

**Drainage Letter
for
Bridle Bit Ranch Filing 1A**

June, 2021

Prepared For:

Nicci Telle
12730 Bridle Bit Road
Colorado Springs, CO 80908

Prepared By:

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Project No. 18006

PCD File No. SF2113

TABLE OF CONTENTS

SIGNATURES AND CERTIFICATIONS

DRAINAGE LETTER

Project Description:	4
Methodology:	5
Floodplain Statement:	5
Soils:	5
Existing Conditions:	6
Proposed Conditions:	6
Proposed Improvements:	9
Facilities:	7
Summary:	9
Drainage Fees:	8

CALCULATIONS

SOIL MAP

FEMA MAP

PROPOSED CONDITIONS DRAINAGE PLAN (ENVELOPE)

Bridle Bit Ranch Filing 1A

Design Engineer's Statement:

This report and plan for the final drainage design of Bridle Bit Ranch Filing 1A was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said drainage letter has been prepared according to the criteria established by the County for drainage letters and said letter is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent act, errors, or omissions on my part in preparing this letter.

SIGNATURE: _____

David J. Whitehead, P.E. Colo # 25118

6.30.2021

Date

Owner/Developer's Statement

I, Nicci Telle, the owner/developer have read and will comply with all the requirements specified in this drainage letter and plan.

By (signature): _____

Nicci Telle

Date: _____

6/29/2021

Title: _____

Owner/Developer

Address: _____

12730 Bridle Bit Rd

Colorado Springs, CO 80908

El Paso County:

Filed in accordance with the requirements of the El Paso County Land Development Code, Drainage Criteria Manual Volumes 1 and 2, and the Engineering Criteria Manual, as amended.

Jennifer Irvine, P.E.,

County Engineer / ECM Administrator

Conditions:

APPROVED

Engineering Department

07/06/2021 10:11:32 AM

dsdnijkamp

**EPC Planning & Community
Development Department**

Drainage Letter

Purpose:

The purpose of this drainage letter is to facilitate the replat of a 10-acre parcel into two 5-acre parcels. The name of the subdivision is “Bridle Bit Ranch Filing 1A”. This letter will identify on-site and off-site drainage patterns for the site. Existing and drainage patterns will be identified and described. The method of conveying developed runoff safely to adequate outfalls will be described and pertinent computations presented.

Project Description:

Bridle Bit Ranch Filing 1A is located just to the north of the intersection of Bridle Bit Road and Shoup Rd, El Paso County, Colorado. The site has a single-family residential home with a detached garage. The site is surrounded by single family residences all developed with RR-5 zoning. The lots to the north, east & south are part of the original Bridle Bit Ranch subdivision platted in April 1980. The lots to the west are part of the New Breed Ranch Filing No. 2.

The subject parcel was originally plated as lots 3 & 4, Bridle Bit Ranch in 1980. Each lot was 5 acres. Subsequently the two lots were combined into a single lot by County Commissioners resolution 82-147, creating one 10-acre parcel.

Major Basins:

The south easterly portion of the Bridle Bit Ranch Filing 1A lies in the Kettle Creek Drainage Basin (FOMO3000). The remainder of the subdivision lies in the Black Squirrel Creek Drainage Basin (FOMO3600). Refer to the existing conditions plan in the appendix. The Drainage Basin Planning Study’s (DBPS) each basin were reviewed in preparing this report. This property is not in or within the vicinity of any major basin improvements identified in either report.

Minor Basins:

As presented in the Major basins section above the site is bisected by two major drainage basins,

Kettle Creek and Black Squirrel Creek. The Kettle Creek basin is the southerly of the two basins. The South easterly portion of the site lies in this basin. This site lies within sub-basin 20 of the report. The report identifies the portion of sub-basin 20 lying north of Shoup Road as being developed as residential (RR-5) which is consistent with this proposed subdivision. This portion of the sub-basin is identified as having sheet flow as a conveyance for stormwater runoff until reaching Shoup Rd. south of this subdivision. Sub-Basin 20 has an area of 0.594 sq miles (380 acres). The portion of this site contained in this sub-basin (approx. 5.06 acres) makes up 1.33% of the sub-basin.

The Black Squirrel Creek drainage basin covers the Northwesterly portion of the site. This portion of the site lies within sub-basin I of the study. The report identifies the area of this subdivision as being developed as “5 acre” developments, which is consistent with the proposed subdivision. This portion of the sub-basin is identified as having sheet flow as a conveyance for stormwater runoff until reaching Shoup Rd to the southwest of the site. Sub-basin I has an area of 601 acres. The portion of this site that lies within the sub-basin has an area of approximately 5.06 acres (0.87% of the sub-basin area.)

Methodology:

The rational methodology for the computation of runoff utilized by this report is in accordance with the City of Colorado Springs Drainage Criteria Manual. The equation used for determining this runoff was $Q = CIA$, where “Q” is the maximum rate of runoff in cubic feet per second, “C” is the runoff coefficient representing the drainage area characteristics, “I” is the rainfall in inches per hour, and “A” is the drainage basin area in acres.

Floodplain Statement:

Bridle Bit Ranch Filing 1A is not located in a F.E.M.A. designated 100-year floodplain as shown on F.I.R.M. Panel No. 08041C 0295G, dated December 7, 2018. See map in appendix.

Soils:

The soils across the site consist of the Kettle gravely loamy sand & the Tomah-Crowfoot complex. The Kettle gravely loamy sand (Map Unit 40), a somewhat excessively drained soil, per the Soil

Survey of the El Paso County Area, published by the Natural Resources Conservation Service. The soil is Hydrologic Group "B". The Tomah-Crowfoot complex (Map Unit 93) is a well-drained soil. This soil complex in Hydrologic Group "B".

The site currently slopes to the southwest and will remain unchanged.

Existing Drainage Characteristics:

The site is located to the west of and adjacent to Bridle Bit Rd. No runoff enters the site from east of the roadway. There is a minor high point in the NE corner of the lot to the north with a ridge running to the west. Runoff from the southern portion of the lot enters this site as sheet flow. All runoff across this site and leaving the site to the SW is conveyed as sheet flow. There are no drainage facilities public or private on or near the site except driveway and street intersection culverts. There is a single family residence located in the eastern half of the site.

Proposed Conditions:

The proposed development, dividing the property into two 5-acre lots, will facilitate the construction of a new single-family home and associated driveway. No other improvements to the site are contemplated. Ground disturbance with the home construction will be minimized.

Basin A (0.50 acres) contains the NW corner of the site. Runoff leaves the site as sheet flow. This basin will remain undisturbed. Runoff for basin A is $Q_5 = 0.18$ cfs and $Q_{100} = 1.18$ cfs.

Basin B (1.15 acres) is located to the south of basin A and lies to the west of a ridgeline running from the NE to the SW. Runoff from this basin leaves the site as sheet flow. This basin will have some of the new residence in it. The residence will be located on the ridge between basin B & C. The remainder of the basin will remain undisturbed. Runoff for basin B is $Q_5 = 0.9$ cfs and $Q_{100} = 3.26$ cfs.

Basin C (6.92 acres) is located to the south and east of basin B and contains a majority of the site. A portion of the new residence and a portion of the existing residence exist in the basin. The westerly

half of Bridle Bit Road is also included in this basin. Runoff in this basin will travel as sheet flow to the south and west. Runoff for basin B is $Q_5 = 2.55$ cfs and $Q_{100} = 15.02$ cfs.

Basin D (2.53 acres) encompasses the SE portion of the site. This basin contains the driveway for the existing residence and the easterly end of the existing residence. The westerly half of Bridle Bit Road is also included in this basin. Runoff for basin B is $Q_5 = 1.25$ cfs and $Q_{100} = 6.23$ cfs. Street Capacity is 6.4 cfs.

Proposed Improvements:

There are no proposed drainage improvements for this development.

Grading and Erosion Control:

There will be grading and foundation excavation for the proposed single-family home on the new lot (Lot 1). The activity will remove debris, grade the pad site and construct the road. Appropriate erosion control measure will be implemented.

Facilities:

The drainage basin planning studies for this site show that there are no planned major drainage facilities for this area.

Four Step Process:

Step 1: Runoff Reduction.

This development is adding one lot and residence. The lot with the existing residence will be unchanged as a part of this land use application. Therefore, there will be no increase in runoff from this lot. The new lot will have a new single-family residence constructed on it. The impervious area on the lot will be kept to a minimum to limit the increase in runoff. The area surrounding the new residence will be maintained in its current undeveloped condition forcing overland sheet flow of any runoff.

Step 2: Stabilize Drainageways

There are no drainageways on or adjacent to this site.

Step 3: Water Quality Capture Volume.

Because the portion of the site to be developed is at the upper boundary of the drainage basin and all runoff from the site is conveyed as sheet flow over native undisturbed land, water quality of the WQCV is attained by overland flow. No constructed water quality facility is proposed.

Step 4: Industrial and Commercial BMP's

This residential development will not have any commercial or industrial activities requiring specialized BMP's.

Drainage Fees:

Bridle Bit Ranch Filing 1A is in the Black Squirrel Creek drainage basin which is tributary to Monument Creek. Drainage and Bridge fees for this basin (for 2021) are \$8,968.00 & \$565.00 per impervious acre, respectively. The fee computation is based on the imperviousness of the new Lot 1. Per ECM 3.10.2a large lots are eligible for a 25 % reduction in drainage fees. Bridge fees are not eligible for the reduction. Estimated fees are as follows:

Lot 1/Acres	Impervious Area	Fee Per Impervious Acre	Total Fee
5.033	0.28 Acres	\$ 8,968.00	\$2,511.04
5.033	0.28 Acres	\$ 565.00	<u>\$ 158.20</u>
		Sub Total	\$2,669.24
		Drainage Fee Reduction (Large Lot)	<u>\$ -627.76</u>
		Total	\$2,041.48

The fees due will be based on the new impervious area of the development and the fees in place at the time of plat recording. No Waiver of drainage fees is being requested.

Construction Costs:**Public**

One culvert will be installed at the driveway location at Bridle Bit Rd

Private

No private drainage facilities are proposed.

Summary:

Drainage calculations were developed in accordance with the El Paso County Drainage Criteria Manual as amended and revised. Runoff from Bridle Bit Ranch Filing 1A will be safely conveyed to adequate outfalls and will not adversely affect the downstream and surrounding developments. This Final Drainage letter for Bridle Bit Ranch Filing 1A is in general conformance with the overall drainage basin planning study and all other previously approved reports which include this site.

There are no major increases in runoff because of this development. Runoff from Lot 2 will not increase as this lot is already developed. The runoff from Lot 1 will increase by 0.1 cfs for the 5-yr and 0.5 cfs for the 100-yr event.

Reference Materials:

1. "Engineering Criteria Manual El Paso County" January 9, 2006, Revised December 2016.
2. "El Paso County Drainage Criteria Manual, Volume 1 & 2", October 2018.
2. "City of Colorado Springs Drainage Criteria Manual, Volume 1" May 2014.
3. "City of Colorado Springs Drainage Criteria Manual, Volume 2" May 2014.
4. Soils Survey of El Paso County Area, Natural Resources Conservation Services of Colorado.
5. Flood Insurance Rate Maps for El Paso County, Colorado and Incorporated Areas. Federal Emergency Management Agency, December 7, 2018

6. "Urban Storm Drainage Criteria Manual, Volume 1: Management, Hydrology & Hydraulics" Original September 1969, Updated January 2016.
7. "Urban Storm Drainage Criteria Manual, Volume 2: Structures, Storage & Recreation" Original September 1969, Updated January 2016.
8. "Urban Storm Drainage Criteria Manual, Volume 3: Stormwater Quality" Original September 1992, Updated November 2010.
9. "Black Squirrel Creek DBPS" January 1989, URS Consultants
10. "Kettle Creek DBPS" May2015, JR Engineering, LLC

MAPS AND CALCULATIONS

Table 6-6. Runoff Coefficients for Rational Method

(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis--	2												
Greenbelts, Agriculture		0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

3.2 Time of Concentration

One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration (t_c) consists of an initial time or overland flow time (t_i) plus the travel time (t_t) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time (t_i) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion (t_t) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

Weighted Imperviousness Calculations

SUB-BASIN	AREA (SF)	AREA (Acres)	ROOF AREA	ROOF IMPERVIOUSNESS	ROOF				LANDSCAPE AREA	LANDSCAPE IMPERVIOUSNESS	LANDSCAPE				PAVEMENT AREA	PAVEMENT IMPERVIOUSNESS	PAVEMENT				WEIGHTED IMPERVIOUSNESS	WEIGHTED COEFFICIENTS			
					C2	C5	C10	C100			C2	C5	C10	C100			C2	C5	C10	C100		C2	C5	C10	C100
A	21,980	0.50	0	90%	0.71	0.73	0.75	0.81	21,980	2%	0.02	0.08	0.15	0.35	0	100%	0.89	0.90	0.92	0.96	2.0%	0.02	0.08	0.15	0.35
B	50,116	1.15	1,500	90%	0.71	0.73	0.75	0.81	42,616	2%	0.02	0.08	0.15	0.35	6,000	100%	0.89	0.90	0.92	0.96	16.4%	0.14	0.20	0.26	0.44
C	301,279	6.92	2,700	90%	0.71	0.73	0.75	0.81	294,779	2%	0.02	0.08	0.15	0.35	3,800	100%	0.89	0.90	0.92	0.96	4.0%	0.04	0.10	0.17	0.36
D	110,165	2.53	0	90%	0.71	0.73	0.75	0.81	104,565	2%	0.02	0.08	0.15	0.35	5,600	100%	0.89	0.90	0.92	0.96	7.0%	0.06	0.12	0.19	0.38
TOTAL	483,540	11.10	4,200	90%	0.71	0.73	0.75	0.81	463,940	2%	0.02	0.09	0.15	0.36	15,400	0%	0.89	0.90	0.92	0.96	2.7%	0.05	0.12	0.18	0.38

Bridle Bit Ranch Filing 1A
Drainage Report
El Paso County, CO

June 2021
Proposed Conditions
Basin Summary

[illegible]

June 2021
Proposed Conditions
Basin Summary

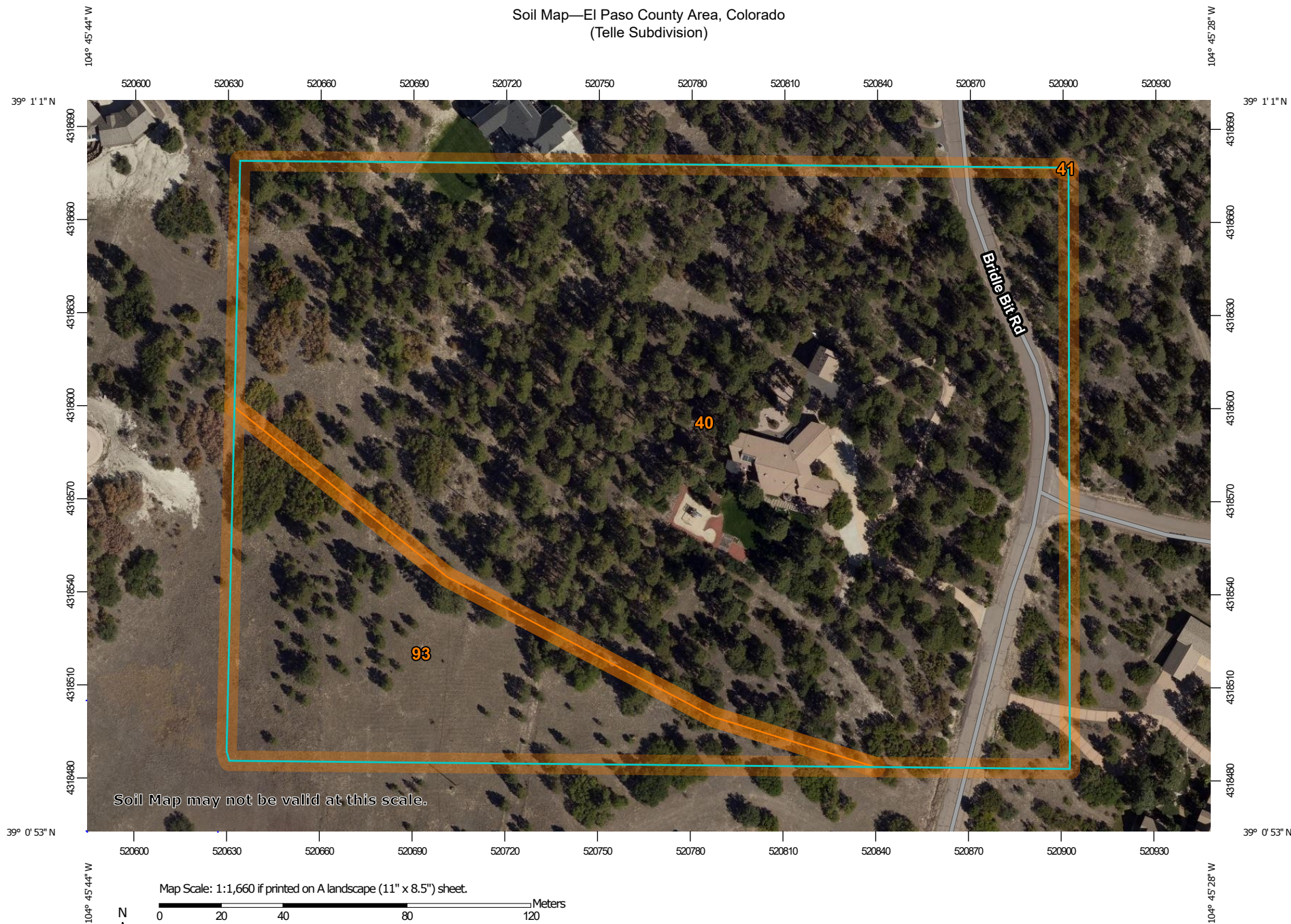
[illegible]

June 2021
Proposed Conditions
Basin Summary

[illegible]

SUMMARY - PROPOSED RUNOFF TABLE						
DESIGN POINT	BASIN DESIGNATION	BASIN AREA (ACRES)	DIRECT 5-YR RUNOFF (CFS)	DIRECT 100-YR RUNOFF (CFS)	CUMULATIVE 5-YR RUNOFF (CFS)	CUMULATIVE 100-YR RUNOFF (CFS)
A	A	0.50	0.16	1.15	0.16	1.15
B	B	1.15	0.86	3.20	0.86	3.20
C	C	6.92	2.32	14.63	2.32	14.63
D	D	2.53	1.16	6.08	1.16	6.08

Soil Map—El Paso County Area, Colorado (Telle Subdivision)



Soil Map may not be valid at this scale.

Map Scale: 1:1,660 if printed on A landscape (11" x 8.5") sheet.

0 20 40 80 120 Meters

0 50 100 200 300 Feet

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84



**Natural Resources
Conservation Service**


Web Soil Survey
National Cooperative Soil Survey

8/26/2020
Page 1 of 3

Soil Map—El Paso County Area, Colorado
(Telle Subdivision)

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 1:24,000.

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: El Paso County Area, Colorado

Survey Area Data: Version 18, Jun 5, 2020

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

Date(s) aerial images were photographed: Aug 19, 2018—Sep 23, 2018

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
40	Kettle gravelly loamy sand, 3 to 8 percent slopes	10.6	81.3%
41	Kettle gravelly loamy sand, 8 to 40 percent slopes	0.0	0.0%
93	Tomah-Crowfoot complex, 8 to 15 percent slopes	2.4	18.7%
Totals for Area of Interest		13.0	100.0%

El Paso County Area, Colorado

40—Kettle gravelly loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 368g

Elevation: 7,000 to 7,700 feet

Farmland classification: Not prime farmland

Map Unit Composition

Kettle and similar soils: 85 percent

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

Description of Kettle

Setting

Landform: Hills

Landform position (three-dimensional): Side slope

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy alluvium derived from arkose

Typical profile

E - 0 to 16 inches: gravelly loamy sand

Bt - 16 to 40 inches: gravelly sandy loam

C - 40 to 60 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High
(2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: B

Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:

Hydric soil rating: No

Pleasant

Percent of map unit:

Landform: Depressions

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 18, Jun 5, 2020

El Paso County Area, Colorado

93—Tomah-Crowfoot complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 36bb

Elevation: 7,300 to 7,600 feet

Farmland classification: Not prime farmland

Map Unit Composition

Tomah and similar soils: 50 percent

Crowfoot and similar soils: 30 percent

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

Description of Tomah

Setting

Landform: Alluvial fans, hills

Landform position (three-dimensional): Side slope, crest

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium derived from arkose and/or residuum weathered from arkose

Typical profile

A - 0 to 10 inches: loamy sand

E - 10 to 22 inches: coarse sand

C - 48 to 60 inches: coarse sand

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water

(Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water capacity: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: B

Ecological site: R049XB216CO - Sandy Divide

Hydric soil rating: No

Description of Crowfoot

Setting

Landform: Hills, alluvial fans

Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

A - 0 to 12 inches: loamy sand
E - 12 to 23 inches: sand
Bt - 23 to 36 inches: sandy clay loam
C - 36 to 60 inches: coarse sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water
(Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: R049XB216CO - Sandy Divide
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit:
Hydric soil rating: No

Pleasant

Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

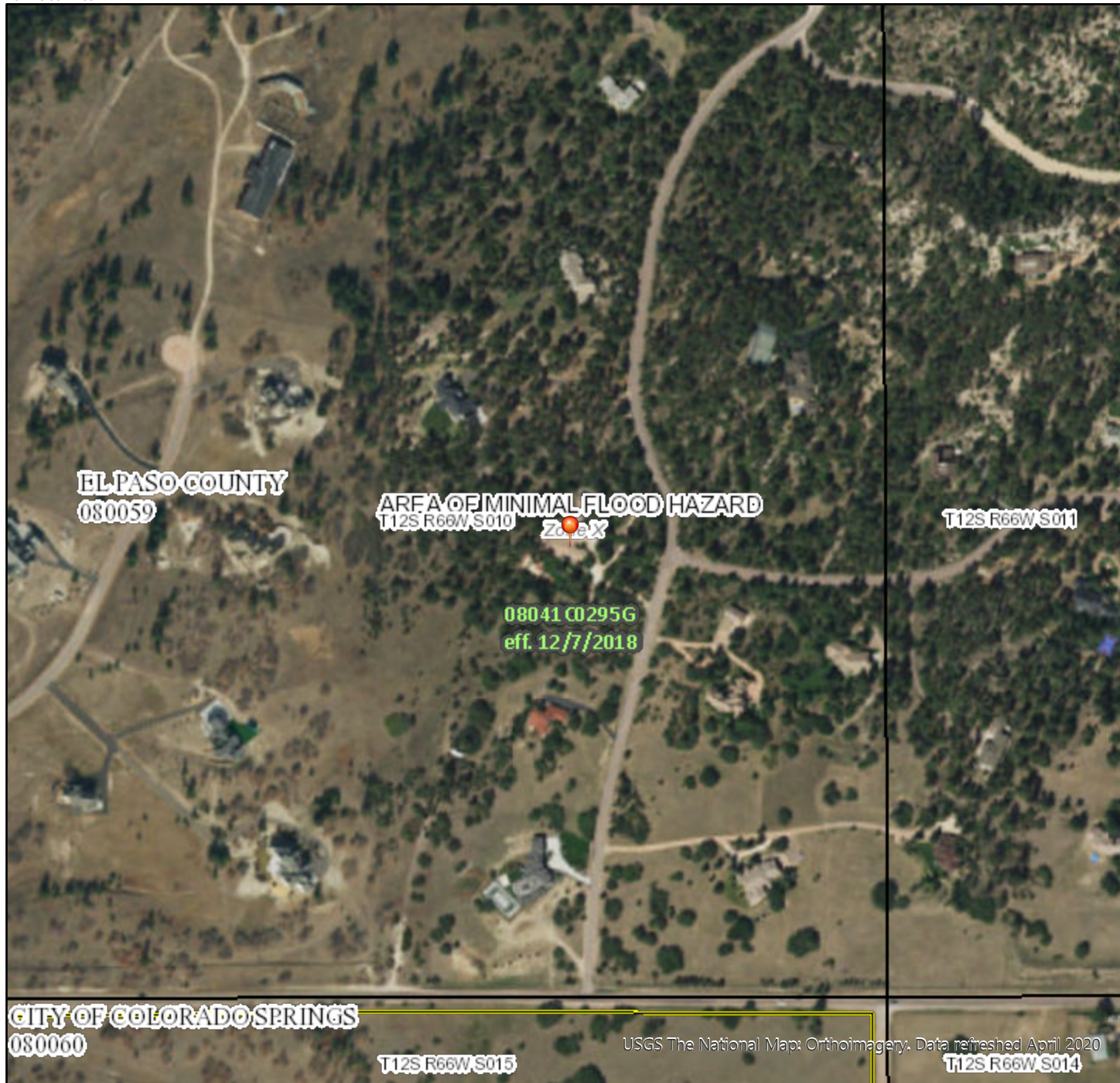
Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 18, Jun 5, 2020

National Flood Hazard Layer FIRMette



104°45'53"W 39°1'12"N



0 250 500 1,000 1,500 2,000 Feet 1:6,000

USGS The National Map: Orthoimagery. Data refreshed April 2020

104°45'16"W 39°0'44"N

Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		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 Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		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.

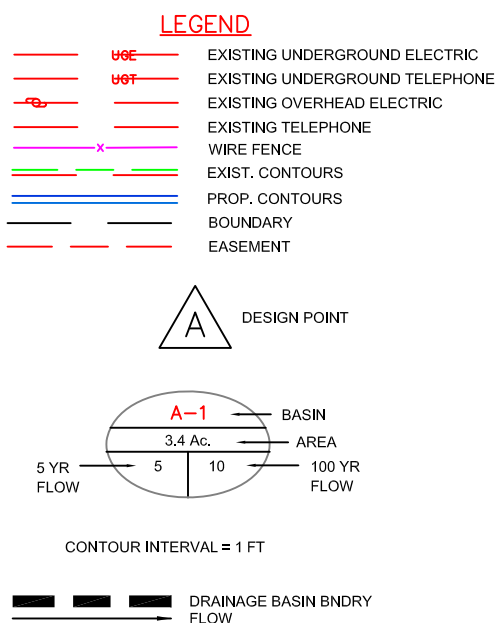
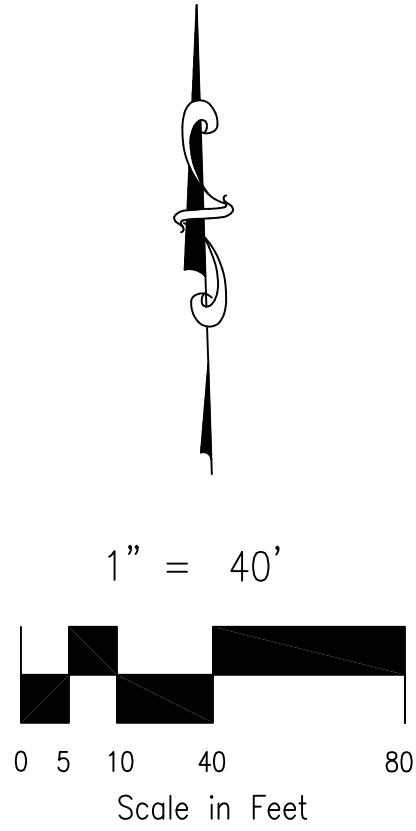
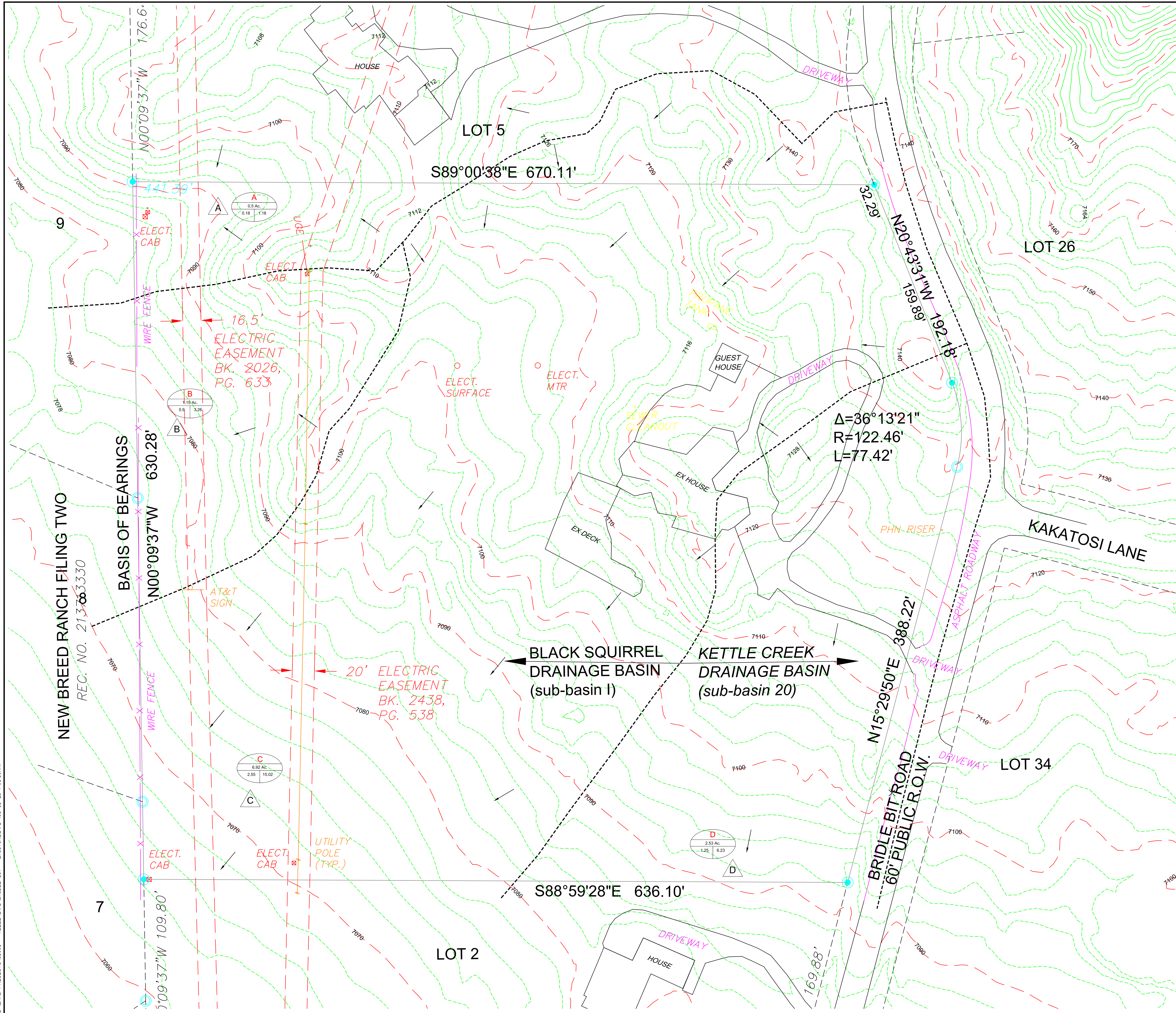


This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/26/2020 at 12:13 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.

D:\LAND PROJECTS\16006 - TELLE DVGS\BRIDLE BIT - EXISTING.DWG (06-15-21 7:06:50AM)



MAJOR WATER SHEDS
KETTLE CREEK
BLACK SQUIRREL

BASIN	AREA (acres)	Q ₅ (cfs)	Q ₁₀₀ (cfs)
A	0.50	0.18	1.18
B	1.15	0.90	3.26
C	6.92	2.55	15.02
D	2.53	1.25	6.23

DESIGN POINT	Q (5)	Q (100)
A	0.18	1.18
B	0.90	3.26
C	2.55	15.02
D	1.25	6.23

SHEET INDEX
1. SITE PLAN

WHITEHEAD ENGINEERING, LLC
CONSULTING CIVIL ENGINEERS

P.O. Box 1551
COLORADO SPRINGS, CO 80901
PHONE: (719) 237-4411

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WHITEHEAD ENGINEERING, LLC

DESIGN AND DRAWINGS
NOT TO BE REUSED
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PERMISSION OF ENGINEER

DRAINAGE PLAN
EXISTING CONDITIONS

SHEET TITLE:
PROJECT NAME:
BRIDLE BIT SUBDIVISION 1A
EL PASO COUNTY, COLORADO

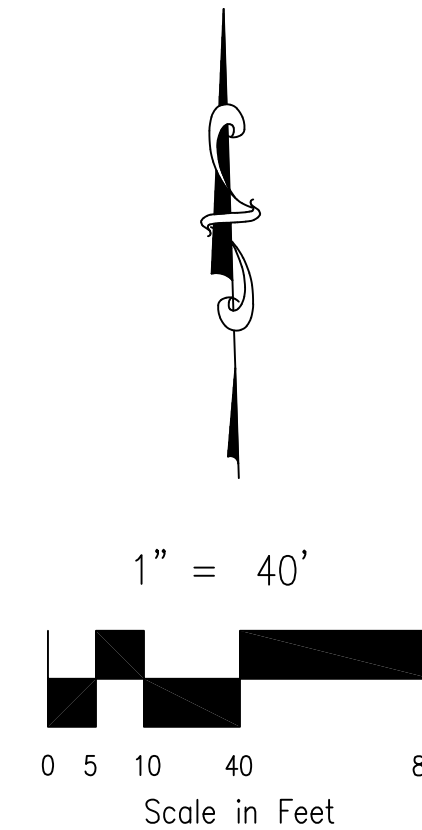
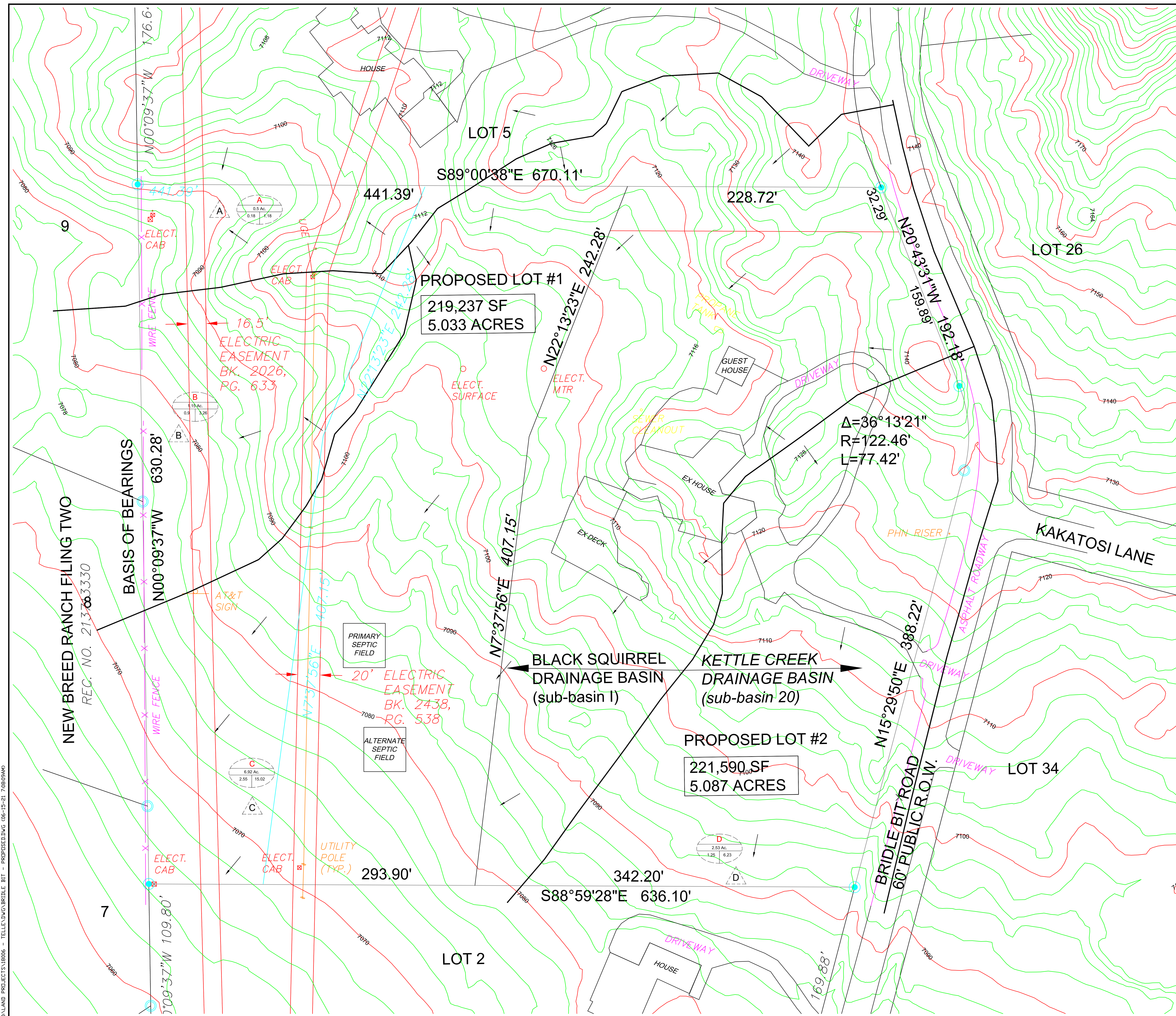
BENCHMARK:

REVISIONS:

SCALE: 1" = 40'
DATE: 05-25-2021
DRAWN BY: DW
CHECKED BY: DW

SHEET NO:
1 OF 1

DRAWING NAME:
Bridle Bit - Existing
VIEW:
Site Plan
PROJECT NO:
18006



LEGEND

- EXISTING UNDERGROUND ELECTRIC
- EXISTING UNDERGROUND TELEPHONE
- EXISTING OVERHEAD ELECTRIC
- EXISTING TELEPHONE
- WIRE FENCE
- EXIST. CONTOURS
- PROP. CONTOURS
- BOUNDARY
- EASEMENT

DESIGN POINT

Diagram showing a triangular area labeled 'A' with a design point 'A-1' and a basin area of 34.6 AC. The basin is divided into two sections: 5 AC and 10 AC. The contour interval is 1 FT. The drainage basin is shown with a 5 YR FLOW line and a 100 YR FLOW line.

MAJOR WATER SHEDS
KETTLE CREEK
BLACK SQUIRREL CREEK

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SHEET INDEX

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SHEET TITLE:

DRAINAGE PLAN

PROPOSED CONDITIONS

PROJECT NAME:

BRIDLE BIT SUBDIVISION 1A

EL PASO COUNTY, COLORADO

BENCHMARK:

REVISIONS:

SCALE:	1" = 40'
DATE:	11-03-2020
DRAWN BY:	DW
CHECKED BY:	DW

SHEET NO:
1 OF 1

DRAWING NAME:
Telle Subdivision

VIEW:
Site Plan

PROJECT NO:
18006