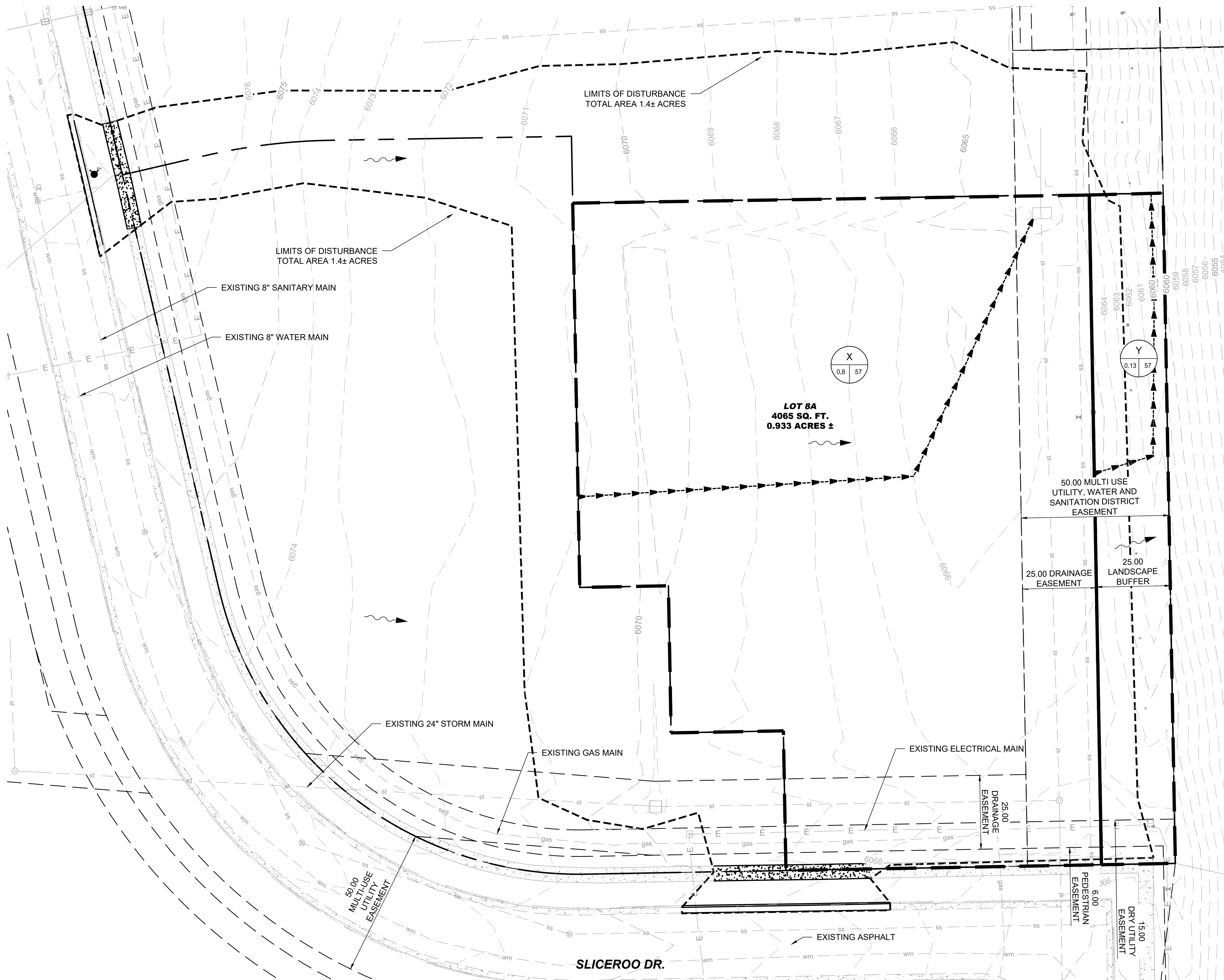
BASIN	Q	
	Q5 CFS	Q100 CFS
A1	2.8	6.4
A2	2.0	4.6
A3	3.6	8.2
A4	2.7	6.2
A5	2.5	5.7
A6	5.3	12.0
A7	2.4	5.5
A8	1.9	4.2
A9	1.7	4.7
A10	1.6	4.3
A11	2.2	5.0
A12	4.2	9.6
A13	4.9	11.1
A14	0.1	1.8
HESS1	3.5	7.8
HESS2	0.2	0.5
RSD1	0.9	1.9
OS1	0.1	1.4

RICK ENGINEERING COMPANY
 9801 EAST EASTER AVE
 CENTENNIAL, CO 80112
 303.537.8020
 rickengineering.com

D-1173
 DATE: JANUARY 25, 2021

SHEET 2 OF 2

NOT FOR CONSTRUCTION – EXHIBIT FOR DRAINAGE STUDY REPORT ONLY



LEGEND

PROPOSED	
	BASIN BOUNDARY
	TIME OF CONCENTRATION FLOW PATH
	LIMITS OF PARKING LOT DETENTION
	FLOW ARROW

BASIS OF BEARING

BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 29 TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE SOUTH QUARTER CORNER BY A 3.25" ALUMINUM CAP "PLS STAMPED 35593" IN A RANGE BOX, AND MONUMENTED AT THE SOUTH QUARTER CORNER BY 3.25" ALUMINUM CAP "PLS STAMPED 22561." SAID SOUTH SECTION LINE BEARS NORTH 89°15'13" EAST A DISTANCE OF 2639.29 FEET WITH ALL BEARINGS HEREON BEING RELATIVE THERETO.

PROJECT BENCHMARK

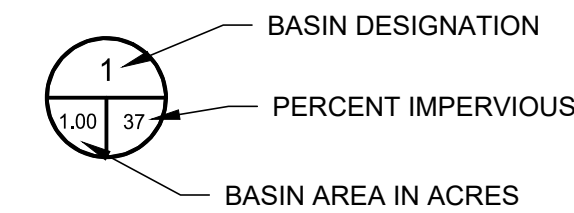
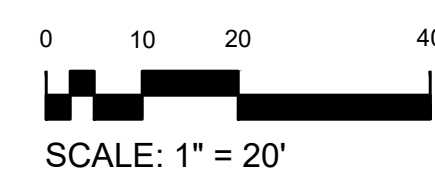
DOUGLAS COUNTY GIS BENCHMARK 1074010, STAMPED "1.074010" LOCATED ON THE WEST SIDE OF DOUBLE ANGLE ROAD, NEAR THE SOUTH ENTRANCE TO THE PARKING LOT AT 9345 DOUBLE ANGLE ROAD. PUBLISHED NAVD 1989 ELEVATION=6028.60 FEET

BASIN TABLE

5-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
X	0.80	0.00	19.99	2.74	0.01
Y	0.13	0.10	5.00	4.71	0.06

100-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
X	0.80	0.01	19.99	5.12	0.04
Y	0.13	0.46	5.00	8.82	0.52

1 EXISTING DRAIANGE MAP
D.1



NOT FOR CONSTRUCTION - PRELIMINARY DESIGN

CHAMBERS & HESS RD., PARKER, CO
6-BAY LINEAR STORE

LES SCHWAB TIRE CENTER - PARKER, CO

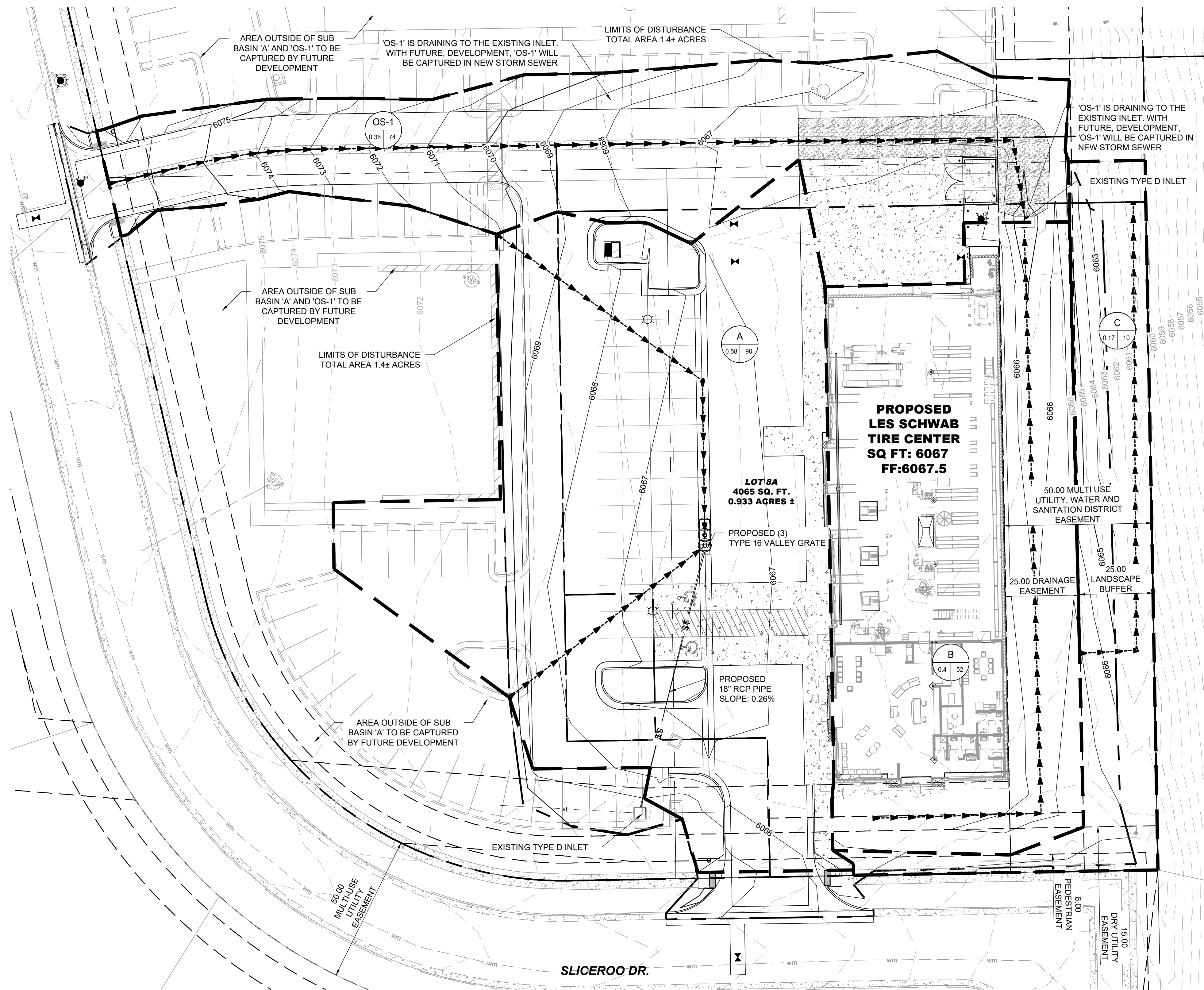
© 2023 | ALL RIGHTS RESERVED

SITE PLAN

07.11.2023
DRAWN BY | SOMA
CHECKED BY | WALKER
REVISIONS

EXISTING DRAINAGE MAP

D.1



LEGEND

PROPOSED	
	BASIN BOUNDARY
	TIME OF CONCENTRATION FLOW PATH
	LIMITS OF PARKING LOT DETENTION

BASIS OF BEARING

BEARINGS ARE BASED ON THE SOUTH LINE OF THE SOUTHEAST QUARTER OF SECTION 29 TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN, BEING MONUMENTED AT THE SOUTH QUARTER CORNER BY A 3.25' ALUMINUM CAP "PLS STAMPED 35593" IN A RANGE BOX, AND MONUMENTED AT THE SOUTH QUARTER CORNER BY 3.25" ALUMINUM CAP "PLS STAMPED 22561." SAID SOUTH SECTION LINE BEARS NORTH 89°15'13" EAST A DISTANCE OF 2639.29 FEET WITH ALL BEARINGS HEREON BEING RELATIVE THERETO.

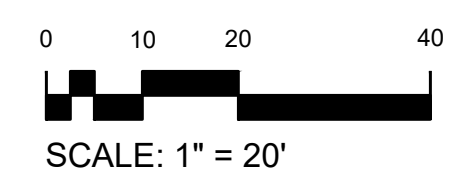
PROJECT BENCHMARK

DOUGLAS COUNTY GIS BENCHMARK 1074010, STAMPED "1.074010" LOCATED ON THE WEST SIDE OF DOUBLE ANGLE ROAD, NEAR THE SOUTH ENTRANCE TO THE PARKING LOT AT 9345 DOUBLE ANGLE ROAD. PUBLISHED NAVD 1989 ELEVATION=6028.60 FEET

BASIN TABLE

NOT FOR CONSTRUCTION - PRELIMINARY DESIGN
 12236 SLICEROO DR, PARKER, CO
 6-BAY LINEAR STORE
LES SCHWAB TIRE CENTER - PARKER, CO
 © 2023 | ALL RIGHTS RESERVED
 CIVIL CDS
 07.11.2023
 DRAWN BY | SOMA
 CHECKED BY | WALKER
 REVISIONS
 PROPOSED DRAINAGE MAP
D.2

1 PROPOSED DRAINAGE MAP
D.2



- BASIN DESIGNATION
- PERCENT IMPERVIOUS
- BASIN AREA IN ACRES

Appendix C: Historic Basin Analysis

Basin Name	Area (AC)	NRCS Hydrologic Soil Group	Pavement 100%	Roofs 90%	Landscape 0%	Percent Impervious	*C ₅	*C ₁₀₀	
X	0.80	B	0.00	0.00	0.02	0.00	0.00	0.43	
Y	0.13	B	0.00	0.00	0.17	0.00	0.00	0.43	
Total =							0.00	0.00	0.43

*Refer to DCM Table 6-4

Basin Data			Initial/Overland Time (T _i)			Travel Time (T _t)					Final
Basin	Area (AC)	C ₅	L (FT)	Slope (%)	T _i (Min)	L (FT)	Slope (%)	C _v	V _t (FPS)	T _t (Min)	T _c (5 Min)
X	0.80	0.00	210	3.00%	19.99	0	2.00%	20	2.828427	0	19.99
Y	0.13	0.00	20	21.00%	3.25	88	2.20%	15	2.22486	0.659218	5.00

1-HR Rainfall Intensity (i)						
T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)	T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)	
5	4.71	8.82	25	2.42	4.53	
7	4.27	7.99	30	2.18	4.08	
10	3.76	7.03	35	1.99	3.72	
11	3.62	6.77	40	1.83	3.42	
12	3.49	6.53	45	1.70	3.18	
13	3.37	6.30	50	1.59	2.97	
15	3.16	5.90	55	1.49	2.79	
20	2.73	5.11	60	1.40	2.63	

Basin	T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)
X	19.99	2.74	5.12
Y	5.00	4.71	8.82

Refer to SDECM Town of Parker PG 5-1:
 $I_{100} = 74.1 / (10 + t_c)^{0.786}$
 $I_5 = 39.615 / (10 + t_c)^{0.786}$

5-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
X	0.80	0.00	19.99	2.74	0.01
Y	0.13	0.00	5.00	4.71	0.00

100-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
X	0.80	0.43	19.99	5.12	1.74
Y	0.13	0.43	5.00	8.82	0.49

Appendix D: Proposed Basin Analysis

Basin Name	Area (AC)	NRCS Hydrologic Soil Group	Pavement	Roofs	Landscape	Percent Impervious	*C ₅	*C ₁₀₀	
			100%	90%	0%				
A	0.58	B	0.52	0.00	0.06	0.90	0.76	0.85	
B	0.39	B	0.00	0.23	0.17	0.53	0.43	0.68	
C	0.16	B	0.02	0.00	0.15	0.11	0.08	0.48	
OS-1	0.36	B	0.22	0.00	0.14	0.61	0.50	0.71	
Total =							0.65	0.54	0.73

*Refer to USDCM Table 6-4

Basin Data			Initial/Overland Time (T _i)			Travel Time (T _t)					Final
Basin	Area (AC)	C _s	L (FT)	Slope (%)	T _i (Min)	L (FT)	Slope (%)	C _v	V _t (FPS)	T _t (Min)	T _c (5 Min)
A	0.58	0.76	68	3.80%	3.22	62	0.80%	20	1.788854	0.577651	5.00
B	0.39	0.43	58	0.50%	11.55	182	1.00%	15	1.5	2.022222	13.57
C	0.16	0.08	20	12.00%	3.65	152	3.10%	15	2.641023	0.959224	6.29
OS-1	0.36	0.50	100	4.20%	6.71	0	2.00%	20	2.828427	0	5.00

1-HR Rainfall Intensity (i)						
T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)		T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)
5	4.71	8.82		25	2.42	4.53
7	4.27	7.99		30	2.18	4.08
10	3.76	7.03		35	1.99	3.72
11	3.62	6.77		40	1.83	3.42
12	3.49	6.53		45	1.70	3.18
13	3.37	6.30		50	1.59	2.97
15	3.16	5.90		55	1.49	2.79
20	2.73	5.11		60	1.40	2.63

Basin	T _c	5 _{yr} (in/hr)	100 _{yr} (in/hr)
A	5.00	4.71	8.82
B	13.57	3.30	6.18
C	6.29	4.42	8.27
OS-1	5.00	4.71	8.82

Refer to SDECM Town of Parker PG 5-1:
 $I_{100} = 74.1 / (10 + t_c)^{0.786}$
 $I_5 = 39.615 / (10 + t_c)^{0.786}$

5-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
A	0.58	0.76	5.00	4.71	2.09
B	0.39	0.43	13.57	3.30	0.56
C	0.16	0.08	6.29	4.42	0.05
OS-1	0.36	0.50	5.00	4.71	0.85

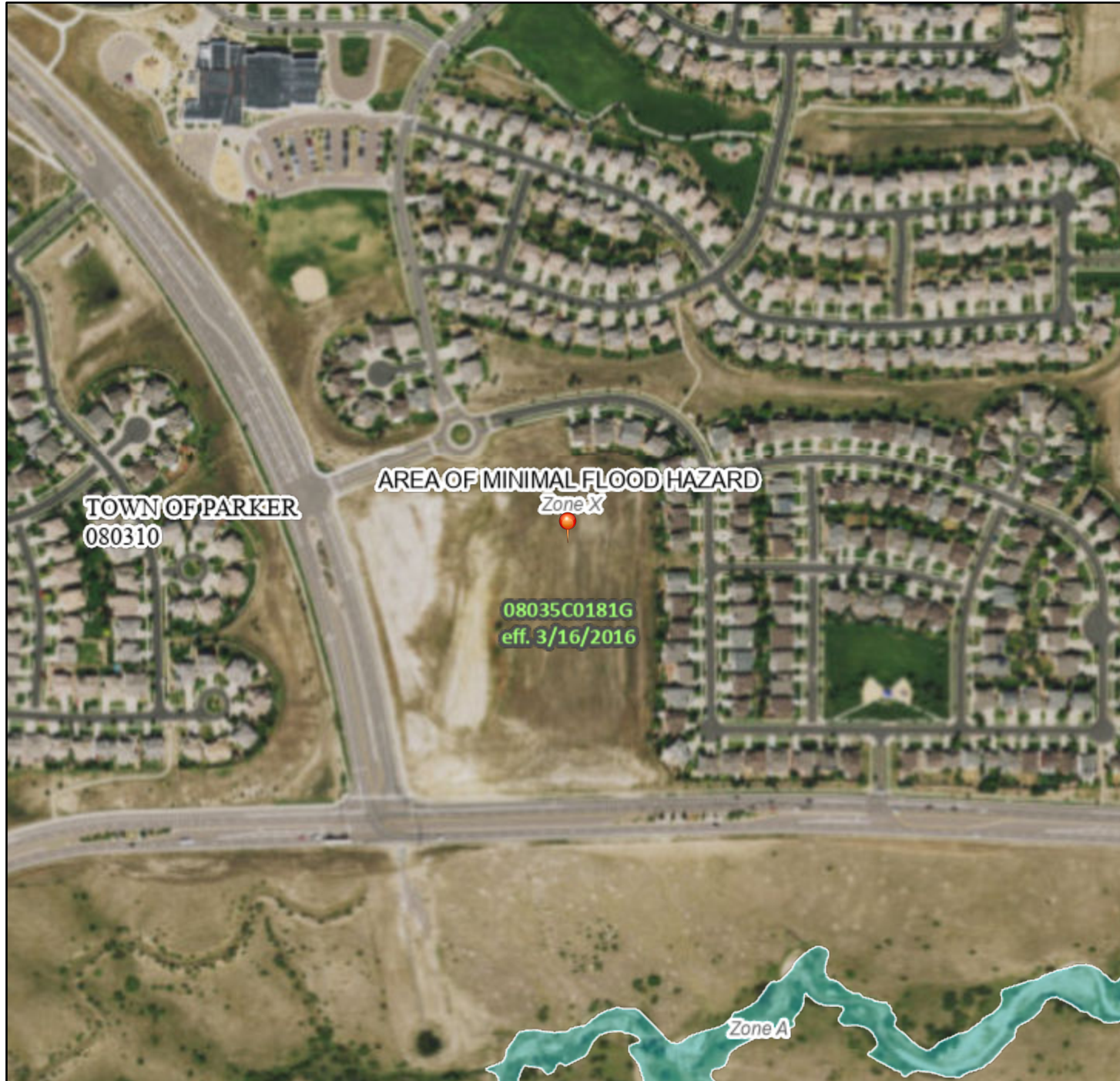
100-YR Design Storm Runoff					
Basin	Area (AC)	C	T _c (Min)	I (in/hr)	Q (CFS)
A	0.58	0.85	5.00	8.82	4.33
B	0.39	0.68	13.57	6.18	1.63
C	0.16	0.48	6.29	8.27	0.63
OS-1	0.36	0.71	5.00	8.82	2.26

Appendix E: FEMA FIRMette

National Flood Hazard Layer FIRMette



104°48'18"W 39°29'56"N



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.



This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **12/22/2021 at 6:47 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.