Info Only: Engineering comments are in blue.

Since this project is now managed by a different engineering consulting firm, and the drainage pattern has significantly changed from the previous design, this review cycle will be treated as the 1st review.

7280 N. Nevada Lane

Drainage letter

Please revise it to be drainage report.

ALL TERRAIN ENGINEERING PROJECT NO: 24020

EL PASO COUNTY PROJECT # - PPR-2411

AUGUST 2024

PREPARED FOR:

Greener Pastures, LLC

Contact: Jeff Weisburg

4450 Mark Dabling Blvd

Colorado Springs, CO 80907

PREPARED BY:

ALL TERRAIN ENGINEERING LLC

CONTACT: RYAN E BURNS

RBURNS@ALLTERRAINENG.COM

(203) 577-8656

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 El Paso County for drainage reports and said report is in conformity with the 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 REGISTERED RYAN E. BURNS 54412 8/12/24 PROFESSIONAL ENGINEER

Ryan Burns, PE Date

State of Colorado No. 54412

For and on behalf of All Terrain Engineering LLC

DEVELOPER'S STATEMENT

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

Please include the date in the developer/owner's signature block.

Business Name: Greener Pastures LLC

By: Jeff Weisburg

Title: Developer/Owner

Address: 4450 Mark Dabling Blvd, Colorado Springs, CO 80907

EL PASO COUNTY STATEMENT

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

For City Engineer Date

Conditions of Approval:

Table of Contents

Appendices

I. General Purpose, Location & Description

a. Purpose

The purpose of this Drainage Letter is to describe the site's onsite and offsite drainage patterns, existing and proposed storm infrastructure, and to safely route developed stormwater to adequate outfalls. This is being prepared to support the zone change request. No new development or imperviousness is proposed with this project. No changes to existing or historic drainage patterns are proposed with this letter or zone change.

b. Location

7280 N. Nevada Lane is located south of Woodmen Road, East of Black Forest Road and West of Sand Creek, as shown on the enclosed vicinity map. It occupies 4.984 acres in the Sand Creek Drainage basin in part of the Northwest quarter of the Northeast Quarter of Section 8, Township 13 South, Range 65 West of the 6th P.M. in El Paso County. The Assessor's Parcel No. is 5308000074. It is an unplatted parcel for which a zone change is being processed, which is the reason for this drainage letter. The site is bounded on the South by California Drive, on the East by Nevada Lane, on the West by Omaha Lane, and on the North by unplatted property.

A vicinity map is presented in Appendix A.

c. Description of Property

The site was developed in stages and includes a private residence in the SE corner, multiple structures, equipment and material storage areas, hardscaped area, and gravel. The residence in the SE corner was built prior to 2008, and therefore exempt from water quality or detention requirements. The remainder of the site was developed post 2008, and therefore this drainage letter documents how water quality treatment is provided for the post 2008 developed areas, and also how the developed flows are routed through the site and downstream to adequate outfalls.

Because the site was developed previously, and at the time no drainage analysis was required, the existing and proposed conditions of the site presented herein, are considered same, as there are no proposed improvements that will alter drainage patterns or flows. Please see the Drainage Basins section below for detailed descriptions of the stormwater hydrology and routing of the site drainage basins.

d. Floodplain Statement

This subdivision is not within the limits of a designated flood plain or flood hazard area, as identified on FEMA panel no. 08041C0533 G, dated December 7, 2018, a copy of which is enclosed for reference.

Drainage Basins

a. Major Basin Description

The site is located within the Sand Creek Drainage Basin. The site's drainage characteristics were previously studied in the following reports:

Please discuss the water detention for this project, considering that the developed area has increased runoff flows and there are no adequate outfalls.

1. "Sand Creek Drainage Basin Planning Study" prepared by Kiowa Engineering, September 1992

A small area from the unplated lot to the north of the site is tributary to the site. No other offsite areas are tributary to the site. Runoff generally sheet flows across the site from North to South and continues south and west along the Existing dirt streets. See below for the historic basin description.

b. Historic Subbasin Description

For the purposes of this report, the historic drainage patterns of and affecting the site, were analyzed to understand if the developed/existing conditions have altered these patterns or flows and what if any improvements are required to safely route the flows through the site and to the downstream outfall.

In the historic condition the site was considered to be range land/undeveloped.

Please include historical map showings these historical sub-basins.

Basin H1, is 6.25 acres in area (same area as existing/proposed basins O1, O2, A-C), and runoff generated (Q5 = 1.4 cfs, Q100 = 9.4 cfs), sheet flows from a high-point north of the site, south to the site's northern boundary, and continue across the site from north to south until they reach California Drive. Flows continue south of the Site and are routed to Sand Creek approximately 3,800' away in undefined drainage paths, according to the Sand Creek DBPS.

Basin H2, is 0.63 acres (same area as existing/proposed Basin D), and slopes from north to south. Runoff generated Q5 = 0.2 cfs, and Q100 = 1.4 cfs sheet flows to the sites southern boundary at deign point 2 and continue per the historic undefined drainage paths to Sand Creek, approximately 3,800' away, according to the DBPS.

Part b covers the historic condition, so Part c should only address the proposed condition. Please remove this section.

c. Existing/Proposed Subbasin Descriptions

The proposed site has been divided into 4 subbasins for analysis (A-D) & two off-site basins O1 & O2. A drainage map is presented in the Appendix. See below for existing/proposed basin descriptions:

Basin O1 is 0.96 acres in area and includes a portion of the unplated parcel to the north. The parcels imperviousness and land coverages were determined by a site visit and through aerial imagery. Basin O1 consists of undeveloped range land, and material storage areas that are largely unvegetated. The material storage areas have been characterized as "railyard" areas with an imperviousness of 40%. Runoff generated, Q5 = 0.6 cfs, Q100 = 2.2 cfs, sheet flows south to the sites northern boundary at design point 1. Runoff continues through Basin A per the patterns identified below, and combines with Basin A runoff @ DP 3. See Basin A Description.

Basin O2 is 0.93 acres in area and includes a portion of the unplated parcel to the north. The parcels imperviousness and land coverages were determined by a site visit and through aerial imagery. Basin O2 consists of undeveloped range land, and material storage areas that are largely unvegetated. The material storage areas have been characterized as "railyard" areas with an imperviousness of 40%. Runoff generated, Q5 = 0.5 cfs, Q100 = 2.1 cfs, sheet flows south to the sites northern boundary at design point 3.

This drainage report accommodates the existing conditions of the tributary areas of the parcel to the north at the time this report was generated. If the lot to the north develops in the future, it is expected that they will manage their developed flows on-site and release at no more than the rates identified in this report.

Basin A is 1.51 Acres in area, located in the northern and western portion of the site. Basin A consists of undeveloped range land, material stockpiles and unvegetated areas characterized as rail-yard areas, roof areas and a small portion of hardscape. Runoff Q5 = 1.1 cfs, Q100 = 3.8 cfs from this basin generally sheet flows south and towards the existing flat bottom, grass lined swale central to the basin. This swale collects the flows from east and west and carries them to design point 2 where they combine with Flows from Basin O1, DP1 Q5 = 1.3 cfs, Q100 = 4.9 cfs. The swale becomes wider as you approach the southern limits of basin A. Flows are spread-out at DP2 and allowed to continue south across basin C's range land/grass buffer area to DP5 where they combine with flows from DP 4, and all other basins, except basin D. See basin C description below.

Basin B is 1.44 acres in area and consists primarily of unvegetated and earthen storage areas characterized as "rail-yards" with an imperviousness of 40%. Basin B also includes landscaped areas, grass/lawn areas, roofs, and small areas of hardscape. Runoff generated Q5 = 2.0 cfs, Q100 = 5.1 cfs, sheet flows south and west, where intercepted by a landscaped berm, which directs flows to the west and to DP 4 at the north boundary of basin C, where they combine with flows from basin O2 (Q5 = 2.0 cfs, Q100 = 5.5 cfs). Flows then continue in the proposed grass lined berm/swale to DP5. See Basin C description below.

Basin C is 1.41 acres in area and consists mainly of range land but also includes small portions of hardscape and a portion of roof from the existing residence primarily contained within Basin D. Runoff generated, Q5 = 0.7 cfs, and Q100 = 3.6 cfs, sheet flows south and west to design point 5 across the existing grass buffer. In the existing condition a landscaped berm along the southern and western limits of the parcel intercepts flows along it length, and directs them to DP 5. In the proposed condition, this berm will be improved to include a flat bottom, to promote infiltration, as well as raised in select areas, to ensure all runoff is directed to the proposed outfall at DP 5, where it combines with all upstream basins and design points (basins A-C, O1, & O2), Q5 = 3.3 cfs and 11.3 cfs.

Flows from DP 5 will exit the site via a proposed break in the berm and a proposed low-tailwater basin/riprap pad. This design ensures that flows leaving the site are not erosive and are generally consistent with the historic condition in quantity and patterns and consistent with the sites existing condition, which has not generated any known issues or erosion downstream to our knowledge.

Once flows leave the site, they travel South and West, across the California Drive and Utah Drive road benches. It appears the roads act as level spreaders in the existing conditions, as no defined flows paths have been found, and no road-side ditches exist to date. It is our opinion that this condition is adequately handling the existing and proposed flows from the site, and are appropriate for the area which is rural in nature, and highly vegetated.

Basin D is 0.63 acres, and consists of a private residence (roofs), hardscaped areas, and landscaped areas. Runoff generated Q5 = 1.1 cfs, Q100 = 2.6 cfs sheet flows south to California Drive at DP6. Flows continue along the road section west to Wyoming Lane where they are directed to the South and continue per historic

Flows leaving the site at DP5 are concentrated. How can erosion on California Drive, a gravel roadway, be mitigated?

patterns to Sand Creek. This residence and associated development was completed prior to 2008, and is considered exempt from water quality and detention requirements. However, a portion of the residence is being accommodated in Basin C, and water quality treatment is provided through infiltration for the portions of the residence within Basin C.

II. Drainage Design Criteria

a. Development Criteria Reference

Storm drainage analysis and design criteria for this project were taken from the "City of Colorado Springs/El Paso County Drainage Criteria Manual" Volumes 1 and 2 (EPCDCM), dated October 12, 1994, the "Urban Storm Drainage Criteria Manual" Volumes 1 to 3 (USDCM) and Chapter 6 and Section 3.2.1 of Chapter 13 of the "Colorado Springs Drainage Criteria Manual" (CSDCM), dated May 2014, as adopted by El Paso County.

b. Hydrologic Criteria

All hydrologic data was obtained from the "El Paso Drainage Criteria Manual" Volumes 1 and 2, and 3. On-site drainage improvements were designed based on the 5 year (minor) storm event and the 100-year (major) storm event. Runoff was calculated using the Rational Method, and rainfall intensities for the 5-year and the 100-year storm return frequencies were obtained from Table 6-2 of the CSDCM. One hour point rainfall data for the storm events is identified in the chart below. Runoff coefficients were determined based on proposed land use and from data in Table 6-6 from the CSDCM. Time of concentrations were developed using equations from CSDCM. All runoff calculations and applicable charts and graphs are included in the Appendices.

c. Hydraulic Criteria

The Rational Method and USDCM's SF-2 and SF-3 forms were used to determine the runoff from the minor and major storms on the site. Autodesk Hydraflow express was used to size any proposed channels or swales. Swales were sized based on the peak 100-year flows with the minimum and maximum swale slopes. Per criteria velocities were checked to be less than 5 ft/s in the existing/proposed swales. All hydraulic calculations are presented in Appendix C.

Drainage Facility Design

a. General Concept

The site was previously developed and a system of swales, berms, and grass buffers have been created to convey stormwater runoff from North to South across the site, to the low point in the southwest corner including the off-site flows from the north. This system of berms and swales is designed to promote infiltration and provide water quality treatment for the developed and impervious areas of the site (excluding Basin D, as it was developed pre 2008). The site is generally mildly sloping, north to south however, is nearly flat from east to west along California Drive in Basin C where all runoff except for Basin D is tributary. The stormwater reaching basin C, is directed over a large, well established, and vegetated grass buffer before reaching the outfall at DP5. An improved grass lined swale/berm is proposed along the southern and western site boundary to ensure all developed flows are treated prior to leaving the site. This system of berms and swales, along with the very mild slopes, type A soils and longer drain paths, has kept peak developed flows

generally consistent with historic flows, and therefore, no traditional detention facility is proposed. See the Historic versus Existing/Proposed flow comparison below:

Please remove EX

Flow Comparison			
Condition	Basin/DP	Q5 (cfs)	Q100 (cfs)
EX/PROPOSED	DP 5	3.3	11.3
HISTORIC	H1	1.4	9.4
EX/PROPOSED	DP 6	1.1	2.6
HISTORIC	H2	0.2	1.4

This statement cannot be verified until the historical drainage map is provided. Additionally, the runoff flow leaving the site at the proposed discharge point is significantly higher than the historical flow. Therefore, a detention facility is required to manage the increase.

b. Water Quality & Detention

Water quality for basins O1, O2, A, B, & C is provided for the site through runoff reduction and filtration. Mile High Flood Districts, UD-BMP, Runoff Reduction Workbook was used to model the sites infiltration for the water quality, see the appendix. The sites' underlying soils are hydrologic type A, which have a high infiltration rate. All developed flows and impervious areas are directed over receiving pervious areas dispersed throughout the site, as described in the basin descriptions above. Basin C acts as a grass buffer, and is the last stop for stormwater prior to leaving the site. This ensures all developed flows are adequately treated by infiltration. A 100% water quality volume reduction was achieved for the developed flows from Basins O1, O2, A, B, & C.

No detention is proposed for the site as the developed flows are generally consistent with the historic flow rates. It was found that the downstream outfall as described in the basin description above is adequate, and has been handling the developed flows from this site for over a decade, to my knowledge. To ensure the outfall remains stable in the long term, a riprap pad and low tail-water basin is proposed. Although flows are not erosive, this extra defense will ensure flows leaving the site are controlled and remain consistent with the existing and historic outfall.

It appears that there is no downstream outfall. The project directly discharge runoff to California Drive - a gravel roadway.

c. Major Drainageways

There are no major drainageways that traverse the site.

d. Grading & Erosion Control Plan

Due to the project disturbance area (prior construction, not associated with this plan or report), a separate Grading and Erosion Control plan has been prepared. The Grading and Erosion Control Plan has been submitted in conjunction with this drainage letter. The GEC plan will become the guiding document for all proposed improvements on-site, including swales, berms, grass buffers, and riprap/low tail-water basin.

e. Four Step Method

Step 1 – Reducing Runoff Volumes: The site has been designed such that all impervious areas are routed over receiving pervious areas. All flows are conveyed overland over pervious areas, on generally mild and flat slopes, over top of hydrologic Type A soils. A runoff-reduction (UD-BMP V3.07) spreadsheet is presented in Appendix B.

Step 2 – Treat and slowly release the WQCV: The Water Quality Capture Volume for the "post 2008" areas of the site (Basins A-C) is completely infiltrated. A 100% Water Quality Volume Reduction for these basins was achieved per MHFD UD-BMP V3.07.

Step 3 – Stabilize stream channels: No evidence of downstream erosion has been observed between the site's outfall and the Sand Creek and to our knowledge the site has generally been in it's present day condition for approximately a decade or more. A low-tailwater basin and riprap pad has been proposed at the sites outfall (DP5) to further control flows, and add an extra layer of defense, over the present day condition, which does not include any engineered improvements at the outfall. Flows leaving the site continue approximately 3,800 feet across public and private property to reach the Creek, and per the DBPS, no specific path is identified. However, it appears a series of private ponds, surrounded by dense vegetation and tree stands, intercept flows prior to reaching the Sand Creek. There are no known improved or engineered drainage conveyances directly downstream of the site.

Step 4 – Consider the need for source controls: To our knowledge only natural and earthen materials are stored on-site. Storage areas are covered. No construction of industrial or commercial uses is proposed or associated with this project All developed is existing.

f. Drainage Basin & Bridge Fees

Drainage and Bridge fees will be due at the time of plating. This report does not propose to subdivide or plat the site.

III. Summary

7280 N. Nevada Lane remains consistent with pre-development drainage conditions with the construction of the recommended drainage improvements. The proposed development will not adversely affect downstream stormwater infrastructure or surrounding developments. This report meets the latest El Paso County Drainage criteria.

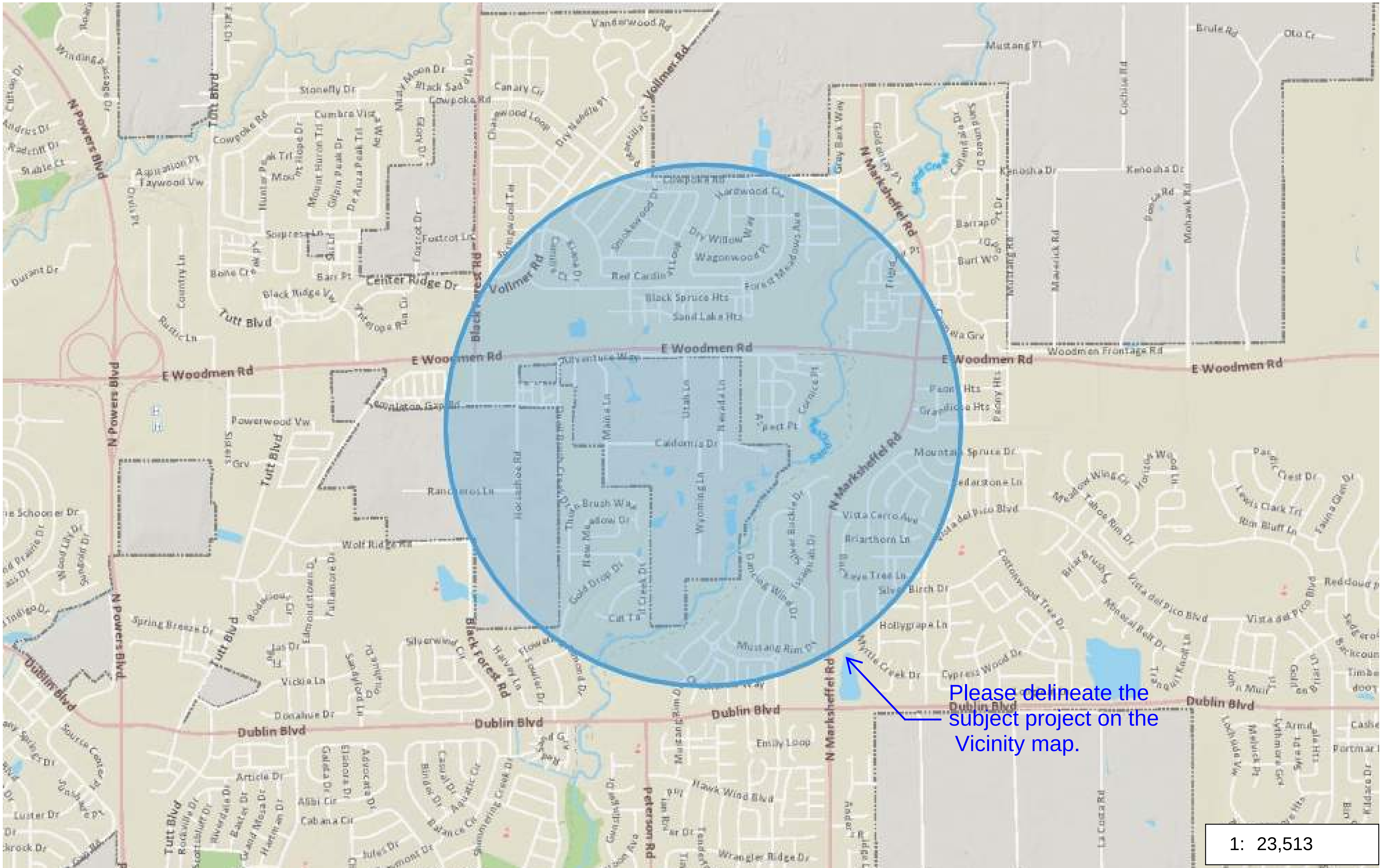
IV. References

1. "El Paso County and City of Colorado Springs Drainage Criteria Manual, Vol I & II".

2. Urban Storm Drainage Criteria Manual (Volumes 1, 2, and 3), prepared by Mile High Flood District, Revised August 2018, September 2017, and January 2021.

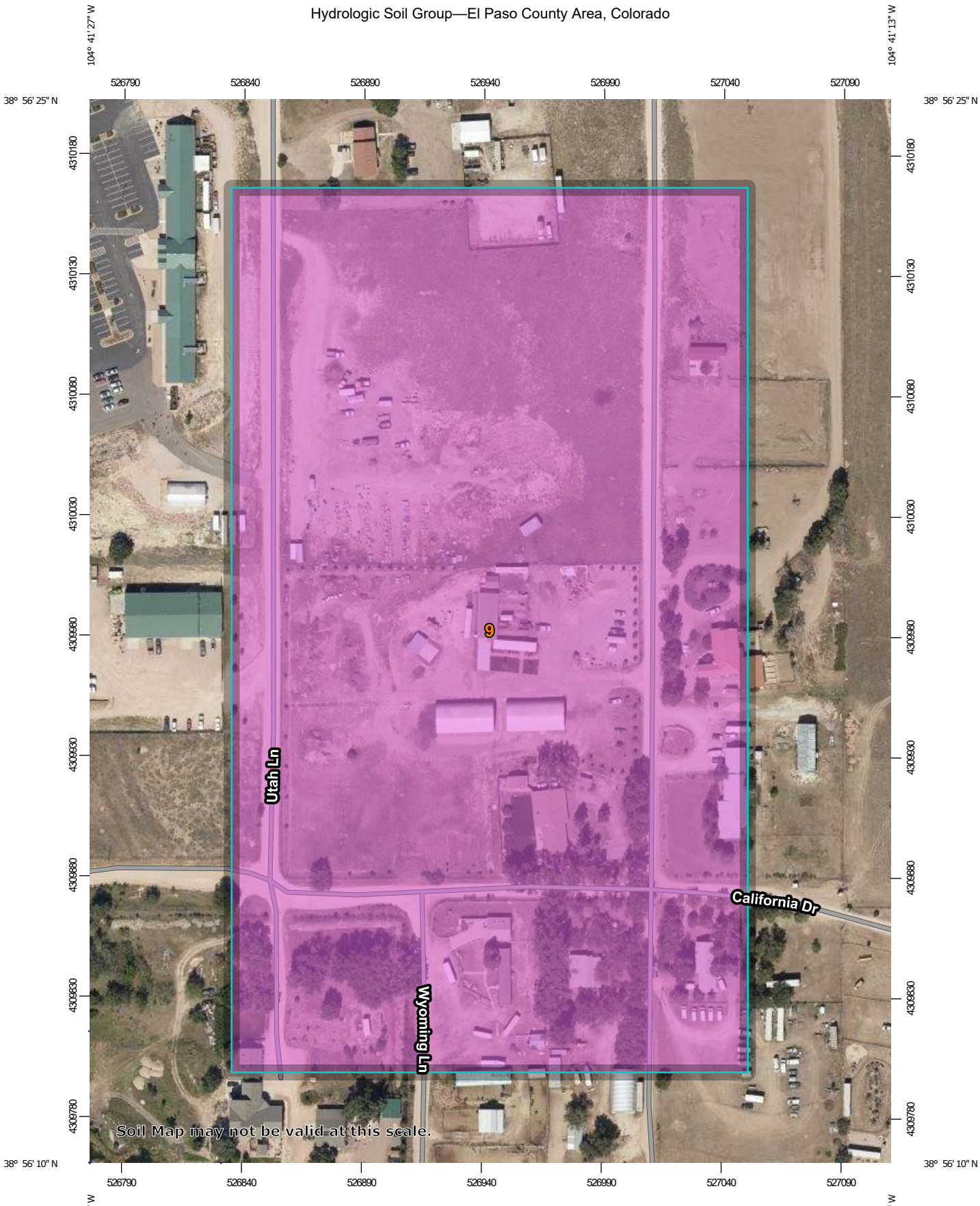
3. Sand Creek Drainage Basin Planning Study, prepared Kiowa Engineering Corporation,January 1993, revised March 1996.

City of Colorado Springs



0.7 | 0 | 0.37 | 0.7 Miles

NAD_1983_StatePlane_Colorado_Central_FIPS_0502_Feet
© Latitude Geographics Group Ltd.



Map Scale: 1:2,150 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

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 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 1:24,000.

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 21, Aug 24, 2023

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
9	Blakeland-Fluvaquentic Haplaquolls	A	19.6	100.0%
Totals for Area of Interest			**19.6**	**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

APPENDIX A – VICINITY MAP, FEMA MAP, NRCS WEB SOIL SURVEY & NOAA ATLAS 14

It appears that FEMA was not included.

APPENDIX B – HYDROLOGIC CALCULATIONS

COMPOSITE % IMPERVIOUS CALCULATIONS - HISTROIC CONDITIONS

Subdivision: 7280 NEVADA LN
Location: Colorado Springs

Project Name: 7280 NEVADA
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 7/25/24

Basin ID	Total Area (ac)	HISTORIC (2%)				Basins Total Weighted C		Basins Total Weighted % Imp.
		C_5	C_{100}	Area (ac)	Weighted % Imp.	C_5	C_{100}	
H1	6.25	0.09	0.36	6.25	2.0%	0.09	0.36	2.0%
H2	0.63	0.09	0.36	0.63	2.0%	0.09	0.36	2.0%
Total	**6.88**							**2.0%**

STANDARD FORM SF-2 - HISTORIC CONDITIONS
TIME OF CONCENTRATION

Subdivision: 7280 NEVADA LN
Location: Colorado Springs

Project Name: 7280 NEVADA
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 7/25/24

SUB-BASIN DATA						INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					*tc* CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Impervious (%)	C_5	C_{100}	L (ft)	S_o (%)	t_i (min)	L_t (ft)	S_t (%)	K	VEL. (ft/s)	t_t (min)	COMP. t_c (min)	TOTAL LENGTH (ft)	Urbanized t_c (min)	t_c (min)
H1	6.25	A	2%	0.09	0.36	300	5.8%	17.7	580	5.8%	2.5	0.6	16.1	33.7	880.0	30.0	30.0
H2	0.63	A	2%	0.09	0.36	187	5.8%	14.0	0	5.8%	2.5	0.6	0.0	14.0	187.0	25.7	14.0

NOTES:

$$t_c = t_i + t_t$$

Where:

t_c = computed time of concentration (minutes)

t_i = overland (initial) flow time (minutes)

t_t = channelized flow time (minutes).

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t}$$

Where:

t_t = channelized flow time (travel time, min)
L_t = waterway length (ft)
S_o = waterway slope (ft/ft)
V_t = travel time velocity (ft/sec) = $K\sqrt{S_o}$
K = NRCS conveyance factor (see Table 6-2).

Use a minimum t_c value of 5 minutes for urbanized areas and a minimum t_c value of 10 minutes for areas that are not considered urban. Use minimum values even when calculations result in a lesser time of concentration.

Equation 6-2

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}}$$

Where:

t_i = overland (initial) flow time (minutes)
C_5 = runoff coefficient for 5-year frequency (from Table 6-4)
L_i = length of overland flow (ft)
S_o = average slope along the overland flow path (ft/ft).

Equation 6-4

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

Where:

t_c = minimum time of concentration for first design point when less than t_c from Equation 6-1.
L_t = length of channelized flow path (ft)
i = imperviousness (expressed as a decimal)
S_t = slope of the channelized flow path (ft/ft).

Equation 6-3

Table 6-2. NRCS Conveyance factors, K

Type of Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Equation 6-5

STANDARD FORM SF-3 - HISTORIC CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: 7280 NEVADA LN
Location: Colorado Springs
Design Storm: 5-Year

Project Name: 7280 NEVADA
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 7/25/24

		DIRECT RUNOFF							TOTAL RUNOFF				STREET/SWALE			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	t_c (min)	C*A (Ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	H1	6.25	0.09	30.0	0.56	2.48	1.4															Runoff sheet flows south to DP 1
	2	H2	0.63	0.09	14.0	0.06	3.63	0.2															Runoff sheet flows south to DP 1

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

STANDARD FORM SF-3 - HISTORIC CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Project Name: 7280 NEVADA
Subdivision: 7280 NEVADA LN
Project No.: 24020.00
Location: Colorado Springs
Calculated By: REB
Design Storm: 100-Year
Checked By:
Date: 7/25/24

		DIRECT RUNOFF							TOTAL RUNOFF				STREET			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (ac)	Runoff Coeff.	t_c (min)	C*A (ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	H1	6.25	0.36	30.0	2.25	4.17	9.4															Runoff sheet flows south to DP 1
	2	H2	0.63	0.36	14.0	0.23	6.09	1.4															Runoff sheet flows south to DP 1

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

COMPOSITE % IMPERVIOUS CALCULATIONS - PROPOSED CONDITIONS

Subdivision: 7280 NEVADA LN
Location: Colorado Springs

Project Name: 7280 NEVADA LN
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 8/8/24

Basin ID	Total Area (ac)	PAVED (100% Imp.)				ROOFS (90%)				RAIL-YARD (40%)				PASTURE/MEADOW (0%)				Basins Total Weighted C		Basins Total Weighted % Imp.
		C_5	C_{100}	Area (ac)	Weighted % Imp.	C_5	C_{100}	Area (ac)	Weighted % Imp.	C_5	C_{100}	Area (ac)	Weighted % Imp.	C_5	C_{100}	Area (ac)	Weighted % Imp.	C_5	C_{100}	
A	1.51	0.90	0.96	0.01	0.7%	0.73	0.81	0.02	1.1%	0.30	0.50	0.78	20.7%	0.08	0.35	0.70	0.0%	0.21	0.44	22.4%
B	1.44	0.90	0.96	0.03	1.9%	0.73	0.81	0.23	14.2%	0.30	0.50	1.18	32.8%	0.08	0.35	0.00	0.0%	0.38	0.56	48.9%
C	1.41	0.90	0.96	0.04	2.5%	0.73	0.81	0.04	2.7%	0.30	0.50	0.07	1.9%	0.08	0.35	1.26	0.0%	0.13	0.39	7.2%
D	0.63	0.90	0.96	0.11	17.9%	0.73	0.81	0.03	4.7%	0.30	0.50	0.43	27.0%	0.08	0.35	0.06	0.0%	0.41	0.58	49.7%
O1	0.96	0.90	0.96	0.00	0.0%	0.73	0.81	0.00	0.0%	0.30	0.50	0.43	17.9%	0.08	0.35	0.53	0.0%	0.18	0.42	17.9%
O2	0.93	0.90	0.96	0.00	0.0%	0.73	0.81	0.00	0.0%	0.30	0.50	0.40	17.2%	0.08	0.35	0.53	0.0%	0.17	0.41	17.2%
Total	**6.88**																			**26.0%**
Total (excluding D)	**6.25**																			**23.6%**

STANDARD FORM SF-2 - PROPOSED CONDITIONS
TIME OF CONCENTRATION

Subdivision: 7280 NEVADA LN
Location: Colorado Springs

Project Name: 7280 NEVADA LN
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 8/8/24

SUB-BASIN DATA						INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					*tc* CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Impervious (%)	C_5	C_{100}	L (ft)	S_o (%)	t_i (min)	L_t (ft)	S_t (%)	K	VEL. (ft/s)	t_t (min)	COMP. t_c (min)	TOTAL LENGTH (ft)	Urbanized t_c (min)	t_c (min)
A	1.51	A	22.4%	0.21	0.44	76	1.2%	13.2	300	3.0%	10.0	1.7	2.9	16.1	376.0	24.6	16.1
B	1.44	A	48.9%	0.38	0.56	85	2.1%	9.4	300	2.1%	10.0	1.4	3.5	12.8	385.0	19.9	12.8
C	1.41	A	7.2%	0.13	0.39	28	1.6%	7.9	400	1.6%	15.0	1.9	3.5	11.4	428.0	30.1	11.4
D	0.63	A	49.7%	0.41	0.58	80	2.6%	8.1	231	2.6%	20.0	3.2	1.2	9.3	311.0	19.0	9.3
O1	0.96	A	17.9%	0.18	0.42	300	5.5%	16.4	63	5.5%	7.0	1.6	0.6	17.1	363.0	23.3	17.1
O2	0.93	A	17.2%	0.17	0.41	300	6.5%	15.6	149	6.5%	5.0	1.3	1.9	17.6	449.0	23.9	17.6

NOTES:

$$t_c = t_i + t_t$$

Where:

t_c = computed time of concentration (minutes)

t_i = overland (initial) flow time (minutes)

t_t = channelized flow time (minutes).

$$t_t = \frac{L_t}{60K\sqrt{S_o}} = \frac{L_t}{60V_t}$$

Where:

t_t = channelized flow time (travel time, min)
L_t = waterway length (ft)
S_o = waterway slope (ft/ft)
V_t = travel time velocity (ft/sec) = $K\sqrt{S_o}$
K = NRCS conveyance factor (see Table 6-2).

Equation 6-2

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}}$$

Where:

t_i = overland (initial) flow time (minutes)
C_5 = runoff coefficient for 5-year frequency (from Table 6-4)
L_i = length of overland flow (ft)
S_o = average slope along the overland flow path (ft/ft).

Equation 6-4

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

Where:

t_c = minimum time of concentration for first design point when less than t_c from Equation 6-1.
L_t = length of channelized flow path (ft)
i = imperviousness (expressed as a decimal)
S_t = slope of the channelized flow path (ft/ft).

Equation 6-3

Table 6-2. NRCS Conveyance factors, K

Type of Land Surface	Conveyance Factor, K
Heavy meadow	2.5
Tillage/field	5
Short pasture and lawns	7
Nearly bare ground	10
Grassed waterway	15
Paved areas and shallow paved swales	20

Equation 6-5

Use a minimum t_c value of 5 minutes for urbanized areas and a minimum t_c value of 10 minutes for areas that are not considered urban. Use minimum values even when calculations result in a lesser time of concentration.

STANDARD FORM SF-3 - PROPOSED CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: 7280 NEVADA LN
Location: Colorado Springs
Design Storm: 5-Year

Project Name: 7280 NEVADA
Project No.: 24020.00
Calculated By: REB
Checked By:
Date: 7/25/24

		DIRECT RUNOFF							TOTAL RUNOFF				STREET/SWALE			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (Ac)	Runoff Coeff.	t_c (min)	C*A (Ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	O1	0.96	0.18	17.1	0.17	3.33	0.6					0.6	0.17	3					305	0.7	7.6	RUNOFF FROM BASION O1, OVERLAND FLOW SOUTH TO SITE'S N BOUNDARY @ DP 1. COMBINES W/ BASIN A FLOWS IN SWALE @ DP 2
		A	1.51	0.21	16.1	0.31	3.41	1.1															RUNOFF FROM BASIN A, OVERLAND/SWALE FLOW TO DP 2 (COMBINES W/ BASIN O1 @ DP2)
	2								24.6	0.48	2.78	1.3	1.3	0.48	3					210	0.7	5.2	COMBINED FLOW @ DP 2, OVERLAND FLOWS TO DP5 AND COMBINES WITH FLOWS FROM BASINS C & D
	3	O2	0.93	0.17	17.6	0.16	3.29	0.5					0.5	0.16	2.1					250	0.6	7.4	RUNOFF FROM BASION O2, OVERLAND FLOW SOUTH TO SITE'S N BOUNDARY @ DP 3. COMBINES W/ BASIN B FLOWS IN SWALE @ DP 4
		B	1.44	0.38	12.8	0.55	3.75	2.0															RUNOFF FROM BASIN B, OVERLAND/SWALE FLOW TO DP 4 (COMBINES W/ BASIN O2 @ DP4)
	4								25.0	0.71	2.76	2.0	2.0	0.71	2.0					210	0.5	6.4	COMBINED FLOW @ DP 4 IN SWALE (BASINS O2, B), CONTINUES IN SWALE TO DP5
		C	1.41	0.13	11.4	0.18	3.93	0.7															RUNOFF FROM BASIN C, OVERLAND/SWALE FLOW TO DP 45(COMBINES W/ BASIN A,B,O1,O2 @ DP 5)
	5								31.4	1.38	2.41	3.3											COMBINED FLOW IN SWALE @ DP5 (BASINS A-C, O1, & O2)
	6	D	0.63	0.41	9.3	0.26	4.23	1.1															RUNOFF FROM BASIN D, OVERLAND FLOW TO BASIN BOUNDARYAND OFFSITE @ DP6

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

STANDARD FORM SF-3 - PROPOSED CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Project Name: 7280 NEVADA
Subdivision: 7280 NEVADA LN
Project No.: 24020.00
Location: Colorado Springs
Calculated By: REB
Design Storm: 100-Year
Checked By:
Date: 7/25/24

		DIRECT RUNOFF							TOTAL RUNOFF				STREET			PIPE				TRAVEL TIME			
STREET	Design Point	Basin ID	Area (ac)	Runoff Coeff.	t_c (min)	C*A (ac)	I (in/hr)	Q (cfs)	tc (min)	C*A (ac)	I (in/hr)	Q (cfs)	Q_{street} (cfs)	C*A (ac)	Slope (%)	Q_{pipe} (cfs)	C*A (ac)	Slope (%)	Pipe Size (inches)	Length (ft)	Velocity (fps)	t_t (min)	REMARKS
	1	O1	0.96	0.42	17.1	0.40	5.59	2.2					2.2	0.40	3					305	0.7	7.6	RUNOFF FROM BASION O1, OVERLAND FLOW SOUTH TO SITE'S N BOUNDARY @ DP 1. COMBINES W/ BASIN A FLOWS IN SWALE @ DP 2
		A	1.51	0.44	16.1	0.66	5.73	3.8															RUNOFF FROM BASIN A, OVERLAND/SWALE FLOW TO DP 2 (COMBINES W/ BASIN O1 @ DP2)
	2								24.6	1.06	4.66	4.9	4.9	1.06	3					210	0.7	5.2	COMBINED FLOW @ DP 2, OVERLAND FLOWS TO DP5 AND COMBINES WITH FLOWS FROM BASINS C & D
	3	O2	0.93	0.41	17.6	0.39	5.51	2.1					2.1	0.39	2.1					250	0.6	7.4	RUNOFF FROM BASION O2, OVERLAND FLOW SOUTH TO SITE'S N BOUNDARY @ DP 3. COMBINES W/ BASIN B FLOWS IN SWALE @ DP 4
		B	1.44	0.56	12.8	0.80	6.30	5.1															RUNOFF FROM BASIN B, OVERLAND/SWALE FLOW TO DP 4 (COMBINES W/ BASIN O2 @ DP4)
	4								25.0	1.19	4.63	5.5	5.5	1.19	2.0					210	0.5	6.4	COMBINED FLOW @ DP 4 IN SWALE (BASINS O2, B), CONTINUES IN SWALE TO DP5
		C	1.41	0.39	11.4	0.54	6.59	3.6															RUNOFF FROM BASIN C, OVERLAND/SWALE FLOW TO DP 45(COMBINES W/ BASIN A,B,O1,O2 @ DP 5)
	5								31.4	2.79	4.05	11.3											COMBINED FLOW IN SWALE @ DP5 (BASINS A-C, O1, & O2)
	6	D	0.63	0.58	9.3	0.37	7.11	2.6															RUNOFF FROM BASIN D, OVERLAND FLOW TO BASIN BOUNDARYAND OFFSITE @ DP6

Notes:
Street and Pipe C*A values are determined by Q/i using the catchment's intensity value.

APPENDIX C – HYDRAULIC CALCULATIONS

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jul 31 2024

DP2 - PROPOSED GRASS LINED SWALE

Trapezoidal

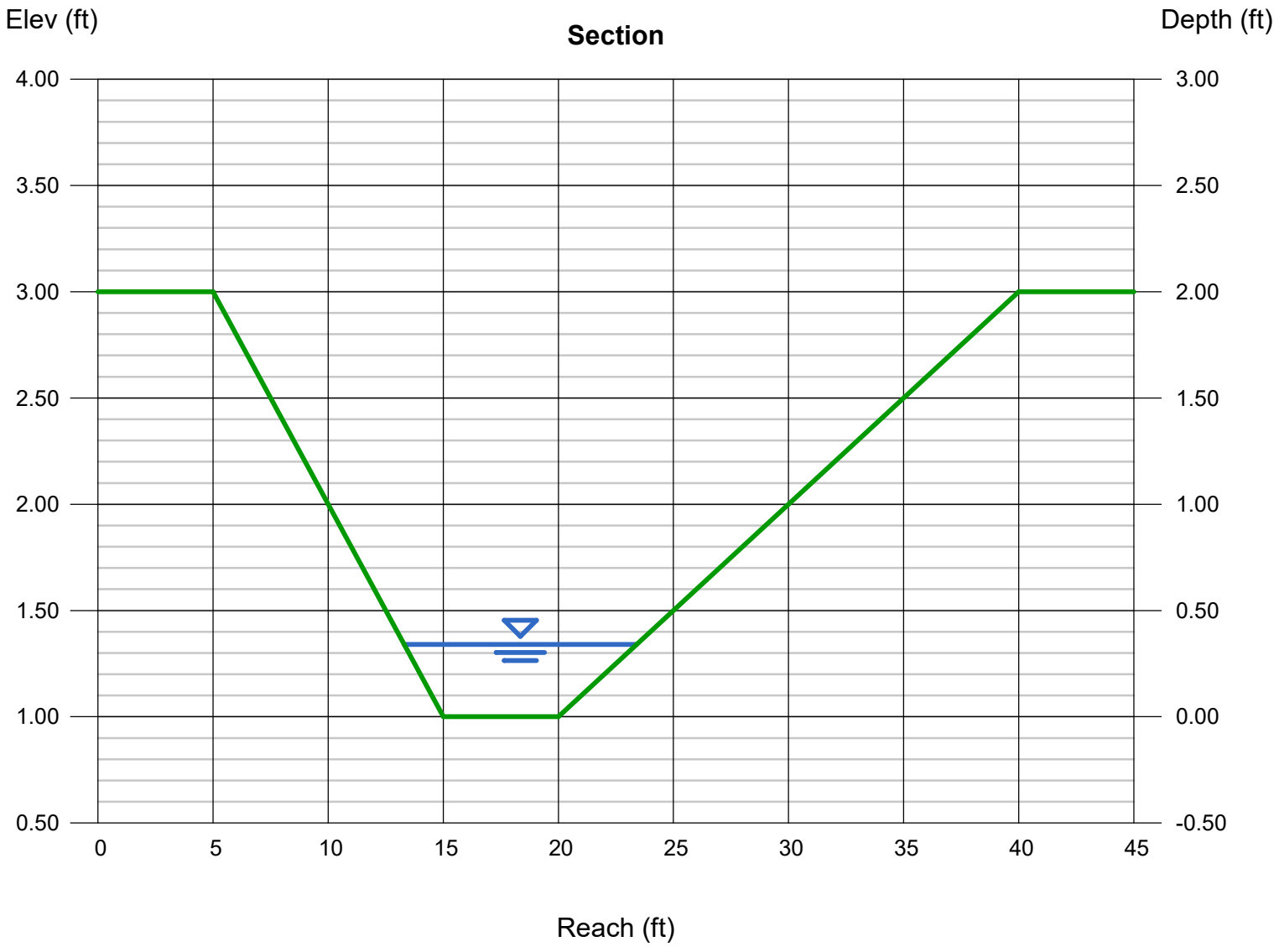
Bottom Width (ft)	= 5.00
Side Slopes (z:1)	= 5.00, 10.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.37
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 4.90

Highlighted

Depth (ft)	= 0.34
Q (cfs)	= 4.900
Area (sqft)	= 2.57
Velocity (ft/s)	= 1.91
Wetted Perim (ft)	= 10.15
Crit Depth, Yc (ft)	= 0.27
Top Width (ft)	= 10.10
EGL (ft)	= 0.40



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Wednesday, Jul 31 2024

DP4 - PROPOSED GRASS LINED SWALE

Trapezoidal

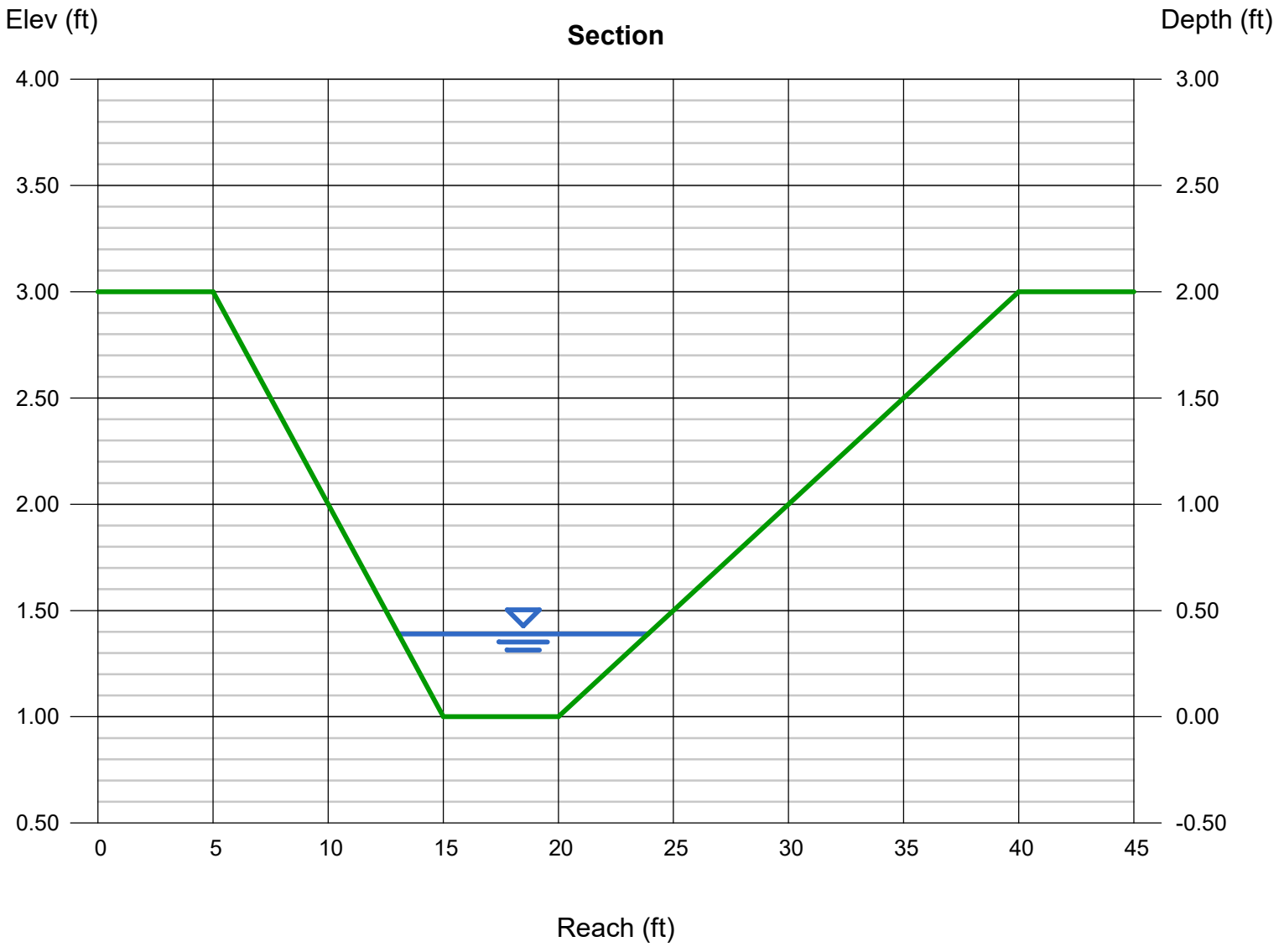
Bottom Width (ft)	= 5.00
Side Slopes (z:1)	= 5.00, 10.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.00
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 5.50

Highlighted

Depth (ft)	= 0.39
Q (cfs)	= 5.500
Area (sqft)	= 3.09
Velocity (ft/s)	= 1.78
Wetted Perim (ft)	= 10.91
Crit Depth, Yc (ft)	= 0.29
Top Width (ft)	= 10.85
EGL (ft)	= 0.44



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Monday, Aug 12 2024

DP 5 - Proposed 100-yr Swale

Trapezoidal

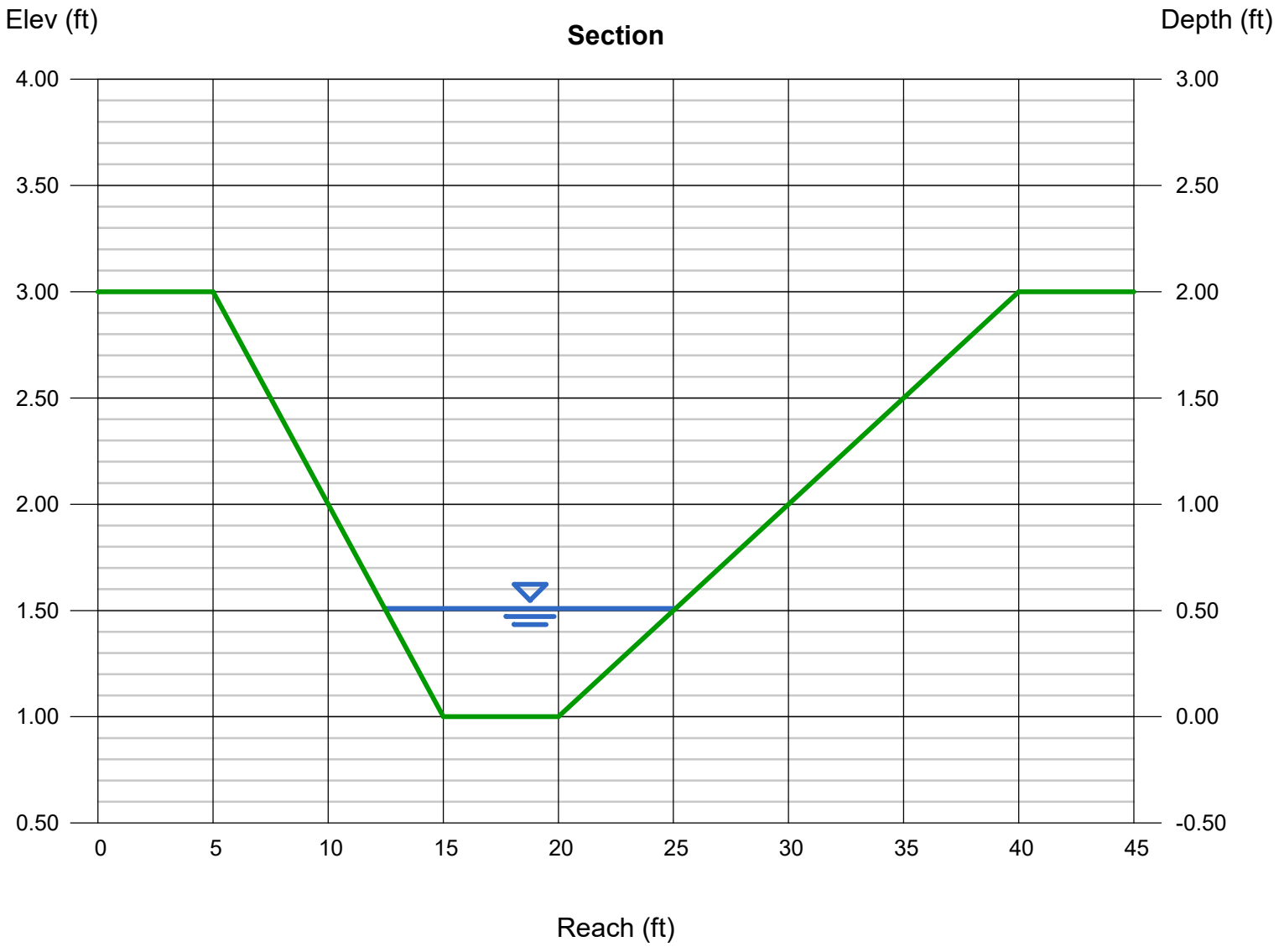
Bottom Width (ft)	= 5.00
Side Slopes (z:1)	= 5.00, 10.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 1.50
N-Value	= 0.035

Calculations

Compute by:	Known Q
Known Q (cfs)	= 11.30

Highlighted

Depth (ft)	= 0.51
Q (cfs)	= 11.30
Area (sqft)	= 4.50
Velocity (ft/s)	= 2.51
Wetted Perim (ft)	= 12.73
Crit Depth, Yc (ft)	= 0.44
Top Width (ft)	= 12.65
EGL (ft)	= 0.61



APPENDIX D – WATER QUALITY

Update these calcs per my comment on the drainage map below.

Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018)

Designer: Ryan Burns
Company: All Terrain Engineering
Date: July 31, 2024
Project: 7280 Nevada Ln
Location: El Paso County

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	UIA:RPA	SPA									
Area ID	A-O1	O2-B-C	SPA									
Downstream Design Point ID	C	C	C									
Downstream BMP Type	None	None	None									
DCIA (ft^2)	--	--	--									
UIA (ft^2)	22,219	42,065	--									
RPA (ft^2)	53,578	37,934	--									
SPA (ft^2)	--	--	101,717									
HSG A (%)	100%	100%	100%									
HSG B (%)	0%	0%	0%									
HSG C/D (%)	0%	0%	0%									
Average Slope of RPA (ft/ft)	0.058	0.021	--									
UIA:RPA Interface Width (ft)	300.00	400.00	--									

CALCULATED RUNOFF RESULTS

Area ID	A-O1	O2-B-C	SPA									
UIA:RPA Area (ft^2)	75,797	79,999	--									
L / W Ratio	0.84	0.50	--									
UIA / Area	0.2931	0.5258	--									
Runoff (in)	0.00	0.00	0.00									
Runoff (ft^3)	0	0	0									
Runoff Reduction (ft^3)	926	1753	5086									

CALCULATED WQCV RESULTS

Area ID	A-O1	O2-B-C	SPA									
WQCV (ft^3)	926	1753	0									
WQCV Reduction (ft^3)	926	1753	0									
WQCV Reduction (%)	100%	100%	0%									
Untreated WQCV (ft^3)	0	0	0									

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

Downstream Design Point ID	C											
DCIA (ft^2)	0											
UIA (ft^2)	64,284											
RPA (ft^2)	91,512											
SPA (ft^2)	101,717											
Total Area (ft^2)	257,513											
Total Impervious Area (ft^2)	64,284											
WQCV (ft^3)	2,679											
WQCV Reduction (ft^3)	2,679											
WQCV Reduction (%)	100%											
Untreated WQCV (ft^3)	0											

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

Total Area (ft^2)	257,513
Total Impervious Area (ft^2)	64,284
WQCV (ft^3)	2,679
WQCV Reduction (ft^3)	2,679
WQCV Reduction (%)	100%
Untreated WQCV (ft^3)	0

APPENDIX E – REFERENCE MATERIAL

MATCH SHT 46 B

MATCH SHT 46

MATCH SHT 44 A

MATCH STA 696 + 10 SHT 45

MATCH STA 684 + 50 SRT 43

THIS DRAWING IS A MASTER PLANNING SHEET REPRESENTING PRELIMINARY AND CONCEPTUAL ENGINEERING. IT SHOULD NOT BE USED FOR CONSTRUCTION PURPOSES.

IMPROVED GRASSLINED CHANNEL
BW=20', d=2', S=1.9%
Q100 = 180 cfs

NEW 4'H x 8'W CBC
10-YR. CAPACITY

STA 696+00 CHECK

PROVIDE OUTLET STRUCTURE

MAINTAIN EX. EMBANKMENTS

OI-POND-66

OI-POND-67

OI-POND-68

FOR CHANNEL DATA, SEE SHT 42

REACH SC-7

STA 690+00 CHECK

PRESERVE EX FLOODPLAIN & VEGETATION

EL PASO CO. C.L.F. OF F.

STA 686+00 CHECK

CHANNEL IMPROVEMENTS		
SEGMENT NO.	BOTTOM WIDTH (FT)	CHANNEL TYPE
148-1	N/A	SELECTIVE RIPRAP LININGS AND GRADE CONTROL
148-2		

FOR PROFILE SEE SHEET P-12

OLIVER E. WATTS
CONSULTING ENGINEER, INC.
COLORADO SPRINGS

7280 NEVADA LANE
SAND CREEK DRAINAGE MAP
1"=200'

0' 200' 400'

Kiowa Engineering Corporation
418 W. Bijou Street
Colorado Springs, Colorado

SAND CREEK DRAINAGE BASIN PLANNING STUDY
PRELIMINARY DESIGN PLANS

Project No 90-0
Date: 9-92
Design: RMW
Drawn: EAK
Check: RMW
Revisions:

44

APPENDIX F – DRAINAGE MAPS

Missing the existing drainage map.

7280 NEVADA

PROPOSED DRAINAGE MAP

Please further breakdown the UIAs and RPAs into more sub-sections that are actually tributary to each other. As an example of how the current design needs work:
How it is laid out now on this map and in the calcs above, the large RPA of O-2 is counting towards treating the UIA of downstream Basin B. Whereas that RPA of O-2 is actually only treating the small gray UIA within O-2 (upstream of the RPA). But note that some of the RPA shown east of that UIA is not treating that UIA, so should instead be shown as a SPA.

Apply this methodology to all sub-basins and update calcs above accordingly.

Also remember that RPAs are PBMPs such that they will be included in our post-construction inspection program, so we will inspect them at least once every 5 years. So all RPAs will need to be properly maintained. With the current use of the site, confirm with the owner that they are not planning on disturbing (including storing materials and equipment) any of these RPAs that are currently covering the site. The owners may want to condense the RPA areas a bit such that they can store materials/equipment in the non-RPA areas.

Is this an old label? I dont see it on the SDP or GEC Plans. And obviously gravel and other materials/equipment cannot be stored in an RPA. RPAs are to be vegetated.

For the UIA tributary to this swale, only the swale area can count as the treating RPA, not the entire surrounding grassy area since the UIA wont actually flow across those grassy areas outside of the swale.

Apply this methodology to all swales.

Please show the longitude slope for the proposed riprap.

Please include type of riprap.

Please include calculation for the proposed riprap.

Runoff leaving the site at DP5 is concentrated. Please provide a solution to mitigate erosion on California Drive. Refer to the comments in Review C2 for additional details.

O-1

O-2

A

B

C

D (EXEMPT)

GRAVEL/SOIL MIX (RAIL-YARD)

APPROXIMATE LIMITS OF GRAVEL & STORAGE AREAS (TYP.) (RAIL YARD)

ASSESS SWALE VEGITATION REMOVE ANY SEDIMENT AND REPLANT SEED AS NEEDED

PROPOSED GRASS LINED SWALE/BERM

EXISTING GRASS LINED SWALE/BERM

PROPOSED RIP-RAP "LOW TAIL WATER BASIN" 0.5' TOTAL DEPTH

EXISTING HARDSCAPED AREA ("PAVED" 100% IMP.) (TYP.)

EXISTING GRASS LINED SWALE & LANDSCAPED BERM

EXISTING HARDSCAPED AREA ("PAVED" 1005 IMP.) (TYP.)

RANGE LAND

GRASS

8' x 45' BUILDING

11' x 37' BUILDING

15' x 16' BUILDING

24' x 60' BUILDING

23' x 40' BUILDING

15' x 21' BUILDING

12' x 56' BUILDING

40' x 79' BUILDING

12' x 24' BUILDING

7280 NEVADA LANE 1 STORY HOUSE/OFFICE

PARCEL A 217,080 SF 4.983 AC

PARCEL B

PORTION OF PARCEL B (NON-EXCLUSIVE R.O.W) WITHIN PARCEL A

* UNPLATTED *
OWNER: MOUNTAIN SPRINGS CHURCH

* UNPLATTED *
OWNER: WOODMEN-UTAH, LLC C/O VANTAGE HOMES

* UNPLATTED *
OWNER: BSK INVESTMENTS, LLC

* UNPLATTED *
OWNER: ANTHONY SALAZAR

* UNPLATTED *
OWNER: WILLIAM AND LISA DAVIDSON

* UNPLATTED *
OWNER: CHRISTOPHER PHILIP B REV TRUST

BOOK 1889 PAGE 399 (TC #9) GAS EASEMENT

BOOK 2527 PAGE 987 (TC #10)

BOOK 1889 PAGE 399 (TC #9)

BOOK 2825 PAGE 320
BOOK 2723 PAGE 282
30' ROW EASEMENT

UTAH LANE

NEVADA LANE

CALIFORNIA DRIVE
(60' EPC R.O.W.)
PARCEL CODE 5308000148

WYOMING LANE

BENCHMARK CP 1000

01: 0.96 | 0.6 | 2.2
02: 0.93 | 0.5 | 2.1
A: 1.51 | 1.1 | 3.8
B: 1.44 | 2.0 | 5.1
C: 1.41 | 0.7 | 3.6
D: 0.63 | 1.1 | 2.6

1.51%
10.00%
5:1

6855.50
6856.00

LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
STORM SEWER		
SWALE/WATERWAY FLOWLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		

BASIN ID (ID / AC / Q5 / Q100)

DESIGN POINT DESIGNATION (1)

SUB-BASIN DRAINAGE AREA

SPA

UIA

RPA

PROPOSED CONDITIONS - BASIN SUMMARY TABLE

Tributary Sub-basin	Area (acres)	Percent Impervious	C_5	C_{100}	t_c (min)	Q_5 (cfs)	Q_{100} (cfs)
A	1.51	22%	0.21	0.44	16.1	1.1	3.8
B	1.44	49%	0.38	0.56	12.8	2.0	5.1
C	1.41	7%	0.13	0.39	11.4	0.7	3.6
D	0.63	50%	0.41	0.58	9.3	1.1	2.6
O1	0.96	18%	0.18	0.42	17.1	0.6	2.2
O2	0.93	17%	0.17	0.41	17.6	0.5	2.1

DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	0.6	2.2
2	1.3	4.9
3	0.5	2.1
4	2.0	5.5
5	3.3	11.3
6	1.1	2.6

30 15 0 30 60

ORIGINAL SCALE: 1" = 30'

PROPOSED DRAINAGE MAP

7280 NEVADA

JOB NO. 24020
LOCATION: EL PASO COUNTY
07/31/2024

SHEET 1

ALL TERRAIN ENGINEERING