FINAL DRAINAGE REPORT
FOR
A-1 CHIPSEAL
LOT 36 AND 37 CLAREMONT BUSINESS PARK FIL NO 2
7245 COLE VIEW
COLORADO SPRINGS, COLORADO

MAY 2023

Prepared For:
A-1 CHIPSEAL
7245 Cole View
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Prepared By:

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Contact: Dane Frank

TNE Job No. 2173.00
County Job No. COM-22-014

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APPENDICIES

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COLORADO SPRINGS, COLORADO

DESIGN ENGINEER'S STATEMENT:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

COLORADO LICENSED
DANE LORIN FRANK
PE.0050207
2023/05/04
PROFESSIONAL ENGINEER

Dane Frank

Dane Frank, P.E. 50207
On behalf of Terra Nova Engineering, Inc.

2023/05/04
Date

OWNER/DEVELOPER'S STATEMENT:

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

Authorized Signature

5-4-23
Date

Daniel S. Grzemela President
Printed Name, Title

A-1 Chipseal Co
Business Name

2505 E. 7th Ave Denver Co 80229
Address

EL PASO COUNTY:

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

Joshua Palmer, P.E.
County Engineer/ECM Administrator

Approved
By: Elizabeth Nijkamp, PE
Date:06/01/2023
El Paso County Department of Public Works

Conditions:

FINAL DRAINAGE REPORT
FOR
A-1 CHIPSEAL
LOT 36 AND 37 CLAREMONT BUSINESS PARK FIL NO 2
7245 COLE VIEW
COLORADO SPRINGS, COLORADO

PURPOSE

The purpose of this Final Drainage Report is to identify and analyze the proposed drainage patterns, determine proposed runoff quantities, and present solutions to drainage impacts on-site and off-site resulting from this development. The site has previously been platted and has previously been studied in:

"Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, prepared by Matrix Design Group.

GENERAL DESCRIPTION

This Final Drainage Report (FDR) is an analysis of approximately 1.36 acres of developed land located at 7245 and 7231 Cole View. This site is currently in use as a paving business. This report and water quality are required because 0.38 acres of asphalt was recently added to the southern portion of the site. The site is in the northeast quarter of Section 8, Township 14 South, Range 65 West of the 6th Principal Meridian within El Paso County. The parcels are bounded to the north and west by Sand Creek, to the southwest by LOT 35 CLAREMONT BUSINESS PARK FIL NO 2, to the southeast by LOTS 13 AND 14 CLAREMONT BUSINESS PARK FIL NO 2, and to the north by LOT 39 CLAREMONT BUSINESS PARK FIL NO 2. (see vicinity map).

The site lies within the Sand Creek Basin, with storm runoff surface draining west across the site, then into a gutter that flows off the site to the south, eventually entering a storm inlet, which drains into the adjacent East Fork Sand Creek. There are also storm inlets in Marksheffel Road that flow into a storm sewer that flows south along Marksheffel to an unknown outfall, which presumably also drains into Sand Creek.

Soils for this project are delineated by the map in the appendix as Ellicott loamy coarse sand, 0 to 5 percent slopes (28). Soils in the study area are shown as mapped by NRCS in the "Soils Survey of El Paso County Area" and contains soils of Hydrologic Group A.

The site is developed with mostly pavement and roof surfaces, and a small amount of landscaping. The site drains to the west, with an average slope of 3.7%.

HISTORIC DRAINAGE CONDITIONS

The site was previously developed with one building and outdoor parking and equipment storage. Historically, the area that has now been given an asphalt surface was composed of dirt with little to no vegetation. There are two drainage basins. Historic Drainage Calculations have been added to the appendix with assumptions made about the site based on historic aerial photos.

Basin HS-A is 1.01 acres that is a combination of roof, parking area, and bare earth which drains to Design Point A and leaves the site in an existing carry curb. Basin HS-A has flows of Q_5 = 2.6 cfs and Q_{100} = 6.0 cfs.

Basin HS-B is 0.35 acres that is mostly landscaping and half a street and drains to Design Point B at the south corner of the site and flows offsite in the street gutter. Basin HS-B has flows of Q_5 = 1.2 cfs and Q_{100} = 2.7 cfs.

EXISTING DRAINAGE CONDITIONS

The site was previously developed with one building and outdoor parking and equipment storage. A 0.38 acre area which was historically composed of dirt with little to no vegetation has now been given an asphalt surface. There are two drainage basins. See attached Existing Drainage Map (in appendix).

Basin EX-A is 1.01 acres that is mostly roof and parking area and drains to Design Point A and leaves the site in an existing carry curb. Basin EX-A has flows of Q_5 = 4.4 cfs and

Q_{100} = 8.6 cfs.

Basin EX-B is 0.35 acres that is mostly landscaping and half a street and drains to Design Point B at the south corner of the site and flows offsite in the street gutter. Basin EX-B has flows of Q_5 = 1.2 cfs and Q_{100} = 2.7 cfs.

PROPOSED DRAINAGE CONDITIONS

The proposed drainage conditions are the same as the existing drainage conditions, with the exception being the removal of 3,300 square feet of asphalt and its replacement with 3,300 square feet of turf grass in the west corner of the site. The County is requiring the addition of a water quality feature retroactively following paving of 0.38 acres on the south side of the site. "The Final Drainage Report For Claremont Business Park Filing No. 2" assumed weighted coefficients of C(5)=0.80 and C(100)=0.90 for the proposed drainage basin which included this project site. In the appendix, this report has calculated weighted coefficients of C(5)=0.86 and C(100)=0.94 for Basin EX-A and C(5)=0.71 and C(100)=0.84 for Basin EX-B in the existing conditions and of C(5)=0.81 and C(100)=0.91 for Basin EX-A and C(5)=0.71 and C(100)=0.84 for Basin EX-B in the prosed conditions. Therefore, the imperviousness used in the existing and proposed reports are similar to the predictions made in the previous drainage report. Flows from Basin EX-B do not change from the historic conditions while flows from Basin EX-A increase by 1.5 cfs in the 5-year flow and 2.3 cfs in the 100-year flow. This additional runoff is directed towards and treated by the proposed turf grass acting as a water quality treatment area which is described below.

Water quality treatment for the recently added asphalt area in Basin EX-A is provided by the proposed turf grass area being added western corner of the site, downstream of the impervious asphalt area. The Runoff Reduction Spreadsheet shows the area being used (see appendix), and a visual representation of this area is shown on the Proposed Drainage Map. The proposed turf grass only provides water quality treatment for the recently added asphalt and has been oriented to accept as much sheet flow from this impervious area as possible.

In an effort to protect receiving water and as part of the "four-step process to minimize adverse impacts of urbanization" this site was analyzed in the following manner:

1. Reduce Runoff- The impervious asphalt area that was recently added to the site is directly upstream of the proposed turf grass which covers a 3,300 square foot area on the low end of the site. This will reduce the volume of runoff using ponding and infiltration. See the Runoff Reduction spreadsheet in the appendix for calculations showing how runoff from this impervious area is treated by the receiving pervious area.
2. Stabilize Drainageways- There are no existing or proposed drainageways onsite. The adjacent East Fork Sand Creek has previously been stabilized and runoff from the site currently flows to a storm sewer system that discharges into East Fork Sand Creek.
3. Provide Water Quality Capture Volume (WQCV)- The proposed turf grass area will provide the water quality treatment for the recently added impervious area. See the Runoff Reduction Spreadsheet in the appendix.
4. Consider Need for Industrial and Commercial BMPs- As the site is currently used for a paving business, there are likely existing industrial BMPs in place at the site. However, no industrial or commercial BMPs are required for the site.

HYDROLOGIC CALCULATIONS

Hydrologic calculations were performed using the El Paso County Storm Drainage Design Criteria Manual - Volumes 1 & 2, latest editions. The Rational Method was used to estimate storm water runoff anticipated from design storms with 5-year and 100-year recurrence intervals.

HYDRAULIC CALCULATIONS

Hydraulic calculations were estimated using the Manning's Formula and the methods described in the El Paso County Storm Drainage Design Criteria Manual – Volumes 1 & 2, latest editions. The pertinent data sheets are included in the appendix of this report.

FLOODPLAIN STATEMENT

No portion of this site is within a designated F.E.M.A. floodplain, as determined by Flood Insurance Rate Map No. 08041C0752 G, dated December 7, 2018 (see appendix).

WATER QUALITY

Water quality treatment for the recently added asphalt in Basin EX-A is provided by the proposed turf grass area directly downstream in the western corner of the site. The Runoff Reduction Spreadsheet shows the area being used (see appendix), and a visual representation of this area is shown on the Proposed Drainage Map. The proposed turf grass only provides water quality treatment for the recently added asphalt. Detention is not necessary as the increase in runoff is not significant.

There is no water quality treatment for existing basin EX-B. This basin is already fully developed and no changes to it are proposed.

CONSTRUCTION COST OPINION

Public Reimbursable

None

Public Non-Reimbursable

None

DRAINAGE FEES

This drainage report is part of a site development application; therefore, no drainage fees are due.

MAINTENANCE

The proposed turf grass will be maintained by the property owner.

SUMMARY

Development of this site will not adversely affect the surrounding development. This report is in general conformance with the previous reports which included this site. Site

runoff and storm drain appurtenances from the A-1 Chipseal development will not adversely affect the downstream and surrounding developments and will be safely routed through the proposed grass buffer to treat the water quality capture volume. Runoff leaving the site is routed to the existing public storm sewer system.

PREPARED BY:
TERRA NOVA ENGINEERING, INC.

Dane Frank, P.E.
Project Engineer

Jobs/2173.00/drainage/217300 FDR.doc

BIBLIOGRAPHY

El Paso County Drainage Criteria Manual-Volumes 1 & 2, latest edition

"Final Drainage Report for Claremont Business Park Filing No. 2", dated November 2006, prepared by Matrix Design Group.

VICINITY MAP

El Paso County - Community: Property Search

Schedule Number: 5408102040

A-1 Chipseal - Vicinity Map

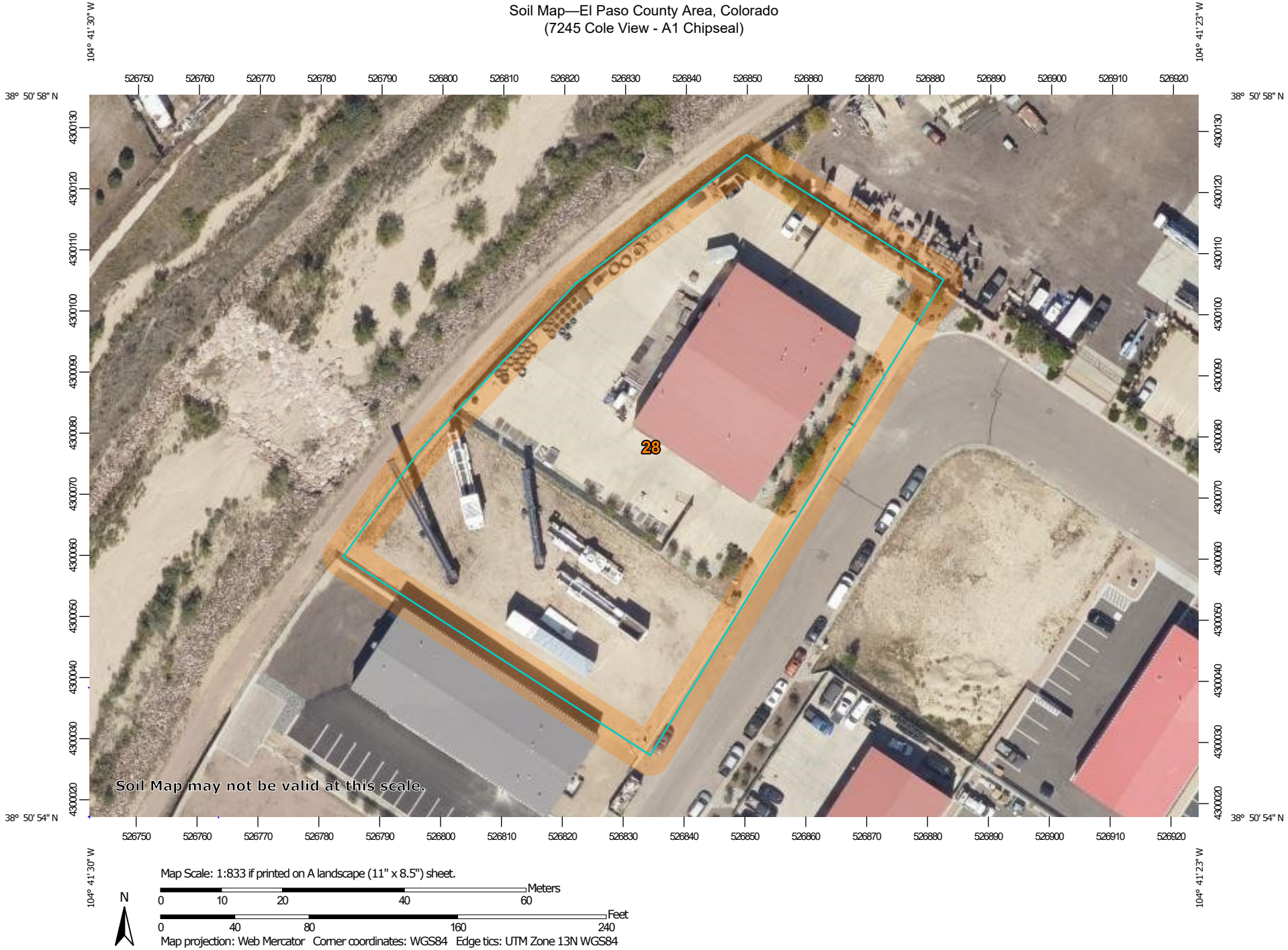
North is up ^

GENERAL LOCATION MAP


A-1 Chipseal - Location Map
Image Dated May 2020
SITE
EAST FORK SAND CREEK
Cole View
Google Earth
N
100 ft

NRCS SOILS MAP

Soil Map—El Paso County Area, Colorado
(7245 Cole View - A1 Chipseal)



Map Scale: 1:833 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 40 80 160 240

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

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 19, 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: 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
28	Ellicott loamy coarse sand, 0 to 5 percent slopes	1.2	100.0%
Totals for Area of Interest		**1.2**	**100.0%**

El Paso County Area, Colorado

28—Ellicott loamy coarse sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 3680
Elevation: 5,500 to 6,500 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Ellicott and similar soils: 97 percent
Minor components: 3 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ellicott

Setting

Landform: Flood plains, stream terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium

Typical profile

A - 0 to 4 inches: loamy coarse sand
C - 4 to 60 inches: stratified coarse sand to sandy loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: FrequentNone
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: A
Ecological site: R069XY031CO - Sandy Bottomland LRU's A and B
Other vegetative classification: SANDY BOTTOMLAND (069AY031CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquoll
Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021

FEMA FIRM MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing Of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

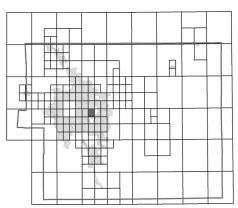
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

El Paso County Vertical Datum Offset Table

Flooding Source	Vertical Datum Offset (ft)

REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.

LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.
ZONE AE Base Flood Elevations determined.
ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary
Floodway boundary
Zone D Boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513 Base Flood Elevation line and value; elevation in feet*
(EL 987) Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

A—A Cross section line
23—23 Transect line
97° 07' 30.00" 32° 22' 30.00" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
4276000mN 1000-meter Universal Transverse Mercator grid ticks, zone 13
6000000 FT 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
DX5510 Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5 River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
MARCH 17, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
DECEMBER 7, 2018 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-0620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

PANEL 0752G

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 752 OF 1300

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
COLORADO SPRINGS, CITY OF	080060	0752	G
EL PASO COUNTY	080059	0752	G

Notice: This map was reissued on 05/15/2020 to make a correction.This revision replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER 08041C0752G

MAP REVISED DECEMBER 7, 2018

Federal Emergency Management Agency

HYDROLOGIC CALCULATIONS

A-1 CHIPSEAL
(Area Runoff Coefficient Summary)

EXISTING CONDITIONS

		STREETS / DEVELOPED			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA**	**AREA**	**C_5**	**C_{100}**	**AREA**	**C_5**	**C_{100}**	**C_5**	**C_{100}**
	(Acres)	***(Acres)***			***(Acres)***				
EX-A	1.01	0.96	0.90	0.96	0.05	0.16	0.51	0.86	0.94
EX-B	0.35	0.26	0.90	0.96	0.09	0.16	0.51	0.71	0.84

Calculated by: JF
Date: 11/6/2020
Checked by: LD

DEVELOPED CONDITIONS

		STREETS / DEVELOPED			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA**	**AREA**	**C_5**	**C_{100}**	**AREA**	**C_5**	**C_{100}**	**C_5**	**C_{100}**
	(Acres)	***(Acres)***			***(Acres)***				
EX-A	1.01	0.89	0.90	0.96	0.12	0.16	0.51	0.81	0.91
EX-B	0.35	0.26	0.90	0.96	0.09	0.16	0.51	0.71	0.84

Calculated by: JF
Date: 11/6/2022
Checked by: LD

A-1 CHIPSEAL
AREA DRAINAGE SUMMARY

EXISTING CONDITIONS

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	**AREA TOTAL** *(Acres)*	C_5	C_{100}	C_5	**Length** *(ft)*	**Slope** *(ft/ft)*	T_C *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	T_t *(min)*	**TOTAL** *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		** For Calcs See Runoff Summary*														
EX-A	1.01	0.86	0.94	0.86	100	0.03	3.0	300	3%	3.5	1.4	5.0	5.0	9.1	**4.4**	**8.6**
EX-B	0.35	0.71	0.84	0.71	30	0.03	2.7	150	3%	3.5	0.7	5.0	5.0	9.1	**1.2**	**2.7**

DEVELOPED CONDITIONS

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	**AREA TOTAL** *(Acres)*	C_5	C_{100}	C_5	**Length** *(ft)*	**Slope** *(ft/ft)*	T_C *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	T_t *(min)*	**TOTAL** *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		** For Calcs See Runoff Summary*														
EX-A	1.01	0.81	0.91	0.81	100	0.03	3.6	300	3%	3.5	1.4	5.1	5.0	9.0	**4.1**	**8.3**
EX-B	0.35	0.71	0.84	0.71	30	0.03	2.7	150	3%	3.5	0.7	5.0	5.0	9.1	**1.2**	**2.7**

Calculated by: JF

Date: 11/6/2022

Checked by: LD

A-1 CHIPSEAL
PROPOSED SURFACE ROUTING SUMMARY

Design Point(s)	*Contributing Basins*	*Area Ac*	*Flow*	
			Q_5	Q_{100}
A	**EX-A**	1.01	**4.1**	**8.3**
B	**EX-B**	0.35	***1.2***	***2.7***

Calculated by: DLF
Date: 4/4/2022
Checked by: LD

A-1 CHIPSEAL
(Area Runoff Coefficient Summary)

HISTORIC CONDITIONS

		STREETS / DEVELOPED			*OVERLAND / UNDEVELOPED*			*WEIGHTED*	
BASIN	**TOTAL AREA**	**AREA**	**C_5**	**C_{100}**	**AREA**	**C_5**	**C_{100}**	**C_5**	**C_{100}**
	(Acres)	***(Acres)***			***(Acres)***				
HS-A	1.01	0.58	0.90	0.96	0.43	0.16	0.51	0.58	0.77
HS-B	0.35	0.26	0.90	0.96	0.09	0.16	0.51	0.71	0.84

Calculated by: JF
Date: 10/6/2022
Checked by: LD

A-1 CHIPSEAL
AREA DRAINAGE SUMMARY

HISTORIC CONDITIONS

		WEIGHTED		*OVERLAND*				*STREET / CHANNEL FLOW*				T_t	*INTENSITY*		*TOTAL FLOWS*	
BASIN	**AREA TOTAL** *(Acres)*	C_5	C_{100}	C_5	**Length** *(ft)*	**Slope** *(ft/ft)*	T_C *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	T_t *(min)*	**TOTAL** *(min)*	I_5 *(in/hr)*	I_{100} *(in/hr)*	Q_5 *(c.f.s.)*	Q_{100} *(c.f.s.)*
		** For Calcs See Runoff Summary*														
HS-A	1.01	0.58	0.77	0.58	100	0.03	6.5	300	3%	3.5	1.4	7.9	4.4	7.8	**2.6**	**6.0**
HS-B	0.35	0.71	0.84	0.71	30	0.03	2.7	150	3%	3.5	0.7	5.0	5.0	9.1	**1.2**	**2.7**

Calculated by: JF

Date: 10/6/2022

Checked by: LD

Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018)

Designer: Dane Frank
Company: Terra Nova Engineering
Date: April 14, 2023
Project: A-1 Chipseal
Location: 7245 Cole View, Colorado Springs

SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth = 0.60 inches
Depth of Average Runoff Producing Storm, d_6 = 0.43 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

Area Type	UIA:RPA											
Area ID	###											
Downstream Design Point ID	###1											
Downstream BMP Type	None											
DCIA (ft^2)	--											
UIA (ft^2)	13,250											
RPA (ft^2)	3,300											
SPA (ft^2)	--											
HSG A (%)	100%											
HSG B (%)	0%											
HSG C/D (%)	0%											
Average Slope of RPA (ft/ft)	0.033											
UIA:RPA Interface Width (ft)	100.00											

CALCULATED RUNOFF RESULTS

Area ID	###											
UIA:RPA Area (ft^2)	16,550											
L / W Ratio	1.66											
UIA / Area	0.8006											
Runoff (in)	0.00											
Runoff (ft^3)	0											
Runoff Reduction (ft^3)	552											

CALCULATED WQCV RESULTS

Area ID	###											
WQCV (ft^3)	552											
WQCV Reduction (ft^3)	552											
WQCV Reduction (%)	100%											
Untreated WQCV (ft^3)	0											

CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

Downstream Design Point ID	###1											
DCIA (ft^2)	0											
UIA (ft^2)	13,250											
RPA (ft^2)	3,300											
SPA (ft^2)	0											
Total Area (ft^2)	16,550											
Total Impervious Area (ft^2)	13,250											
WQCV (ft^3)	552											
WQCV Reduction (ft^3)	552											
WQCV Reduction (%)	100%											
Untreated WQCV (ft^3)	0											

CALCULATED SITE RESULTS (sums results from all columns in worksheet)

Total Area (ft^2)	16,550
Total Impervious Area (ft^2)	13,250
WQCV (ft^3)	552
WQCV Reduction (ft^3)	552
WQCV Reduction (%)	100%
Untreated WQCV (ft^3)	0

DRAINAGE MAPS

A-1 CHIPSEAL
COLORADO SPRINGS
EXISTING DRAINAGE MAP
JULY 2022

BASIN SUMMARY

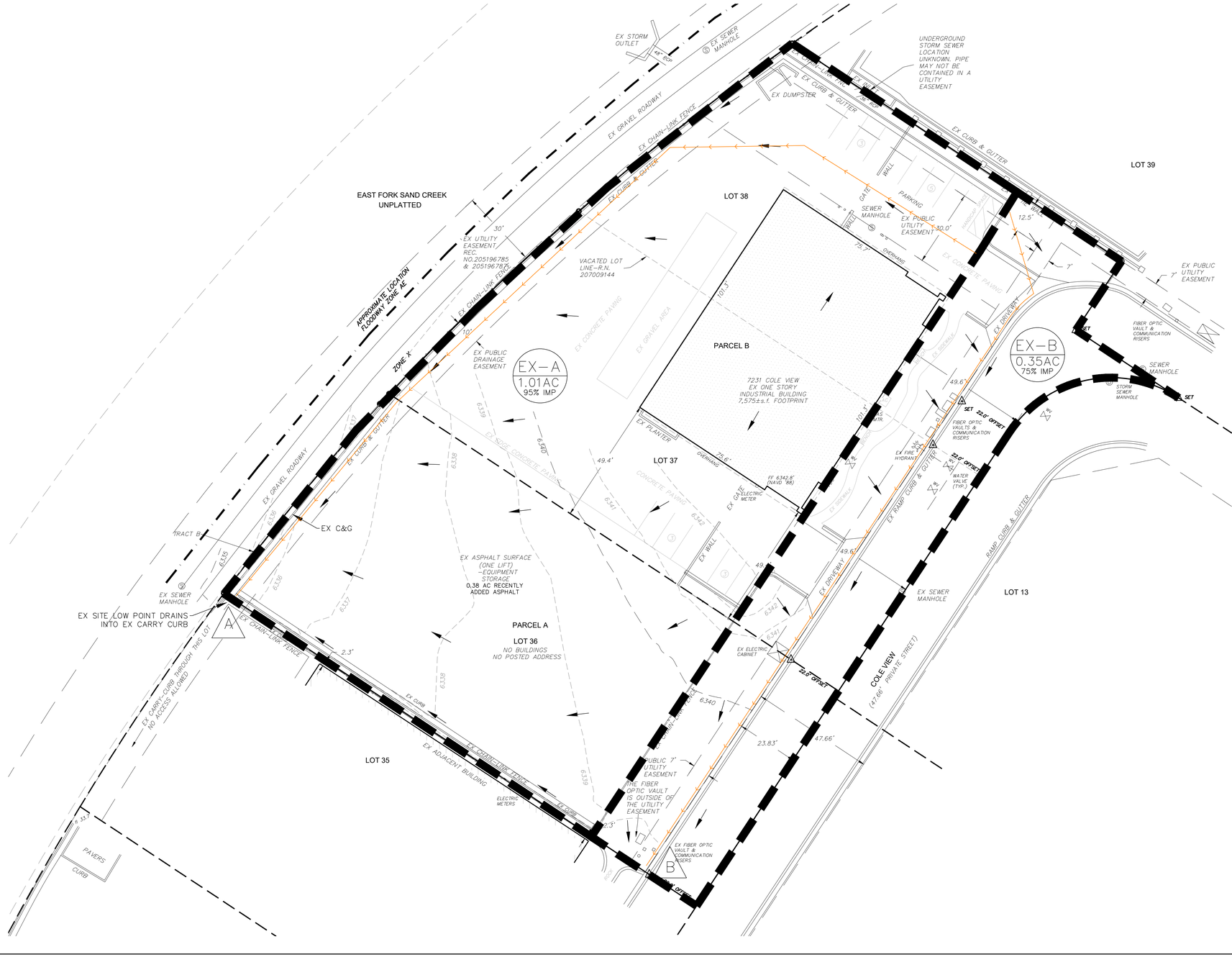
DESIGN POINT	BASIN	AREA (ACRES)	FLOW 5 YR (cfs)	FLOW 100 YR (cfs)
A	EX–A	1.01	4.4	8.6
B	EX–B	0.35	1.2	2.7

LEGEND

- P–7 / 12.22 / 75.00% — BASIN DESIGNATION, AREA IN BASIN (AC), PERCENT IMPERVIOUS
- D — DESIGN POINT
- BASIN BOUNDARY
- EXISTING 1' CONTOUR
- EXISTING 10' CONTOUR
- GROUND SURFACE FLOW DIRECTION
- ROAD AND DITCH FLOW DIRECTION
- CHAIN–LINK FENCE
- TIME OF CONCENTRATION PATH

NOTES

1. ALL FEATURE SHOWN ARE EXISTING.



N

20' 0 20' 40'

SCALE: 1"=20'

REVISIONS

NO.	DESCRIPTION	DATE

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COLORADO SPRINGS, CO 80904
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FAX: 719–635–6426
www.tnesinc.com

A–1 CHIPSEAL

EXISTING DRAINAGE MAP

DESIGNED BY	DLF
DRAWN BY	DLF
CHECKED BY	LD
H–SCALE	AS SHOWN
V–SCALE	N/A
JOB NO.	2173.00
DATE ISSUED	11/04/22
SHEET NO.	1 OF 2

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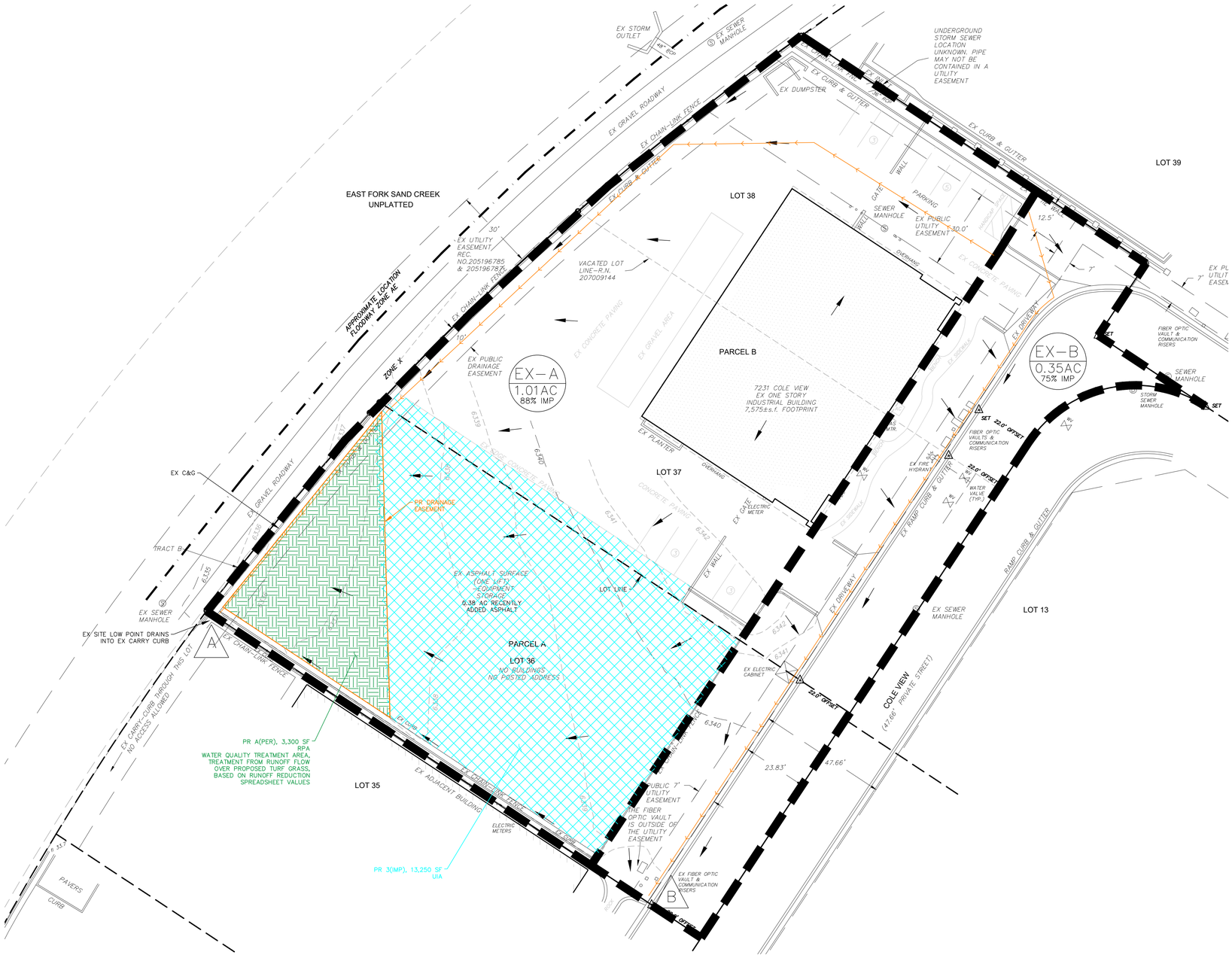
A-1 CHIPSEAL
COLORADO SPRINGS
PROPOSED DRAINAGE MAP
JULY 2022

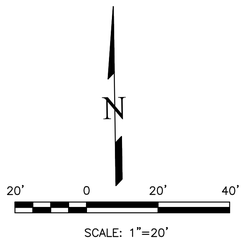
BASIN SUMMARY

DESIGN POINT	BASIN	AREA (ACRES)	FLOW 5 YR (cfs)	FLOW 100 YR (cfs)
A	EX-A	1.01	4.1	8.3
B	EX-B	0.35	1.2	2.7

LEGEND

- P-7 / 12.22 / 88 IMP — BASIN DESIGNATION, AREA IN BASIN (AC), PERCENT IMPERVIOUS
- D — DESIGN POINT
- BASIN BOUNDARY
- EXISTING 1' CONTOUR
- EXISTING 10' CONTOUR
- GROUND SURFACE FLOW DIRECTION
- ROAD AND DITCH FLOW DIRECTION
- CHAIN-LINK FENCE
- TIME OF CONCENTRATION PATH
- PROPOSED DRAINAGE EASEMENT





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REVISIONS

NO.	DESCRIPTION	DATE

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www.tnesinc.com

A-1 CHIPSEAL

PROPOSED DRAINAGE MAP

DESIGNED BY	DLF
DRAWN BY	DLF
CHECKED BY	LD
H-SCALE	AS SHOWN
V-SCALE	N/A
JOB NO.	2173.00
DATE ISSUED	11/04/22
SHEET NO.	2 OF 2