JJ RANCH SUBDIVISION

FINAL DRAINAGE REPORT

PCD FILE NO: SF2511

ALL TERRAIN ENGINEERING PROJECT NO: 24023

MAY 2025

PREPARED FOR:

JAY & JANE OHMES TRUST

CONTACT: JAY & JANE OHMES

10155 HARDY ROAD

COLORADO SPRINGS, 80908

PREPARED BY:

ALL TERRAIN ENGINEERING LLC

CONTACT: NICHOLAS Q. JOKERST

NJOKERST@ALLTERRAINENG.COM

(530) 391-7635

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 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.

_____

Nicholas Q. Jokerst, PE Date

State of Colorado No. 59273

For and on behalf of All Terrain Engineering LLC

DEVELOPER'S STATEMENT

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

_____

Jane Ohmes Date

Jay & Jane Ohmes Trust

10155 Hardy Road, Colorado Springs, CO 80908

EL PASO COUNTY ONLY

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. Date
County Engineer/ECM Administrator

Conditions:

Table of Contents

Appendices

I. General Purpose, Location & Description

a. Purpose

The purpose of this Final Drainage Report (FDR) for the JJ RANCH SUBDIVISION 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 FDR will support a final plat for JJ Ranch.

b. Location

JJ RANCH SUBDIVISION, referred to as 'the site' herein, is an unplatted parcel in El Paso County, Colorado. The site is bound by Hardy Road to the north, Cherokee Pines and Albert Ridge subdivisions to the west, unplatted land to the east and Warner Subdivision to the south. A vicinity map is presented in Appendix A.

c. Description of Property

The site is approximately 19.34 acres. There is no disturbed area associated with this FDR. In general, the site slopes westerly. Onsite elevations range from 7,440' – 7,486' with slopes ranging 1 – 10%. Per a NRCS soil survey, the site is made up of Elbeth sandy loam which is a Type B Soil. The NRCS soil survey is presented in Appendix A.

An unnamed drainageway bisects the site and conveys stormwater easterly. See Major Drainageway section for additional detail. There are no irrigation facilities on site.

d. Floodplain Statement

Based on FEMA Firm map 08041C0310G dated December 7, 2018, the site is Zone X, which are of minimal flood hazard. The site's FEMA floodplain panel is presented in Appendix A.

II. Drainage Basins

a. Major Basin Description

The site is located within the West Kiowa Creek Drainage Basin, however; there is not an approved DBPS available at the time of this FDR.

b. Existing Subbasin Description

In the existing condition, the site is a single unplatted lot with a single residence, associated driveway and accessory structures. The remainder of the lot is undeveloped. The existing drainage analysis divided the site into 10 basins. See below for existing basin descriptions.

Basin A is 7.88 acres. Basin A includes the existing residence, gravel driveway, accessory structures and a portion of Hardy Road. Basin A stormwater (Q_5 = 2.7 cfs Q_{100} = 11.9cfs) sheet flows south and is captured in an onsite drainageway that conveys stormwater east to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow. The existing driveway connection at Hardy Road does not require a culvert as there is not a roadside ditch upstream of the driveway connection. Instead,

stormwater from the road and upstream areas sheet flows south into the site and does not drain along Hardy Road.

Basin B is 2.38 acres of onsite and offsite undeveloped area. Basin B stormwater (Q_5 = 0.8 cfs Q_{100} = 5.1 cfs) sheet flows onsite from the west and is captured in an onsite drainageway at DP2 (Q_5 = 12.1 cfs Q_{100} = 68.1 cfs) . DP2 is conveyed east to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin C is 6.77 acres of onsite and offsite undeveloped area. Basin C stormwater (Q_5 = 1.9 cfs Q_{100} = 12.6 cfs) sheet flows onsite from the west and is captured in an onsite drainageway at DP3 (Q_5 = 12.3 cfs Q_{100} = 70.2 cfs). DP3 is conveyed east to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin D1 is 5.66 acres of offsite undeveloped area and a portion of the Warner 4 Lot and Albert Ridge subdivisions. Basin D1 stormwater (Q_5 = 1.9 cfs Q_{100} = 11.6 cfs) sheet flows onsite from the southwest at DP4 (Q_5 = 1.9 cfs Q_{100} = 11.6 cfs). DP4 is conveyed north to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin D2 is 4.64 acres of onsite undeveloped area. Basin D2 stormwater (Q_5 = 1.3 cfs Q_{100} = 8.2 cfs) sheet flows north and is captured in an onsite drainageway that conveys stormwater east to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 stormwater follows historic drainage patterns offsite to the east as channel flow.

Basin E is 8.33 acres of onsite undeveloped area and a portion of Warner 4 Lot Subdivision. Basin E stormwater (Q_5 = 2.3 cfs Q_{100} = 12.2 cfs) flows northeast to DP6 (Q_5 = 2.3 cfs Q_{100} = 12.2 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin F is 0.84 acres of onsite undeveloped area and a portion of Warner 4 Lot Subdivision. Basin F stormwater (Q_5 = 0.4 cfs Q_{100} = 2.2 cfs) flows northeast to DP7 (Q_5 = 0.4 cfs Q_{100} = 2.2 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin G is 1.17 acres of onsite undeveloped area and a portion of Hardy Road. Basin G stormwater (Q_5 = 0.7 cfs Q_{100} = 3.3 cfs) flows east to DP8 (Q_5 = 0.7 cfs Q_{100} = 3.3 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin H is 0.51 acres of onsite undeveloped area. Basin H stormwater (Q_5 = 0.2 cfs Q_{100} = 1.1 cfs) flows east to DP9 (Q_5 = 0.2 cfs Q_{100} = 1.1 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin OS1 is 65.25 acres of offsite undeveloped area and portions of the Warner 4 Lot, Albert Ridge and Willow Springs Estates subdivisions. Basin OS1 stormwater (Q_5 = 11.9 cfs Q_{100} = 67.0 cfs) flows onsite from the west at DP1 as channel flow. DP1 is conveyed east through the site to DP5 (Q_5 = 14.9 cfs Q_{100} = 83.7 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

c. Proposed Subbasin Description

In the proposed condition, the site will be subdivided into three 5+ acre lots. The existing residence, driveway and attached shed will remain on proposed Lot 2. Lot 1 and Lot 3 will remain undeveloped at this time. The existing barn and sheds will remain on Lot 2. However, to account for future development, Lot 1 and Lot 3 are analyzed as developed 5+ acre lots. If Lot 1 and Lot 3 develop in the future, lot specific drainage reports will be required to confirm or update the findings in this FDR. The proposed condition analysis utilizes the same basins from the existing conditions as no disturbance or change to drainage patterns are proposed. Basin OS1 and D1 have no changes from the existing condition, see above for OS1 and D1 descriptions. See below for proposed basin descriptions.

Basin A is 7.88 acres. Basin A includes the existing residence, gravel driveway, accessory structures and a portion of Hardy Road. Lot 1 & Lot 3 portions of Basin A have been analyzed for their future developed condition (5+ acre lots). Basin A stormwater (Q_5 = 2.7 cfs Q_{100} = 12.3 cfs) sheet flows south and is captured in an onsite drainageway that conveys stormwater east to DP5 (Q_5 = 15.6 cfs Q_{100} = 84.6 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

At such time that Lot 3 develops, a driveway will be constructed from Hardy Road to Lot 3 within the proposed 24' access easement. The driveway will cross the unnamed drainageway to access Lot 3. Where the future driveway crosses the drainageway, the depth in the channel in the 5-year and 100-year storms are 0.22' and 0.42', respectively. The overtopping depth of 0.42' meets EPC DCM criteria of a 0.5' overtopping maximum depth. The driveway crossing can safely function as a 'Texas crossing' where storm flows are designed to overtop the driveway that will be constructed to match the existing grade and maintain drainage patterns. A culvert may be utilized as well but would require a lot specific drainage report to size once final driveway design is complete.

Basin B is 2.38 acres of onsite and offsite undeveloped area. Lot 1 & Lot 3 portions of Basin B have been analyzed for their future developed condition (5+ acre lots). Basin B stormwater (Q_5 = 0.9 cfs Q_{100} = 5.3 cfs) sheet flows onsite from the west and is captured in an onsite drainageway at DP2 (Q_5 = 12.1 cfs Q_{100} = 68.2 cfs). DP2 is conveyed east to DP5 (Q_5 = 15.6 cfs Q_{100} = 84.6 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin C is 6.77 acres of onsite and offsite undeveloped area. Lot 1 & Lot 3 portions of Basin C have been analyzed for their future developed condition (5+ acre lots). Basin C stormwater (Q_5 = 2.7 cfs Q_{100} = 13.5 cfs) sheet flows onsite from the west and is captured in an onsite drainageway at DP3 (Q_5 = 12.7 cfs Q_{100} = 70.5 cfs). DP3 is conveyed east to DP5 (Q_5 = 15.6 cfs Q_{100} = 85.2 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin D1 is 5.66 acres of offsite undeveloped area and a portion of the Warner 4 Lot and Albert Ridge subdivisions. Basin D1 stormwater (Q_5 = 1.9 cfs Q_{100} = 11.6 cfs) sheet flows onsite from the southwest at DP4. DP4 is conveyed north to DP5 (Q_5 = 15.6 cfs Q_{100} = 84.6 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin D2 is 4.64 acres of onsite undeveloped area. Lot 1 & Lot 3 portions of Basin D2 have been analyzed for their future developed condition (5+ acre lots). Basin D2 stormwater (Q_5 = 2.0 cfs Q_{100} = 8.9 cfs) sheet flows north and is captured in an onsite drainageway that conveys stormwater east to DP5 (Q_5 = 15.6 cfs Q_{100} = 84.6 cfs). DP5 follows historic drainage patterns offsite to the east as channel flow.

Basin E is 8.33 acres of onsite undeveloped area and a portion of Warner 4 Lot Subdivision. Lot 1 & Lot 3 portions of Basin E have been analyzed for their future developed condition (5+ acre lots). Basin E stormwater (Q_5 = 2.4 cfs Q_{100} = 12.3 cfs) flows northeast to DP6 (Q_5 = 2.4 cfs Q_{100} = 12.3 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin F is 0.84 acres of onsite undeveloped area and a portion of Warner 4 Lot Subdivision. Lot 1 & Lot 3 portions of Basin F have been analyzed for their future developed condition (5+ acre lots). Basin F stormwater (Q_5 = 0.5 cfs Q_{100} = 2.3 cfs) flows northeast to DP7 (Q_5 = 0.5 cfs Q_{100} = 2.3 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin G is 1.17 acres of onsite undeveloped area and a portion of Hardy Road. Basin G stormwater (Q_5 = 0.7 cfs Q_{100} = 3.3 cfs) flows east to DP8 (Q_5 = 0.7 cfs Q_{100} = 3.3 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

Basin H is 0.51 acres of onsite undeveloped area. Basin H stormwater (Q_5 = 0.2 cfs Q_{100} = 1.1 cfs) flows east to DP9 (Q_5 = 0.2 cfs Q_{100} = 1.1 cfs) and follows historic drainage patterns offsite to the east as sheet flow.

III. Drainage Design Criteria

a. Development Criteria Reference

The drainage analysis follows the criteria from the “Drainage Criteria Manual County of El Paso, Colorado” Volumes 1 and 2,” as amended.

b. Hydrologic Criteria

Runoff was calculated per EPCDCM Chapter 5 – Storm Runoff Method of Analysis.

d. Hydraulic Criteria

Hydraulic criteria for culvert analysis are from EPCDCM Chapter 10 – Open Channel Design. Open channel analysis was performed using Hydraflow Express Extension for Autodesk Civil 3D, latest edition.

IV. Drainage Facility Design

a. General Concept

The site will not be performing any disturbance or ground cover changes. This report supports a final plat that will subdivide the existing site into three 5+ acre lots. Proposed lots are analyzed for their future conditions. However, there are no proposed stormwater facilities associated with this report. Stormwater will follow historic drainage patterns in the proposed condition.

b. Water Quality & Detention

The site is not proposing any disturbance, change to ground cover or alteration of existing drainage patterns. Therefore, permanent water quality is not required for the site. A PBMP form is presented in Appendix E. However, the proposed condition of the site provides an analysis if the proposed lots were to develop in the future. The proposed condition analysis results in an increase in ultimate discharge.

EXISTING V. PROPOSED STORMWATER COMPARISON

DP#	EXISTING		PROPOSED		% INCREASE 5 YR	% INCREASE 100 YR
	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$		
2	12.1	68.1	12.1	68.2	0.0%	0.1%
3	12.3	70.2	12.7	70.5	3.3%	0.4%
5	14.9	83.7	15.6	84.6	4.7%	1.1%
6	2.3	12.2	2.4	12.3	4.3%	0.8%
7	0.4	2.2	0.5	2.3	25.0%	4.5%
TOTAL	42	236.4	43.3	237.9	**3.1%**	**0.6%**

However, the increase in stormwater for the site development is 1.3 cfs and 1.5 cfs in the 5-year and 100-year scenarios, respectively. This increase in flow is negligible and will not adversely affect downstream stormwater infrastructure.

c. Major Drainageways

An unnamed drainageway bisects the site and conveys stormwater easterly. The drainageway conveys Basin OS1 through the site. Due to the flow rate in the drainageway, a 'No-Build' easement is required to maintain the flow path in the future. To determine the easement limits, a channel cross sectional analysis is performed to calculate water surface elevations. The proposed 'No-Build' easement encompasses the 100-year flow depth in the channel and provides a minimum 1.0' of freeboard above the computed water surface elevations.

A channel analysis summary table is presented in Appendix C. The table provides shear stress, Froude number calculations for each cross section. Based upon EPC DCM Table 10-3, the permissible open channel velocity for the site soil type (Sandy loam) is 2.5 ft/sec. The 7 cross sections demonstrate velocities that range from 1.28 ft/s to 3.94 ft/s. However, based upon field observations, the channel is stable and vegetated. Therefore, no improvements are proposed to address existing velocities. Photographs of the existing channel are provided in Appendix E.

EPC DCM Section 10.5.2 states the permissible 100-year flow depth is 5.0'. All 7 cross sections demonstrate a 100-year flow depth less than 5.0'. EPC DCM Section 10.5.5 requires a minimum of 1.0' freeboard. All 7 cross sections demonstrate a freeboard of at least 1.0' in the 100-year scenario. Shear stress values are

Additional comment provided based upon included site photos. Table 10-3 from the DCM is for bare soil. For a vegetated channel, table 10-4 is applicable, or a different source that contains the existing channel lining and permissible velocity. Otherwise, the statement of the channel being vegetated is contradictory.

These are opposite.

computed for reference purposes only, as EPC DCM does not provide guidance regarding acceptable shear stress values. EPC DCM Section 10.7 states that Froude number's greater than 1 represent subcritical flow and Froude's less than 1 represents supercritical flow. 5 of the 6 channel cross sections demonstrate a Froude number in the subcritical flow regime. Channel Section 0 has a 100-year Froude number of 1.11 and is supercritical. However, based upon field observations, the channel is stable and vegetated at this location.

d. Grading & Erosion Control Plan

The project will disturb no area. Therefore, a separate Grading and Erosion Control plan is not required nor provided.

e. Four Step Method

Step 1 – Reducing Runoff Volumes: Roof drains will route across landscape areas whenever possible to promote infiltration and runoff reduction. Runoff reduction areas directly reduce runoff volumes by slowing runoff and promoting infiltration. The Type B soils present on site have a moderate infiltration rate, even when wet, that will help to reduce runoff volumes.

Step 2 – Treat and slowly release the WQCV: Water quality treatment is not required for the site as the total disturbance is 0 acres and no proposed changes to ground cover or drainage patterns is proposed. A PBMP applicability form is presented in Appendix D.

Step 3 – Stabilize stream channels: All new and re-development projects are required to construct or participate in the funding of channel stabilization measures. Drainage basin fees paid, at the time of platting, go towards channel stabilization with the drainage basin. However, there are no fees associated with the West Kiowa Creek drainage basin.

Step 4 – Consider the need for source controls: No industrial or commercial uses are proposed within this development and therefore no source controls are proposed.

f. Drainage Basin & Bridge Fees

There are no basin or bridge fees associated with the West Kiowa Creek drainage basin.

V. Summary

JJ RANCH SUBDIVISION remains consistent with pre-development drainage conditions, however; future development will result in a slight increase in stormwater discharges. However, the slight increase in discharge from the proposed development will not adversely affect downstream stormwater infrastructure or surrounding developments. This report meets the latest El Paso County Drainage criteria.

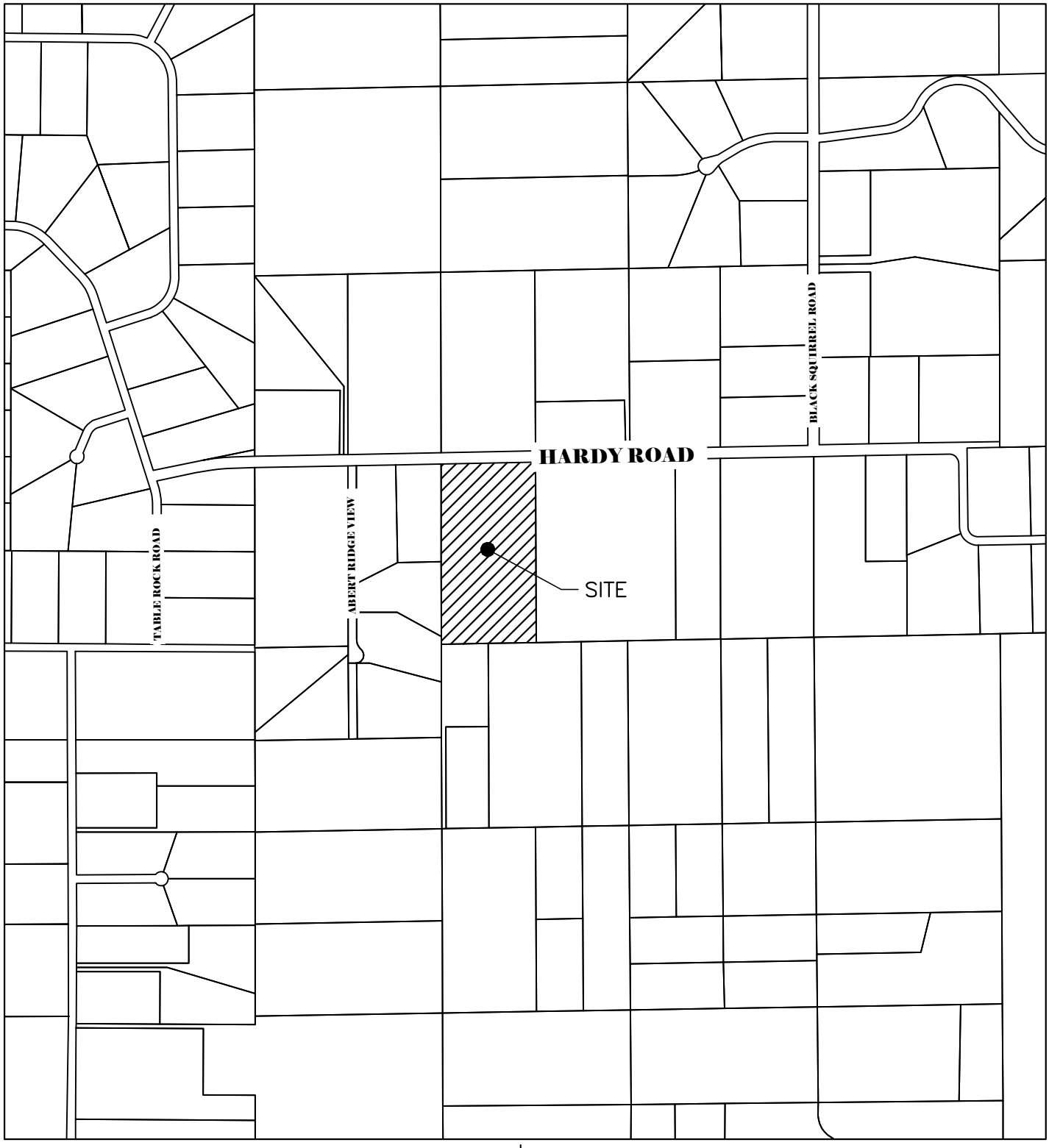
VI. References

1. El Paso County – Drainage Criteria Manual, 2018 as amended.
2. Urban Storm Drainage Criteria Manual, Urban Drainage Flood Control District, January 2018.
3. Federal Emergency Management Agency, Flood Map Service Center - https://msc.fema.gov/portal/home
4. Urban Storm Drainage Criteria Manual, Mile High Flood District, January 2018.
5. Web Soil Survey, Natural Resources Conservation Service, September 2024.

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

JJ RANCH SUBDIVISION

VICINITY MAP



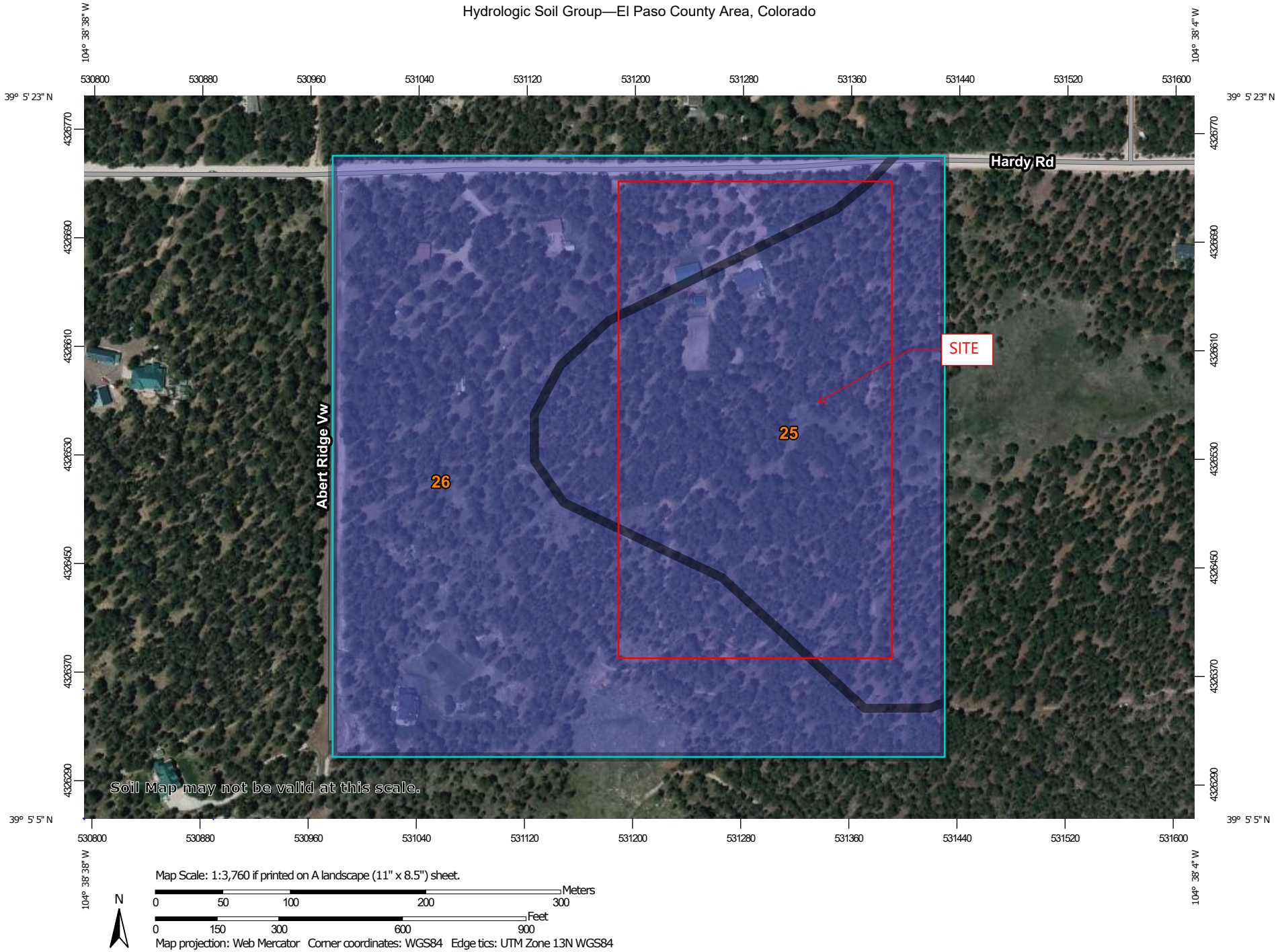
N

1000 500 0 1000 2000

ORIGINAL SCALE: 1" = 1000'

VICINITY MAP	
JJ RANCH SUBDIVISION	
JOB NO. 24023	
LOCATION: EPC	SHEET
01/31/2025	
SHEET: 1	

ALL TERRAIN ENGINEERING
1004 WEST VAN BUREN STREET
COLORADO SPRINGS, CO 80907



Map Scale: 1:3,760 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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 22, Sep 3, 2024

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

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

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
25	Elbeth sandy loam, 3 to 8 percent slopes	B	19.3	38.7%
26	Elbeth sandy loam, 8 to 15 percent slopes	B	30.5	61.3%
Totals for Area of Interest			**49.8**	**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.

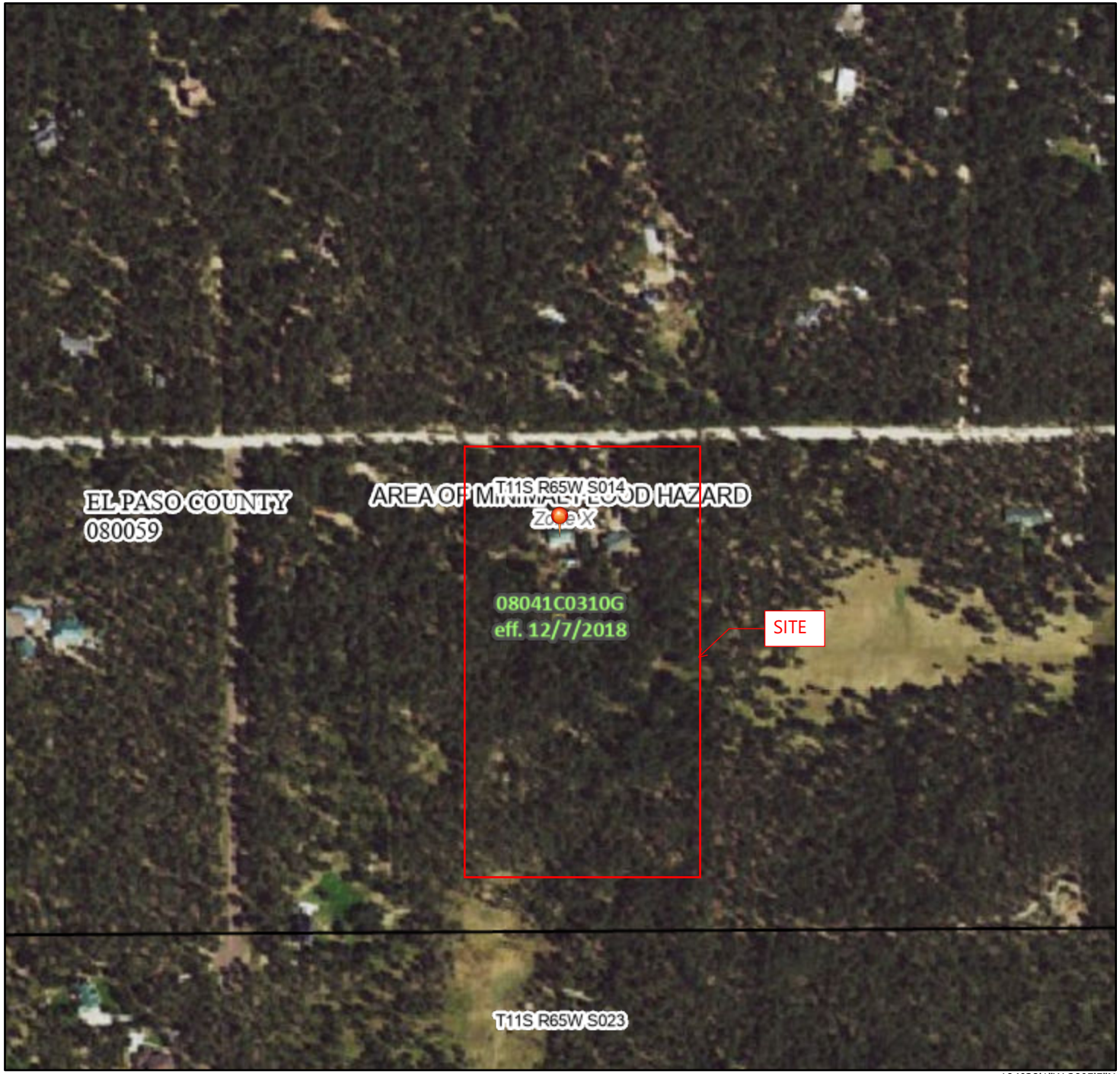
Rating Options

Aggregation Method: Dominant Condition

National Flood Hazard Layer FIRMette

FEMA

104°38'38"W 39°5'33"N



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

1:6,000

104°38'1"W 39°5'5"N

Basemap Imagery Source: USGS National Map 2023

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 / 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
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

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 1/26/2025 at 5:59 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.

APPENDIX B – HYDROLOGIC CALCULATIONS

Subdivision:	JJ Ranch Subdivision
Location:	El Paso County
Project Name:	JJ Ranch Subdivision
Project Number:	24023
Calculated By:	NQJ
Checked By:	REB
Date:	5/27/2025

EXISTING 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	7.88	7%	0.14	0.38	32.8	2.7	11.9
B	2.38	2%	0.09	0.36	14.9	0.8	5.1
C	6.77	4%	0.10	0.37	20.1	2.1	12.9
D1	5.66	3%	0.10	0.37	16.9	1.9	11.6
D2	4.64	4%	0.10	0.37	23.4	1.3	8.2
E	8.33	5%	0.12	0.38	33.6	2.3	12.2
F	0.84	4%	0.11	0.37	10.1	0.4	2.2
G	1.17	11%	0.15	0.40	9.1	0.7	3.3
H	0.51	2%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5%	0.11	0.38	52.9	11.9	67.0

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.1
3	12.3	70.2
4	1.9	11.6
5	14.9	83.7
6	2.3	12.2
7	0.4	2.2
8	0.7	3.3
9	0.2	1.1

COMPOSITE % IMPERVIOUS CALCULATIONS - EXISTING CONDITIONS

Subdivision: JJ Ranch Subdivision
Location: El Paso County

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		Gravel				Warner 4 Lot Subdivsion				Paved				Roofs				Historic/Agriculture				Weighted C_5 & C_{100}		Basins Total Weighted % Imp.
Basin ID	Total Area (ac)	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	
A	7.88	0.59	0.70	0.32	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.07	100.0%	0.73	0.81	0.10	90.0%	0.09	0.36	7.39	2.0%	0.14	0.38	7.2%
B	2.38	0.59	0.70	0.00	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	2.38	2.0%	0.09	0.36	2.0%
C	6.77	0.59	0.70	0.14	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	6.63	2.0%	0.10	0.37	3.6%
D1	5.66	0.59	0.70	0.00	80.0%	0.14	0.39	1.10	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	4.56	2.0%	0.10	0.37	3.0%
D2	4.64	0.59	0.70	0.09	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	4.55	2.0%	0.10	0.37	3.5%
E	8.33	0.59	0.70	0.00	80.0%	0.14	0.39	4.63	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	3.70	2.0%	0.12	0.38	4.8%
F	0.84	0.59	0.70	0.00	80.0%	0.14	0.39	0.40	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	0.44	2.0%	0.11	0.37	4.4%
G	1.17	0.59	0.70	0.13	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	1.04	2.0%	0.15	0.40	10.7%
H	0.51	0.59	0.70	0.00	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	0.51	2.0%	0.09	0.36	2.0%
OS1	65.25	0.59	0.70	1.59	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	1.00	90.0%	0.09	0.36	62.66	2.0%	0.11	0.38	5.2%
Total	**103.43**																							**4.6%**

STANDARD FORM SF-2 - EXISTING CONDITIONS
TIME OF CONCENTRATION

Subdivision: JJ Ranch Subdivision
Location: El Paso County

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

SUB-BASIN DATA					INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					*tc* CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Weighted C_5	Impervious (%)	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	7.88	B	0.143	7.2%	91	2.0%	13.1	1109	1.8%	7.0	0.9	19.7	32.8	1200.0	38.6	32.8
B	2.38	B	0.09	2.0%	55	3.6%	8.9	575	5.2%	7.0	1.6	6.0	14.9	630.0	30.2	14.9
C	6.77	B	0.10	3.6%	120	5.0%	11.6	922	6.7%	7.0	1.8	8.5	20.1	1042.0	31.6	20.1
D1	5.66	B	0.10	3.0%	95	9.4%	8.4	886	6.1%	7.0	1.7	8.5	16.9	981.0	31.8	16.9
D2	4.64	B	0.10	3.5%	225	7.1%	14.2	763	3.9%	7.0	1.4	9.2	23.4	988.0	32.2	23.4
E	8.33	B	0.12	4.8%	300	6.0%	17.0	1397	4.0%	7.0	1.4	16.6	33.6	1697.0	37.2	33.6
F	0.84	B	0.11	4.4%	50	4.0%	8.0	210	5.7%	7.0	1.7	2.1	10.1	260.0	26.8	10.1
G	1.17	B	0.15	10.7%	20	2.0%	6.1	305	5.9%	7.0	1.7	3.0	9.1	325.0	26.2	9.1
H	0.51	B	0.09	2.0%	80	2.5%	12.1	143	5.2%	7.0	1.6	1.5	13.5	223.0	26.8	13.5
OS1	65.25	B	0.11	5.2%	300	8.0%	15.6	2900	3.2%	7.0	1.3	38.6	54.2	3200.0	52.9	52.9

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).

Eq $$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}}$$ Equation 6-3

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 $(26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$ Equation 6-5

:

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).

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

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 - EXISTING CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: JJ Ranch Subdivision
Location: El Paso County
Design Storm: 5-Year

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		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	OS1	65.25	0.11	52.9	7.31	1.63	11.9					11.9	7.31	1.8					765	1.3	1.0	BASIN OS1 FLOW, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP1 & CONTINUES TO DP2
	2	B	2.38	0.09	14.9	0.21	3.53	0.8	53.9	7.52	1.60	12.1	12.1	7.52	1.9					305	1.4	3.7	BASIN B & DP1 FLOW @ DP2, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP3
	3	C	6.77	0.10	20.1	0.68	3.08	2.1	57.6	8.20	1.50	12.3	12.3	8.20	3.1					261	1.8	2.5	BASIN C & DP2 FLOW @ DP3, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
	4	D1	5.66	0.10	16.9	0.56	3.34	1.9					1.88	0.56	3.9					763	2.0	6.4	BASIN D1 FLOW @ DP4, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
		D2	4.64	0.10	23.4	0.46	2.85	1.3															BASIN D2 FLOW @ DP5
	5	A	7.88	0.14	32.8	1.13	2.35	2.7	60.0	10.36	1.44	14.9											BASIN A, BASIN D2, DP1-DP4 COMBINED FLOW @ DP5, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	6	E	8.33	0.12	33.6	0.98	2.31	2.3															BASIN E FLOW @ DP6, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	7	F	0.84	0.11	10.1	0.10	4.12	0.4															BASIN F FLOW @ DP7, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	8	G	1.17	0.15	9.1	0.17	4.27	0.7															BASIN G FLOW @ DP8, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	9	H	0.51	0.09	13.5	0.05	3.67	0.2															BASIN H FLOW @ DP9, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST

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

STANDARD FORM SF-3 - EXISTING CONDITIONS

STORM DRAINAGE SYSTEM DESIGN

(RATIONAL METHOD PROCEDURE)

Subdivision: JJ Ranch Subdivision
Location: El Paso County
Design Storm: 100-Year

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		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	OS1	65.25	0.38	52.9	24.48	2.74	67.0					67.0	24.48	1.8					765	1.3	1.0	BASIN OS1 FLOW, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP1 & CONTINUES TO DP2
	2	B	2.38	0.36	14.9	0.86	5.93	5.1	53.9	25.34	2.69	68.1	68.1	25.34	1.9					305	1.4	3.7	BASIN B & DP1 FLOW @ DP2, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP3
	3	C	6.77	0.37	20.1	2.48	5.17	12.9	57.6	27.82	2.52	70.2	70.2	27.82	3.1					261	1.8	2.5	BASIN C & DP2 FLOW @ DP3, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
	4	D1	5.66	0.37	16.9	2.07	5.60	11.6					11.60	2.07	3.9					763	2.0	6.4	BASIN D1 FLOW @ DP4, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
		D2	4.64	0.37	23.4	1.70	4.79	8.2															BASIN D2 FLOW @ DP5
	5	A	7.88	0.38	32.8	3.03	3.94	11.9	60.0	34.63	2.42	83.7											BASIN A, BASIN D2, DP3 & DP4 COMBINED FLOW @ DP5, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	6	E	8.33	0.38	33.6	3.14	3.88	12.2															BASIN E FLOW @ DP6, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	7	F	0.84	0.37	10.1	0.31	6.92	2.2															BASIN F FLOW @ DP7, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	8	G	1.17	0.40	9.1	0.47	7.16	3.3															BASIN G FLOW @ DP8, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	9	H	0.51	0.36	13.5	0.18	6.17	1.1															BASIN H FLOW @ DP9, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST

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

Subdivision:	JJ Ranch Subdivision
Location:	El Paso County
Project Name:	JJ Ranch Subdivision
Project Number:	24023
Calculated By:	NQJ
Checked By:	REB
Date:	5/27/2025

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	7.88	9.2%	0.15	0.40	32.7	2.7	12.3
B	2.38	4.2%	0.11	0.37	14.7	0.9	5.3
C	6.77	6.3%	0.13	0.38	19.8	2.7	13.5
D1	5.66	3.0%	0.10	0.37	16.9	1.9	11.6
D2	4.64	8.4%	0.15	0.40	22.7	2.0	8.9
E	8.33	5.5%	0.13	0.38	33.5	2.4	12.3
F	0.84	7.0%	0.14	0.39	9.9	0.5	2.3
G	1.17	10.7%	0.15	0.40	9.1	0.7	3.3
H	0.51	2.0%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5.2%	0.11	0.38	52.9	11.9	67.0

PROPOSED CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.2
3	12.7	70.5
4	1.9	11.6
5	15.6	84.6
6	2.4	12.3
7	0.5	2.3
8	0.7	3.3
9	0.2	1.1

COMPOSITE % IMPERVIOUS CALCULATIONS - PROPOSED CONDITIONS

Subdivision: JJ Ranch Subdivision
Location: El Paso County

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		Gravel				5+ Acre Lots				Paved				Roofs				Historic/Agriculture				Weighted C_5 & C_{100}		Basins Total Weighted % Imp.
Basin ID	Total Area (ac)	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	Area (ac)	% Imp.	C_5	C_{100}	
A	7.88	0.59	0.70	0.32	80.0%	0.14	0.39	3.27	7.0%	0.90	0.96	0.07	100.0%	0.73	0.81	0.10	90.0%	0.09	0.36	4.12	2.0%	0.15	0.40	9.2%
B	2.38	0.59	0.70	0.00	80.0%	0.14	0.39	1.03	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	1.35	2.0%	0.11	0.37	4.2%
C	6.77	0.59	0.70	0.14	80.0%	0.14	0.39	3.58	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	3.05	2.0%	0.13	0.38	6.3%
D1	5.66	0.59	0.70	0.00	80.0%	0.14	0.39	1.10	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	4.56	2.0%	0.10	0.37	3.0%
D2	4.64	0.59	0.70	0.09	80.0%	0.14	0.39	4.55	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	0.00	2.0%	0.15	0.40	8.4%
E	8.33	0.59	0.70	0.00	80.0%	0.14	0.39	5.85	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	2.48	2.0%	0.13	0.38	5.5%
F	0.84	0.59	0.70	0.00	80.0%	0.14	0.39	0.84	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	0.00	2.0%	0.14	0.39	7.0%
G	1.17	0.59	0.70	0.13	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	90.0%	0.09	0.36	1.04	2.0%	0.15	0.40	10.7%
H	0.51	0.59	0.70	0.00	180.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	0.00	190.0%	0.09	0.36	0.51	2.0%	0.09	0.36	2.0%
OS1	65.25	0.59	0.70	1.59	80.0%	0.14	0.39	0.00	7.0%	0.90	0.96	0.00	100.0%	0.73	0.81	1.00	90.0%	0.09	0.36	62.66	2.0%	0.11	0.38	5.2%
Total	**103.43**																							**6.1%**

STANDARD FORM SF-2 - PROPOSED CONDITIONS
TIME OF CONCENTRATION

Subdivision: JJ Ranch Subdivision
Location: El Paso County

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

SUB-BASIN DATA					INITIAL/OVERLAND (T_i)			TRAVEL TIME (T_t)					*tc* CHECK (URBANIZED BASINS)			FINAL
BASIN ID	D.A. (ac)	Hydrologic Soils Group	Weighted C_5	Impervious (%)	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	7.88	B	0.146	9.2%	91	2.0%	13.1	1109	1.8%	7.0	0.9	19.7	32.7	1200.0	37.8	32.7
B	2.38	B	0.11	4.2%	55	3.6%	8.7	575	5.2%	7.0	1.6	6.0	14.7	630.0	29.7	14.7
C	6.77	B	0.13	6.3%	120	5.0%	11.3	922	6.7%	7.0	1.8	8.5	19.8	1042.0	30.9	19.8
D1	5.66	B	0.10	3.0%	95	9.4%	8.4	886	6.1%	7.0	1.7	8.5	16.9	981.0	31.8	16.9
D2	4.64	B	0.15	8.4%	225	7.1%	13.5	763	3.9%	7.0	1.4	9.2	22.7	988.0	30.9	22.7
E	8.33	B	0.13	5.5%	300	6.0%	16.9	1397	4.0%	7.0	1.4	16.6	33.5	1697.0	37.0	33.5
F	0.84	B	0.14	7.0%	50	4.0%	7.8	210	5.7%	7.0	1.7	2.1	9.9	260.0	26.3	9.9
G	1.17	B	0.15	10.7%	20	2.0%	6.1	305	5.9%	7.0	1.7	3.0	9.1	325.0	26.2	9.1
H	0.51	B	0.09	2.0%	80	2.5%	12.1	143	5.2%	7.0	1.6	1.5	13.5	223.0	26.8	13.5
OS1	65.25	B	0.11	5.2%	300	8.0%	15.6	2900	3.2%	7.0	1.3	38.6	54.2	3200.0	52.9	52.9

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).

Eq $$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_o^{0.33}}$$ Equation 6-3

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 $(26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$ Equation 6-5

:

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).

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

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: JJ Ranch Subdivision
Location: El Paso County
Design Storm: 5-Year

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		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	OS1	65.25	0.11	52.9	7.31	1.63	11.9					11.9	7.31	1.8					765	1.3	1.0	BASIN OS1 FLOW, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP1 & CONTINUES TO DP2
	2	B	2.38	0.11	14.7	0.27	3.55	0.9	53.9	7.57	1.60	12.1	12.1	7.57	1.9					305	1.4	3.7	BASIN B & DP1 FLOW @ DP2, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP3
	3	C	6.77	0.13	19.8	0.86	3.10	2.7	57.6	8.43	1.50	12.7	12.7	8.43	3.1					261	1.8	2.5	BASIN C & DP2 FLOW @ DP3, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
	4	D1	5.66	0.10	16.9	0.56	3.34	1.9					1.88	0.56	3.9					763	2.0	6.4	BASIN D1 FLOW @ DP4, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
		D2	4.64	0.15	22.7	0.69	2.90	2.0															BASIN D2 FLOW @ DP5
	5	A	7.88	0.15	32.7	1.15	2.35	2.7	60.0	10.84	1.44	15.6											BASIN A, BASIN D2, DP1-DP4 COMBINED FLOW @ DP5, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	6	E	8.33	0.13	33.5	1.04	2.32	2.4															BASIN E FLOW @ DP6, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	7	F	0.84	0.14	9.9	0.12	4.15	0.5															BASIN F FLOW @ DP7, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	8	G	1.17	0.15	9.1	0.17	4.27	0.7															BASIN G FLOW @ DP8, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	9	H	0.51	0.09	13.5	0.05	3.67	0.2															BASIN H FLOW @ DP9, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST

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)

Subdivision: JJ Ranch Subdivision
Location: El Paso County
Design Storm: 100-Year

Project Name: JJ Ranch Subdivision
Project No.: 24023.00
Calculated By: NQJ
Checked By: REB
Date: 5/27/25

		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	OS1	65.25	0.38	52.9	24.48	2.74	67.0					67.0	24.48	1.8					765	1.3	1.0	BASIN OS1 FLOW, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP1 & CONTINUES TO DP2
	2	B	2.38	0.37	14.7	0.89	5.97	5.3	53.9	25.37	2.69	68.2	68.2	25.37	1.9					305	1.4	3.7	BASIN B & DP1 FLOW @ DP2, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP3
	3	C	6.77	0.38	19.8	2.59	5.21	13.5	57.6	27.96	2.52	70.5	70.5	27.96	3.1					261	1.8	2.5	BASIN C & DP2 FLOW @ DP3, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
	4	D1	5.66	0.37	16.9	2.07	5.60	11.6					11.60	2.07	3.9					763	2.0	6.4	BASIN D1 FLOW @ DP4, FOLLOWS HISTORIC DRAINAGE PATTERNS TO DP5
		D2	4.64	0.40	22.7	1.84	4.87	8.9															BASIN D2 FLOW @ DP5
	5	A	7.88	0.40	32.7	3.13	3.94	12.3	60.0	35.00	2.42	84.6											BASIN A, BASIN D2, DP3 & DP4 COMBINED FLOW @ DP5, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	6	E	8.33	0.38	33.5	3.17	3.89	12.3															BASIN E FLOW @ DP6, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	7	F	0.84	0.39	9.9	0.33	6.97	2.3															BASIN F FLOW @ DP7, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	8	G	1.17	0.40	9.1	0.47	7.16	3.3															BASIN G FLOW @ DP8, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST
	9	H	0.51	0.36	13.5	0.18	6.17	1.1															BASIN H FLOW @ DP9, FOLLOWS HISTORIC DRAINAGE PATTERNS OFFSITE TO THE EAST

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

APPENDIX C – HYDRAULIC CALCULATIONS

Subdivision:	JJ Ranch
Location:	El Paso County
Project Name:	JJ Ranch
Project Number:	24023
Calculated By:	NQJ
Checked By:	REB
Date:	5/27/2025

Proposed Conditions - Drainageway Summary Table

Channel Section	Section Slope, ft/ft	5-year Depth, ft	5-year Velocity, ft/s	5-year Hydraulic Radius, ft	100-year Depth, ft	100-year Velocity, ft/s	100-year Hydraulic Radius, ft	Froude, 5-yr	Froude, 100-yr	Shear Stress, 5-yr	Shear Stress, 100-yr
0	0.032	0.15	2.18	0.14	0.39	3.94	0.31	0.99	1.11	0.3	0.6
1	0.032	0.19	1.78	0.001	0.36	2.83	0.20	0.72	0.83	0.0	0.4
2	0.015	0.21	1.28	0.12	0.41	2.54	0.29	0.49	0.70	0.1	0.3
3	0.021	0.22	1.64	0.11	0.42	2.56	0.22	0.62	0.70	0.1	0.3
4	0.029	0.25	1.61	0.10	0.41	2.69	0.20	0.57	0.74	0.2	0.4
5	0.024	0.17	2.04	0.14	0.42	3.59	0.32	0.87	0.98	0.2	0.5
6	0.044	0.06	1.48	0.06	0.16	2.99	0.16	1.06	1.32	0.2	0.4

Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #0 (Q5 = DP1 = 11.9 cfs)

User-defined

Invert Elev (ft)	= 7456.00
Slope (%)	= 3.20
N-Value	= 0.030

Calculations

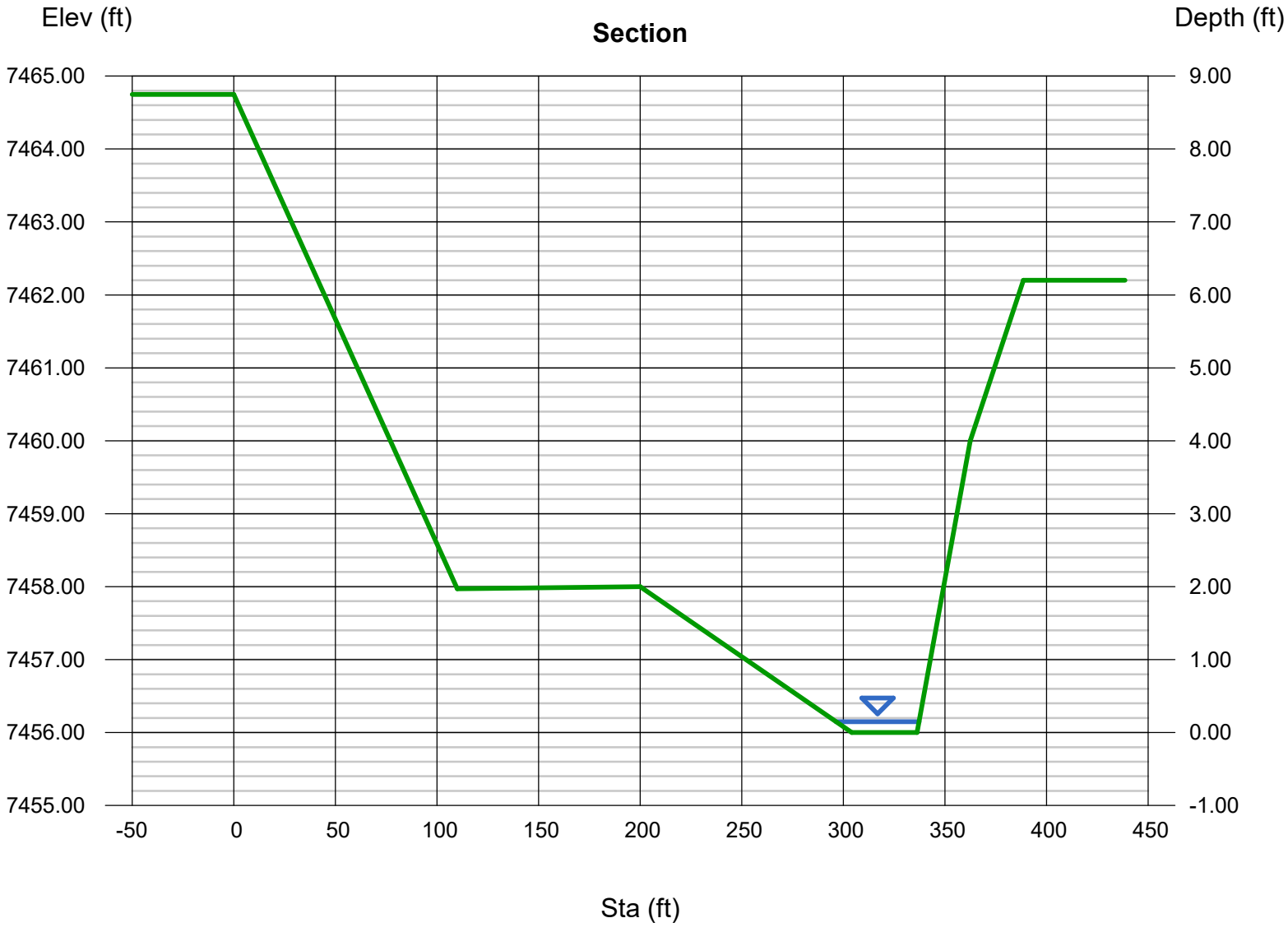
Compute by:	Known Q
Known Q (cfs)	= 11.90

Highlighted

Depth (ft)	= 0.15
Q (cfs)	= 11.90
Area (sqft)	= 5.47
Velocity (ft/s)	= 2.18
Wetted Perim (ft)	= 40.90
Crit Depth, Yc (ft)	= 0.16
Top Width (ft)	= 40.89
EGL (ft)	= 0.22

(Sta, El, n)-(Sta, El, n)...

(0.00, 7464.75)-(110.00, 7457.97, 0.030)-(200.00, 7458.00, 0.030)-(304.20, 7456.00, 0.030)-(336.30, 7456.00, 0.030)-(362.40, 7460.00, 0.030)-(388.65, 7462.20, 0.



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #0 (Q100 = DP1 = 67.0 cfs)

User-defined

Invert Elev (ft)	= 7456.00
Slope (%)	= 3.20
N-Value	= 0.030

Calculations

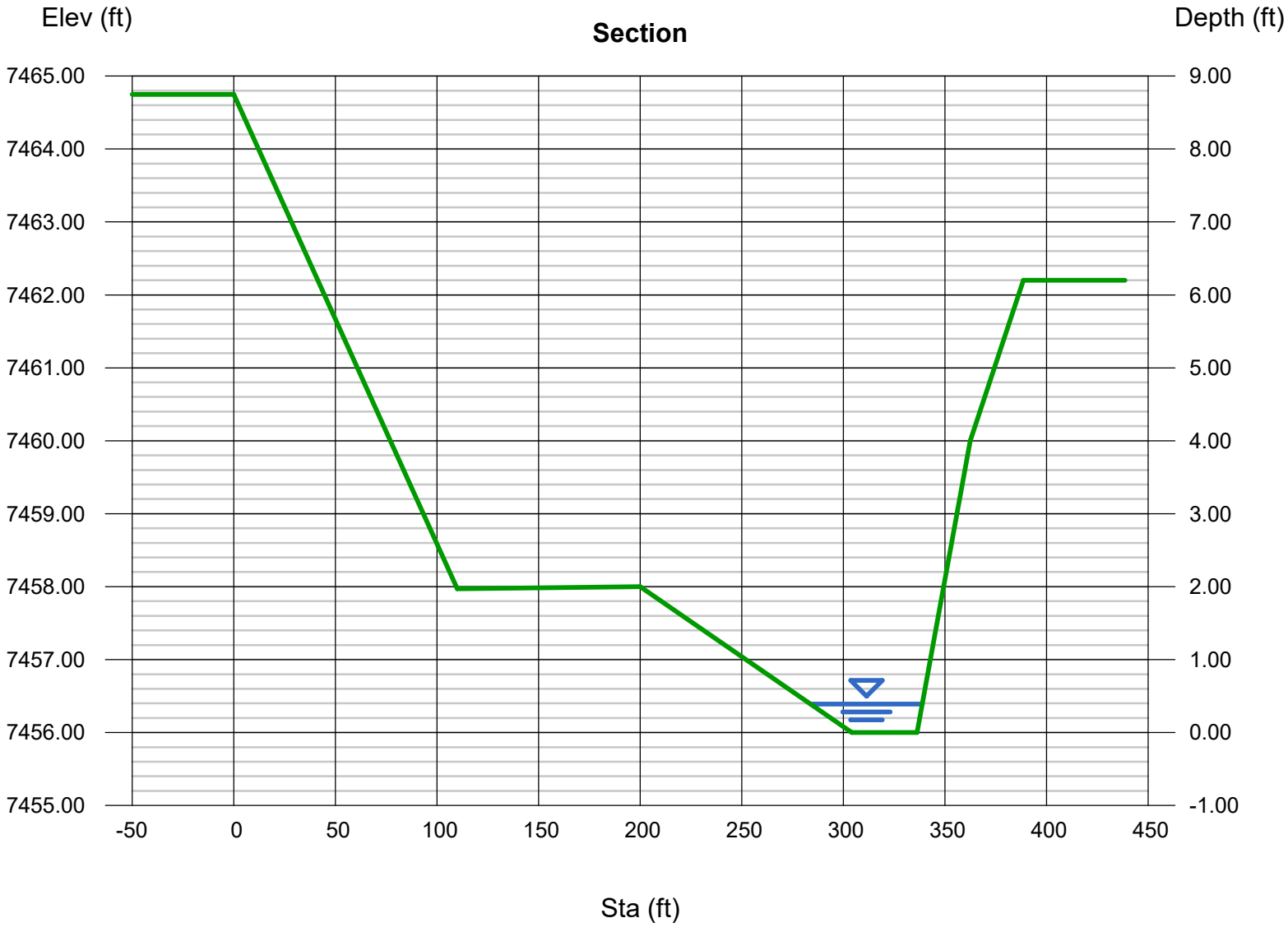
Compute by:	Known Q
Known Q (cfs)	= 67.00

Highlighted

Depth (ft)	= 0.39
Q (cfs)	= 67.00
Area (sqft)	= 16.98
Velocity (ft/s)	= 3.94
Wetted Perim (ft)	= 55.01
Crit Depth, Yc (ft)	= 0.45
Top Width (ft)	= 54.97
EGL (ft)	= 0.63

(Sta, El, n)-(Sta, El, n)...

(0.00, 7464.75)-(110.00, 7457.97, 0.030)-(200.00, 7458.00, 0.030)-(304.20, 7456.00, 0.030)-(336.30, 7456.00, 0.030)-(362.40, 7460.00, 0.030)-(388.65, 7462.20, 0.



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #1 (Q5 = DP1 = 11.9 cfs)

User-defined

Invert Elev (ft)	= 7454.67
Slope (%)	= 3.20
N-Value	= 0.030

Calculations

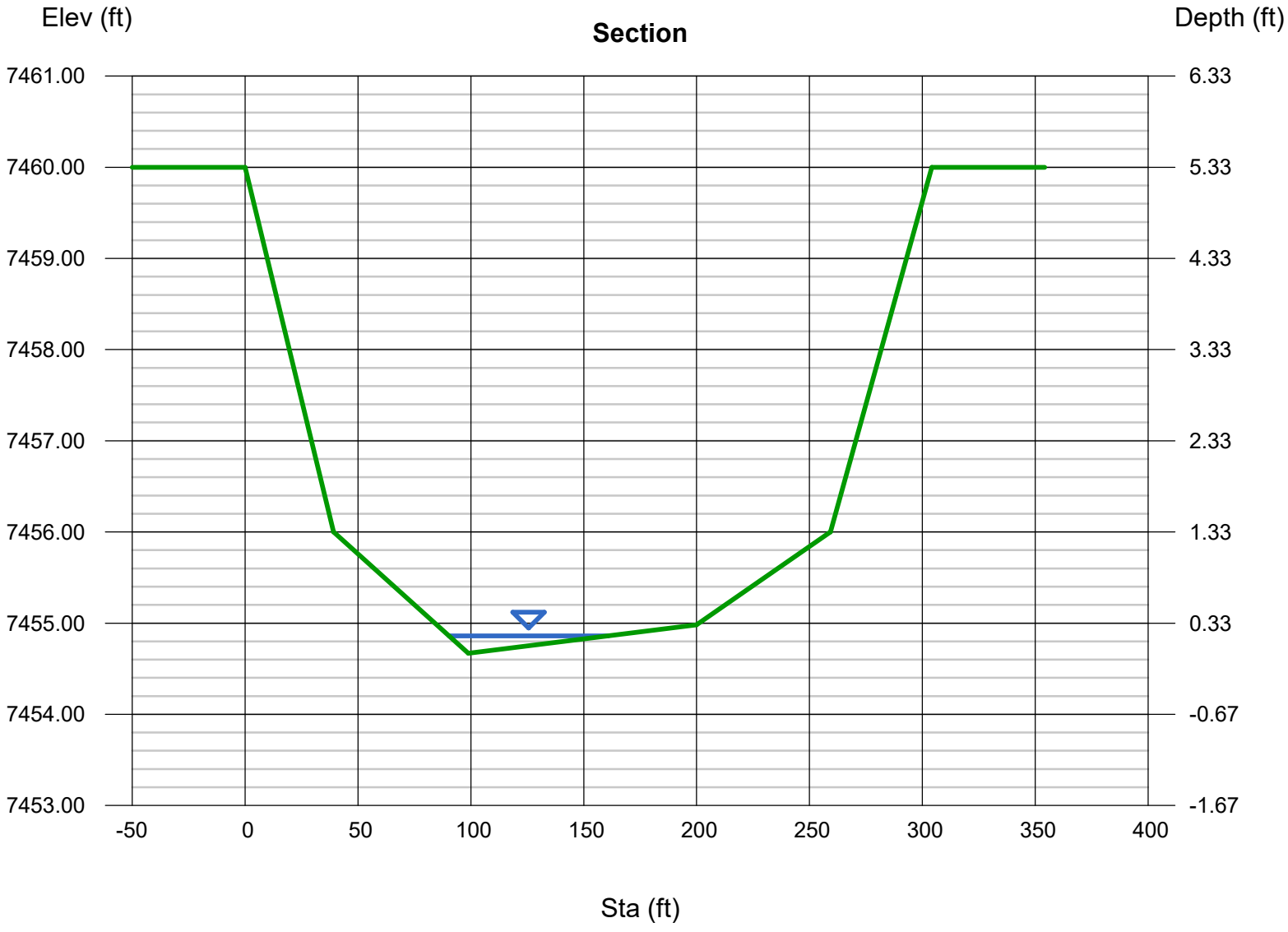
Compute by:	Known Q
Known Q (cfs)	= 11.90

Highlighted

Depth (ft)	= 0.19
Q (cfs)	= 11.90
Area (sqft)	= 6.69
Velocity (ft/s)	= 1.78
Wetted Perim (ft)	= 70.45
Crit Depth, Yc (ft)	= 0.20
Top Width (ft)	= 70.45
EGL (ft)	= 0.24

(Sta, El, n)-(Sta, El, n)...

(0.00, 7460.00)-(39.15, 7456.00, 0.030)-(98.93, 7454.67, 0.030)-(200.00, 7454.98, 0.030)-(259.30, 7456.00, 0.030)-(304.21, 7460.00, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #1 (Q100 = DP1 = 67.0 cfs)

User-defined

Invert Elev (ft)	= 7454.67
Slope (%)	= 3.20
N-Value	= 0.030

Calculations

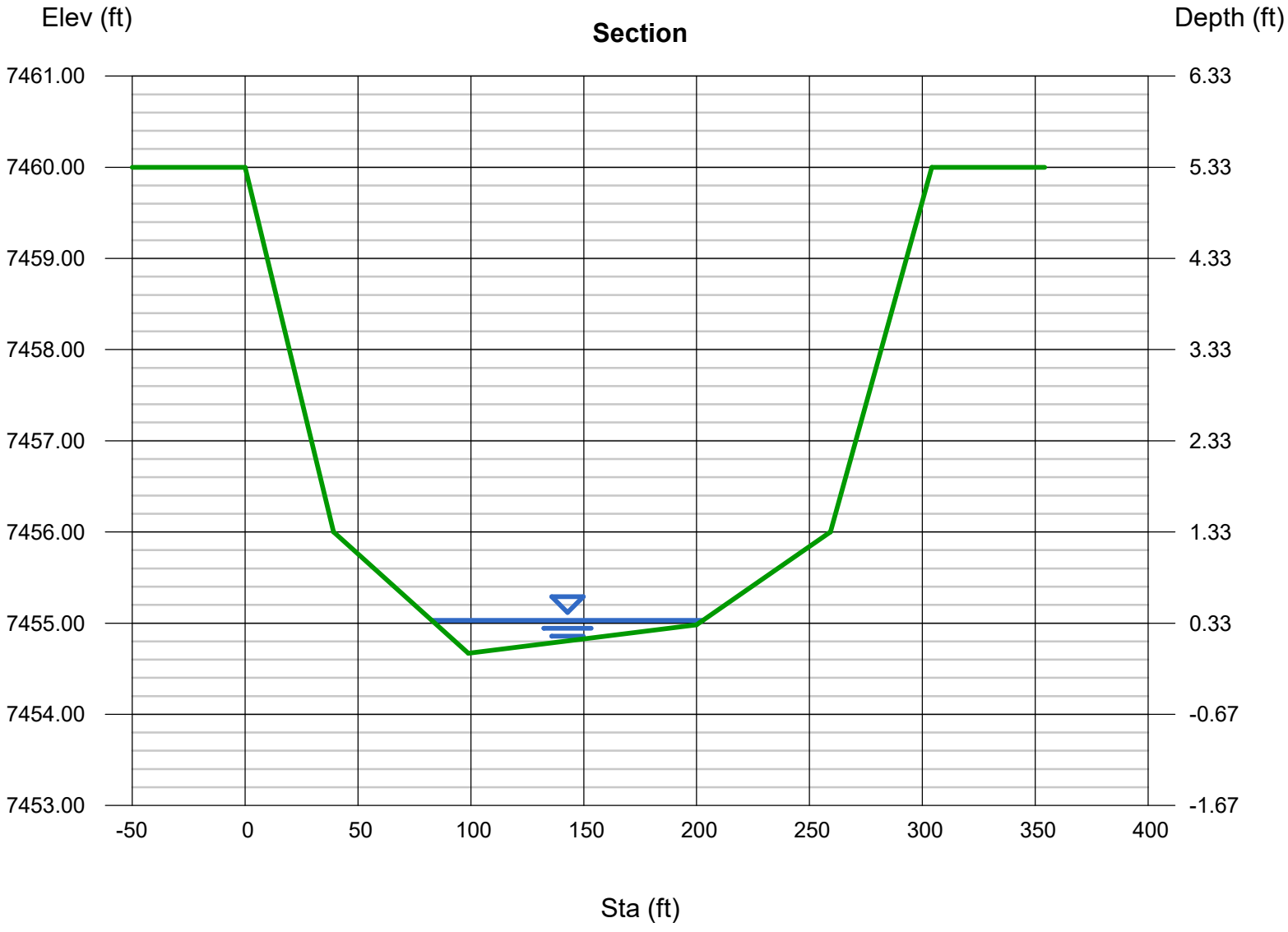
Compute by:	Known Q
Known Q (cfs)	= 67.00

Highlighted

Depth (ft)	= 0.36
Q (cfs)	= 67.00
Area (sqft)	= 23.68
Velocity (ft/s)	= 2.83
Wetted Perim (ft)	= 120.14
Crit Depth, Yc (ft)	= 0.38
Top Width (ft)	= 120.14
EGL (ft)	= 0.48

(Sta, El, n)-(Sta, El, n)...

(0.00, 7460.00)-(39.15, 7456.00, 0.030)-(98.93, 7454.67, 0.030)-(200.00, 7454.98, 0.030)-(259.30, 7456.00, 0.030)-(304.21, 7460.00, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #2 (Q5 = DP2 = 12.1 cfs)

User-defined

Invert Elev (ft)	= 7451.81
Slope (%)	= 1.50
N-Value	= 0.030

Calculations

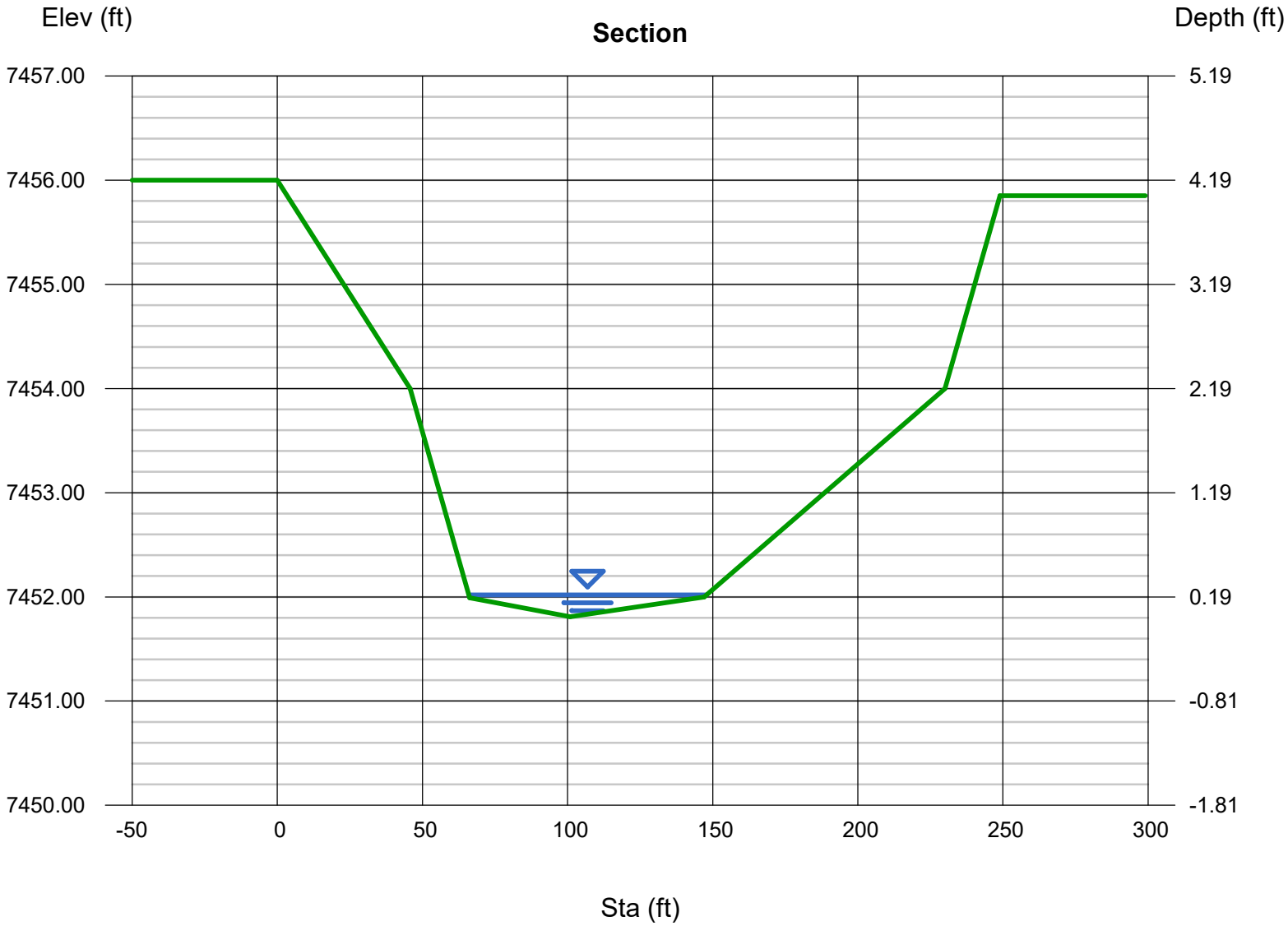
Compute by:	Known Q
Known Q (cfs)	= 12.10

Highlighted

Depth (ft)	= 0.21
Q (cfs)	= 12.10
Area (sqft)	= 9.46
Velocity (ft/s)	= 1.28
Wetted Perim (ft)	= 81.86
Crit Depth, Yc (ft)	= 0.19
Top Width (ft)	= 81.85
EGL (ft)	= 0.24

(Sta, El, n)-(Sta, El, n)...

(0.00, 7456.00)-(45.79, 7454.00, 0.030)-(66.28, 7451.99, 0.030)-(100.92, 7451.81, 0.030)-(147.00, 7452.00, 0.030)-(230.00, 7454.00, 0.030)-(249.00, 7455.85, 0.03



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #2 (Q100 = DP2 = 68.2 cfs)

User-defined

Invert Elev (ft)	= 7451.81
Slope (%)	= 1.50
N-Value	= 0.030

Calculations

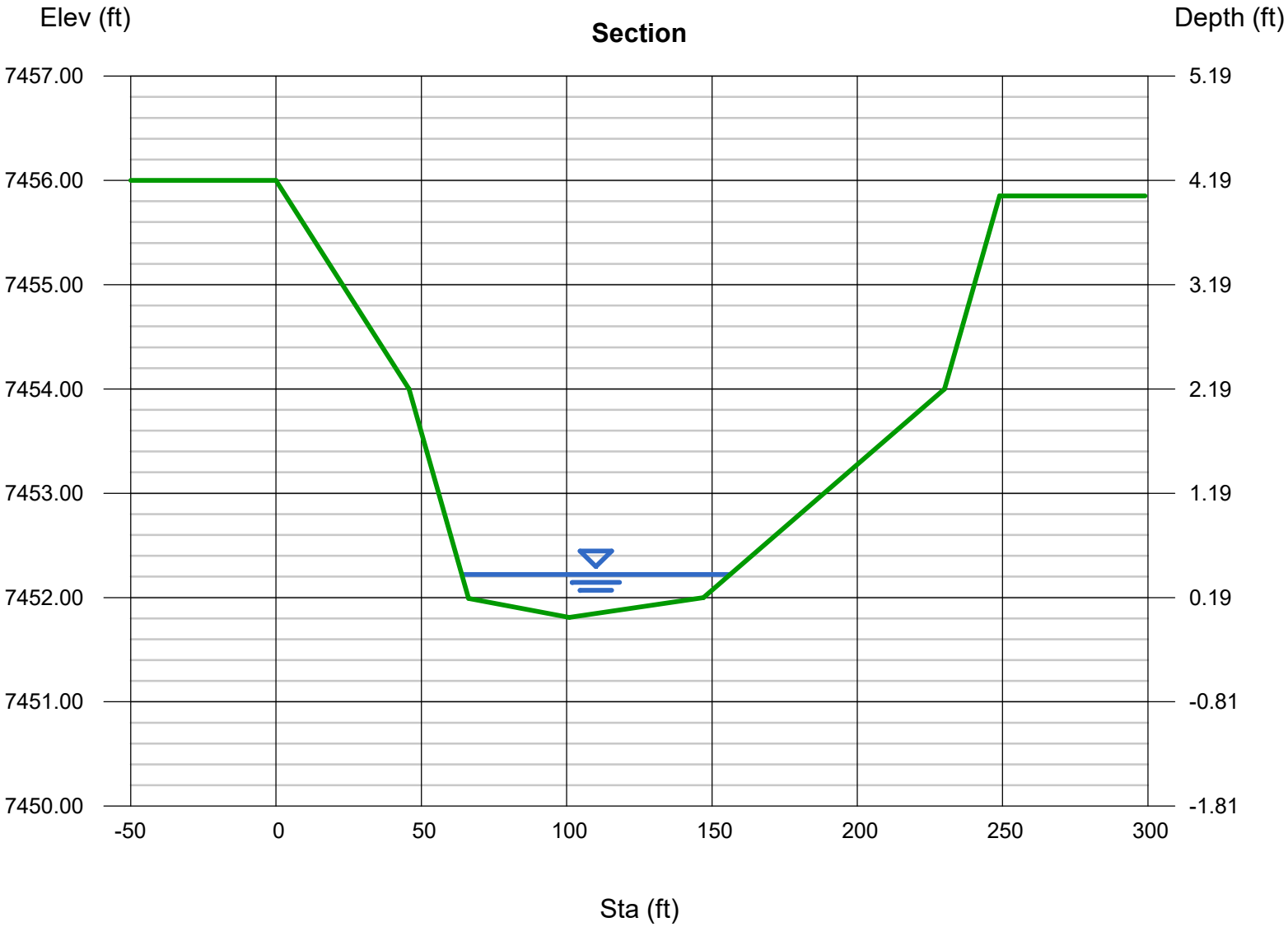
Compute by:	Known Q
Known Q (cfs)	= 68.20

Highlighted

Depth (ft)	= 0.41
Q (cfs)	= 68.20
Area (sqft)	= 26.89
Velocity (ft/s)	= 2.54
Wetted Perim (ft)	= 92.22
Crit Depth, Yc (ft)	= 0.38
Top Width (ft)	= 92.20
EGL (ft)	= 0.51

(Sta, El, n)-(Sta, El, n)...

(0.00, 7456.00)-(45.79, 7454.00, 0.030)-(66.28, 7451.99, 0.030)-(100.92, 7451.81, 0.030)-(147.00, 7452.00, 0.030)-(230.00, 7454.00, 0.030)-(249.00, 7455.85, 0.03



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #3 (Q5 = DP2 = 12.1 cfs)

User-defined

Invert Elev (ft)	= 7448.47
Slope (%)	= 2.10
N-Value	= 0.030

Calculations

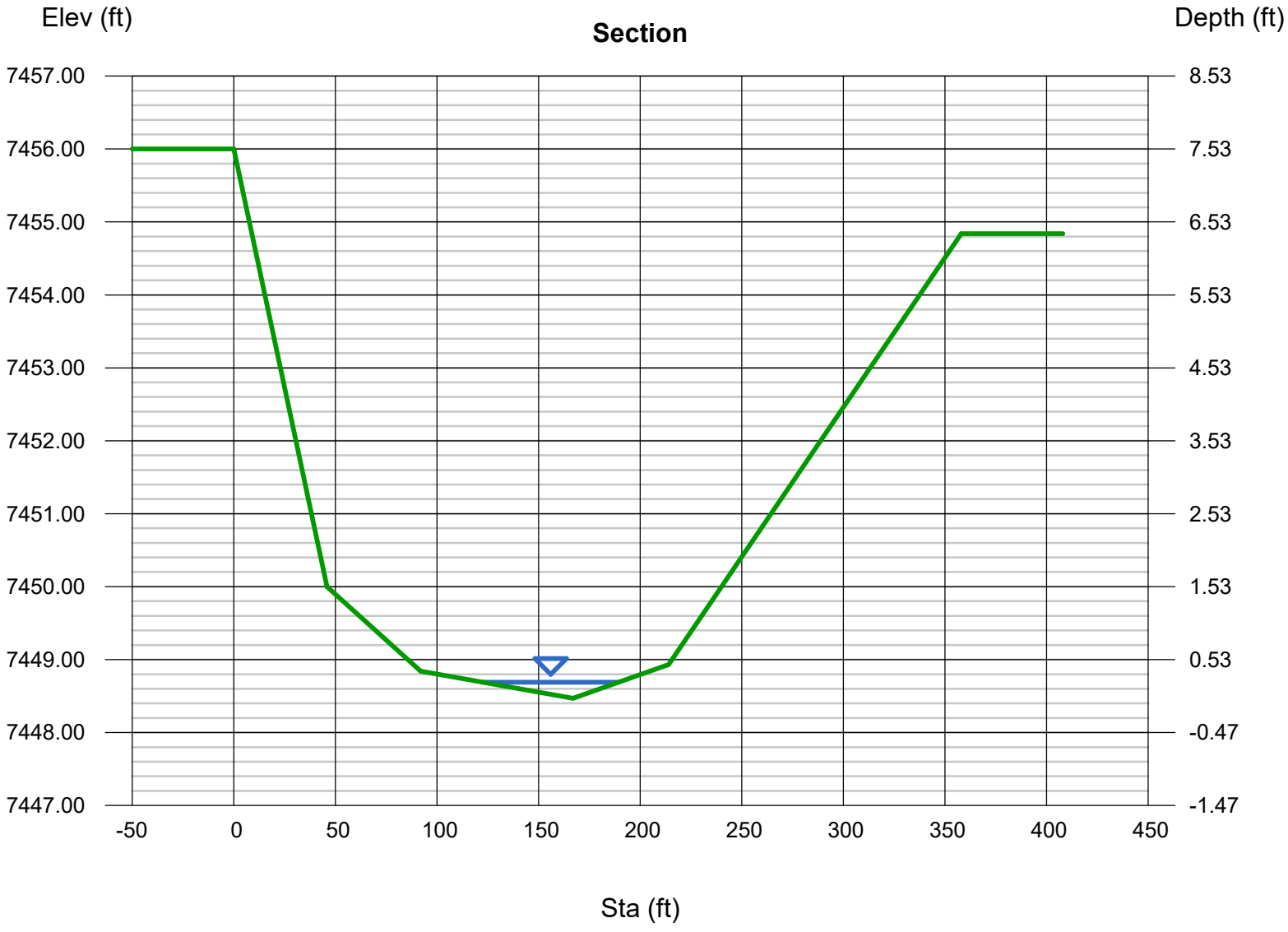
Compute by:	Known Q
Known Q (cfs)	= 12.10

Highlighted

Depth (ft)	= 0.22
Q (cfs)	= 12.10
Area (sqft)	= 7.40
Velocity (ft/s)	= 1.64
Wetted Perim (ft)	= 67.19
Crit Depth, Yc (ft)	= 0.21
Top Width (ft)	= 67.19
EGL (ft)	= 0.26

(Sta, El, n)-(Sta, El, n)...

(0.00, 7456.00)-(45.90, 7450.00, 0.030)-(92.00, 7448.84, 0.030)-(167.00, 7448.47, 0.030)-(214.00, 7448.93, 0.030)-(358.00, 7454.84, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #3 (Q100 = DP2 = 68.2 cfs)

User-defined

Invert Elev (ft)	= 7448.47
Slope (%)	= 2.10
N-Value	= 0.030

Calculations

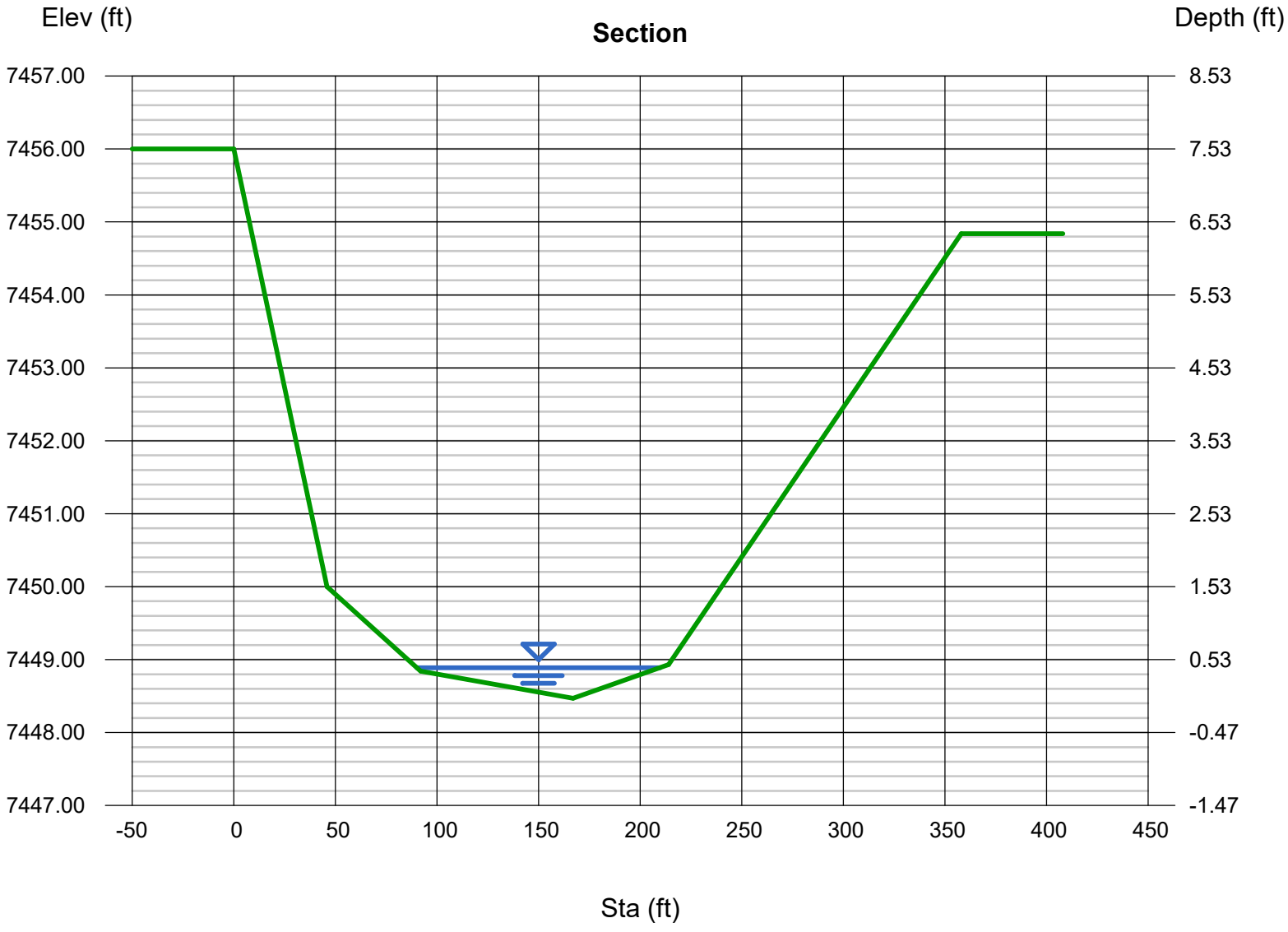
Compute by:	Known Q
Known Q (cfs)	= 68.20

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 68.20
Area (sqft)	= 26.69
Velocity (ft/s)	= 2.56
Wetted Perim (ft)	= 119.91
Crit Depth, Yc (ft)	= 0.42
Top Width (ft)	= 119.91
EGL (ft)	= 0.52

(Sta, El, n)-(Sta, El, n)...

(0.00, 7456.00)-(45.90, 7450.00, 0.030)-(92.00, 7448.84, 0.030)-(167.00, 7448.47, 0.030)-(214.00, 7448.93, 0.030)-(358.00, 7454.84, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, May 27 2025

Channel #4 (Q5 = DP3 = 12.7 cfs)

User-defined

Invert Elev (ft)	= 7444.79
Slope (%)	= 2.90
N-Value	= 0.030

Calculations

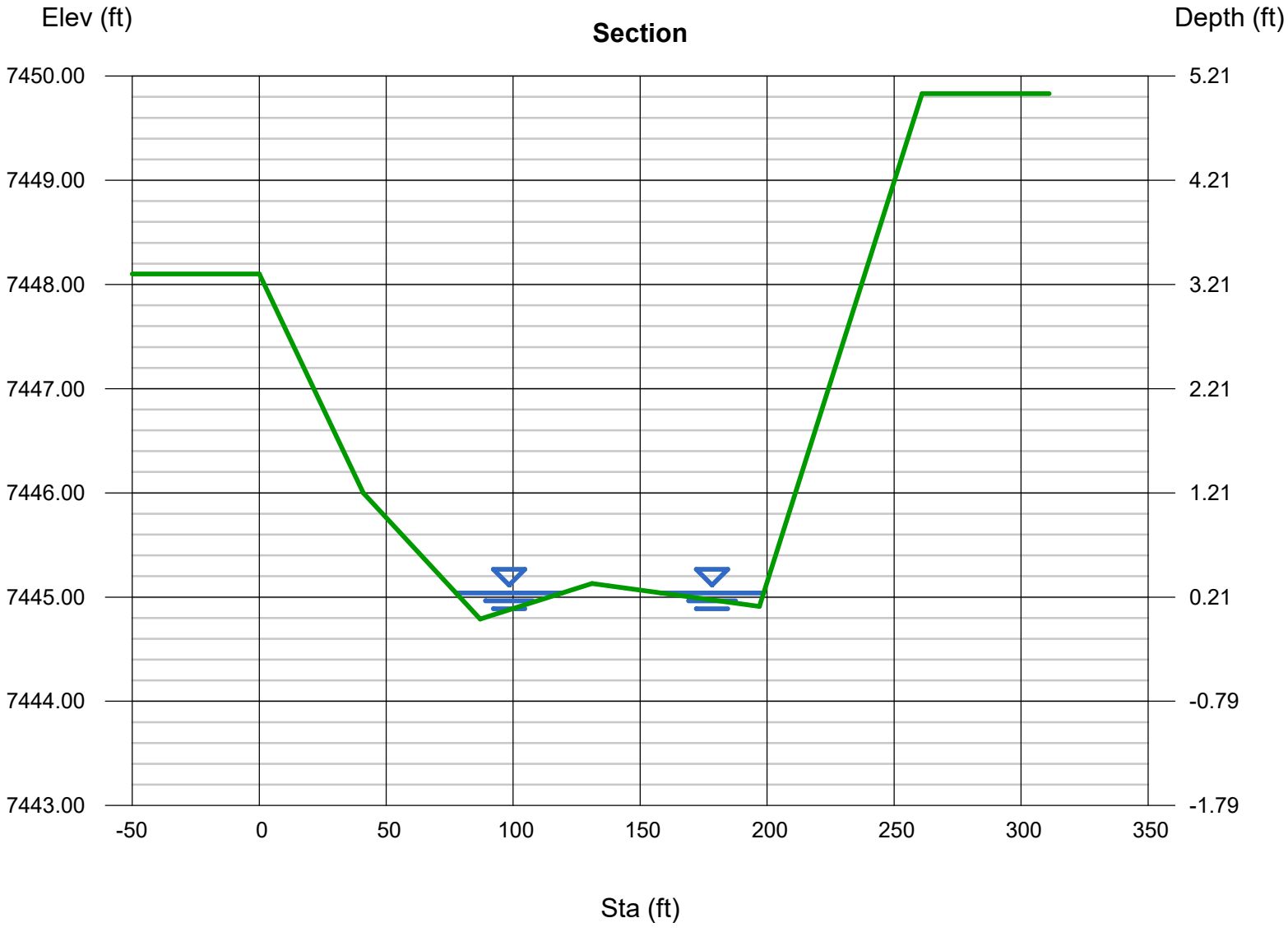
Compute by:	Known Q
Known Q (cfs)	= 12.70

Highlighted

Depth (ft)	= 0.25
Q (cfs)	= 12.70
Area (sqft)	= 7.88
Velocity (ft/s)	= 1.61
Wetted Perim (ft)	= 82.58
Crit Depth, Yc (ft)	= 0.25
Top Width (ft)	= 82.58
EGL (ft)	= 0.29

(Sta, El, n)-(Sta, El, n)...

(0.00, 7448.10)-(41.00, 7446.00, 0.030)-(87.00, 7444.79, 0.030)-(131.00, 7445.13, 0.030)-(197.00, 7444.91, 0.030)-(261.00, 7449.83, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, May 27 2025

Channel #4 (Q100 = DP3 = 70.5 cfs)

User-defined

Invert Elev (ft)	= 7444.79
Slope (%)	= 2.90
N-Value	= 0.030

Calculations

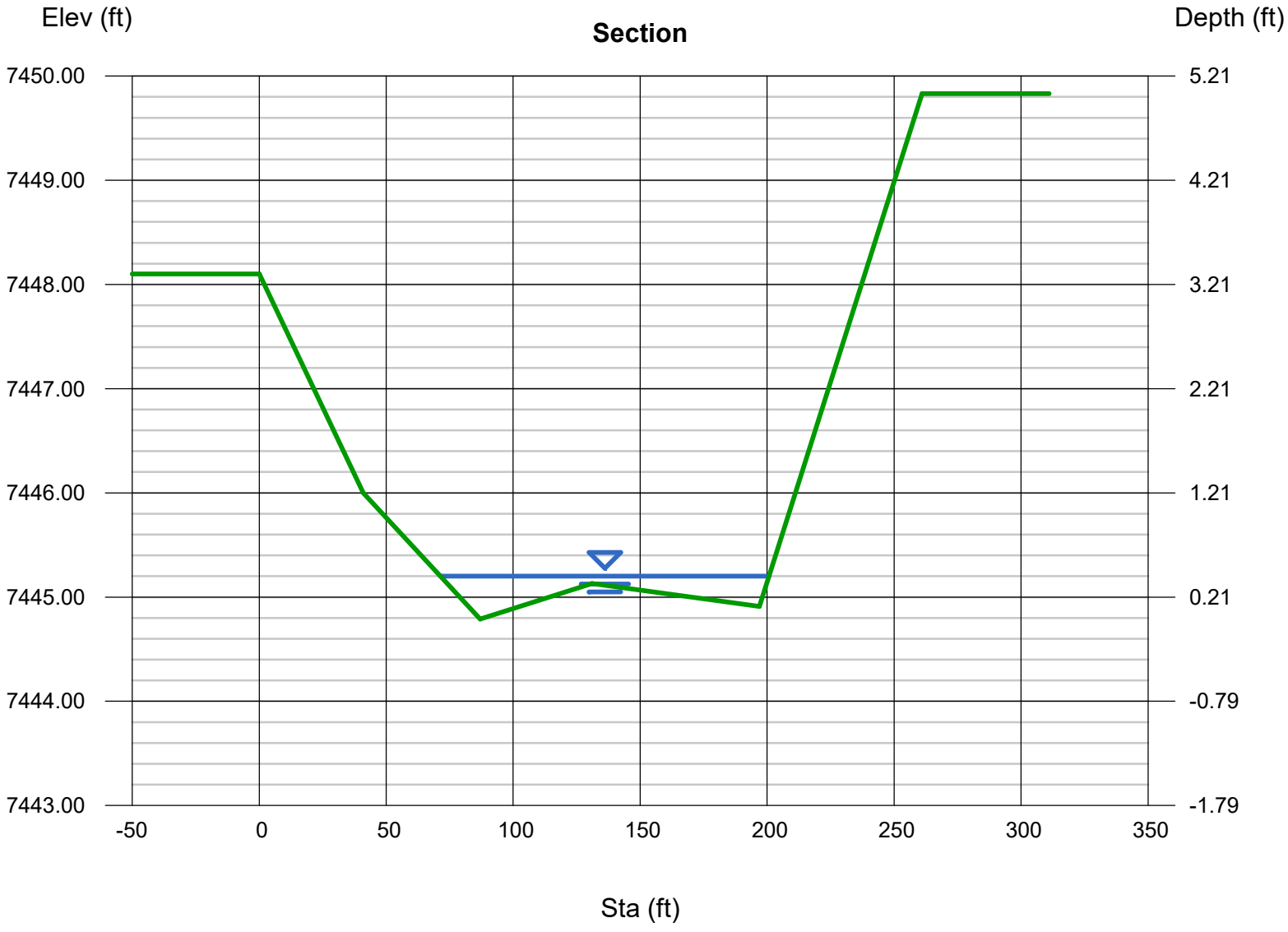
Compute by:	Known Q
Known Q (cfs)	= 70.50

Highlighted

Depth (ft)	= 0.41
Q (cfs)	= 70.50
Area (sqft)	= 26.21
Velocity (ft/s)	= 2.69
Wetted Perim (ft)	= 129.38
Crit Depth, Yc (ft)	= 0.42
Top Width (ft)	= 129.37
EGL (ft)	= 0.52

(Sta, El, n)-(Sta, El, n)...

(0.00, 7448.10)-(41.00, 7446.00, 0.030)-(87.00, 7444.79, 0.030)-(131.00, 7445.13, 0.030)-(197.00, 7444.91, 0.030)-(261.00, 7449.83, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Jan 28 2025

Channel #5 (Q5 = DP5 = 15.6 cfs)

User-defined

Invert Elev (ft)	= 7440.00
Slope (%)	= 2.40
N-Value	= 0.030

Calculations

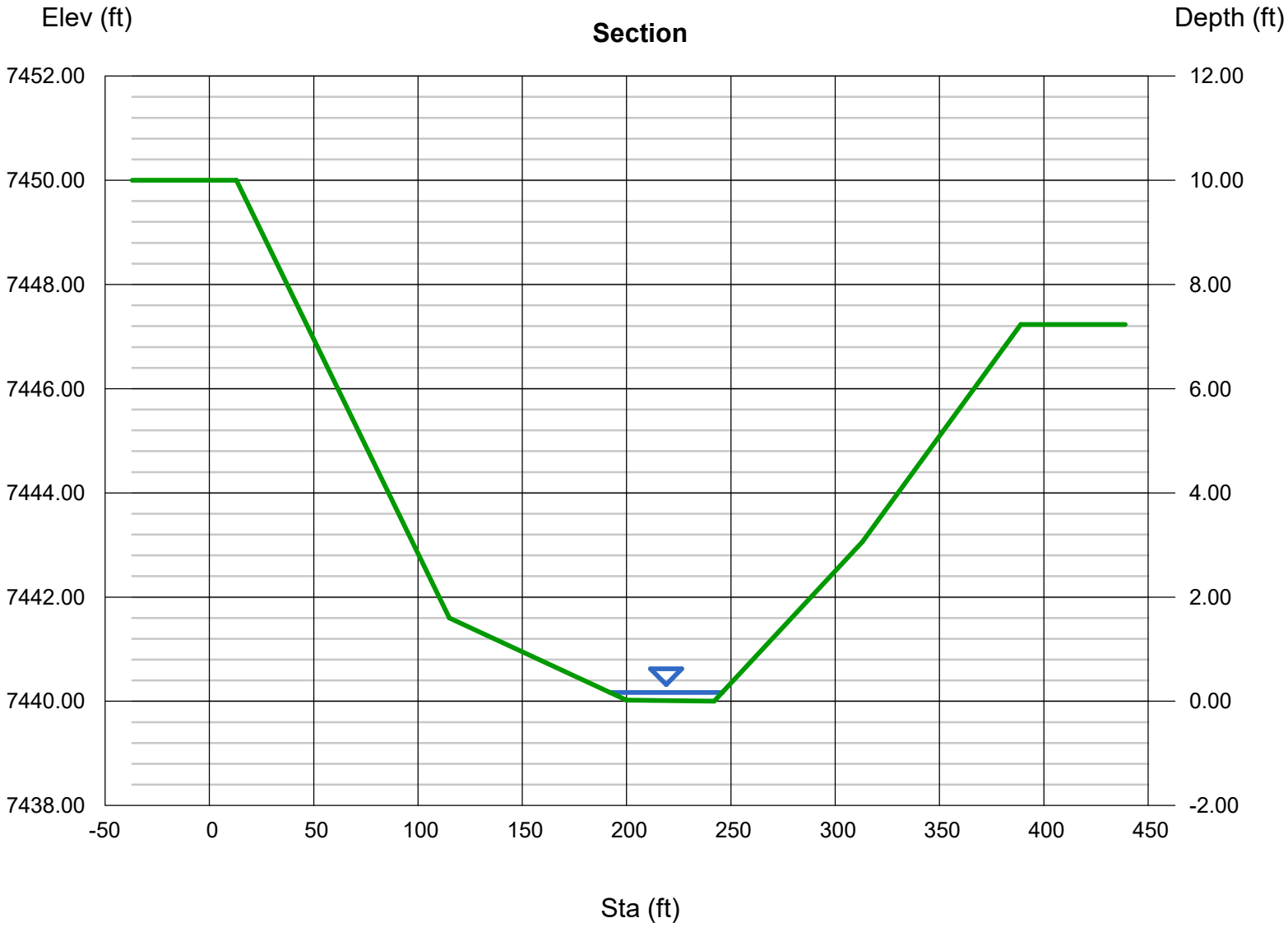
Compute by:	Known Q
Known Q (cfs)	= 15.60

Highlighted

Depth (ft)	= 0.17
Q (cfs)	= 15.60
Area (sqft)	= 7.66
Velocity (ft/s)	= 2.04
Wetted Perim (ft)	= 54.01
Crit Depth, Yc (ft)	= 0.17
Top Width (ft)	= 54.01
EGL (ft)	= 0.23

(Sta, El, n)-(Sta, El, n)...

(13.00, 7450.00)-(115.00, 7441.60, 0.030)-(200.00, 7440.02, 0.030)-(242.00, 7440.00, 0.030)-(313.00, 7443.06, 0.030)-(389.00, 7447.23, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, May 27 2025

Channel #5 (Q100 = DP5 = 84.6 cfs)

User-defined

Invert Elev (ft)	= 7440.00
Slope (%)	= 2.40
N-Value	= 0.030

Calculations

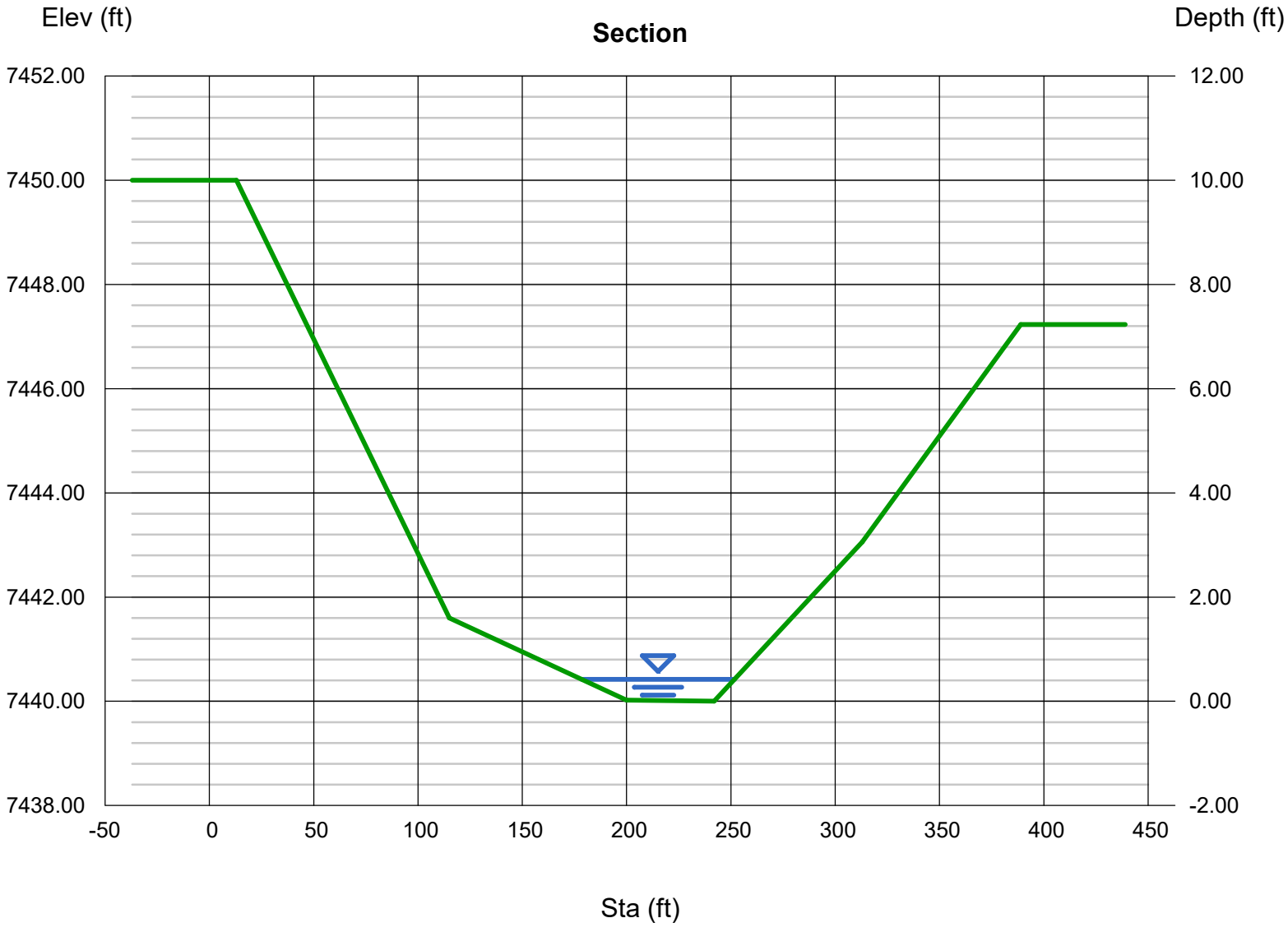
Compute by:	Known Q
Known Q (cfs)	= 84.60

Highlighted

Depth (ft)	= 0.42
Q (cfs)	= 84.60
Area (sqft)	= 23.56
Velocity (ft/s)	= 3.59
Wetted Perim (ft)	= 73.27
Crit Depth, Yc (ft)	= 0.45
Top Width (ft)	= 73.26
EGL (ft)	= 0.62

(Sta, El, n)-(Sta, El, n)...

(13.00, 7450.00)-(115.00, 7441.60, 0.030)-(200.00, 7440.02, 0.030)-(242.00, 7440.00, 0.030)-(313.00, 7443.06, 0.030)-(389.00, 7447.23, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, May 27 2025

Channel #6 (Q5 = DP5 = 15.6 cfs)

User-defined

Invert Elev (ft)	= 7438.00
Slope (%)	= 4.40
N-Value	= 0.030

Calculations

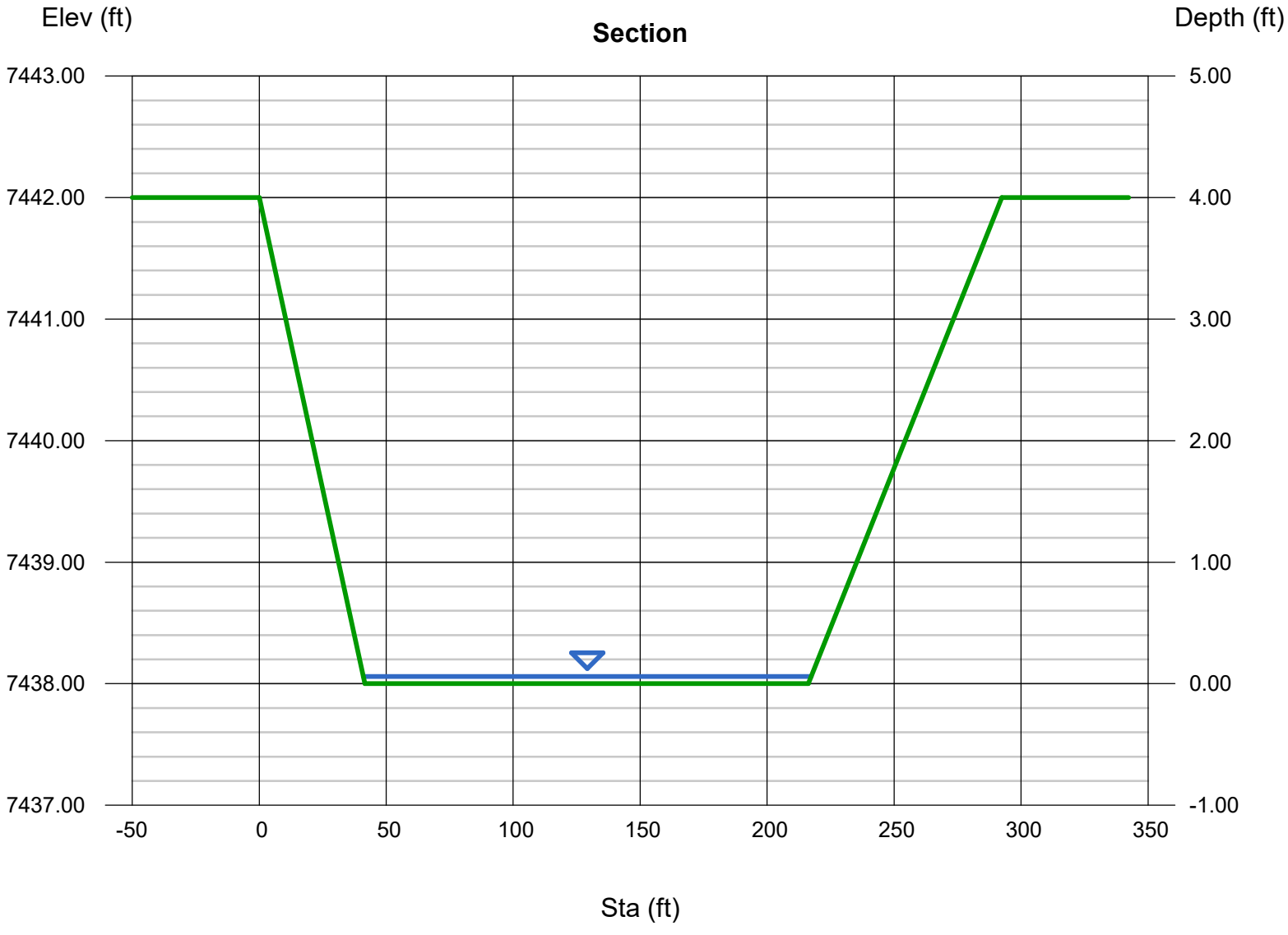
Compute by:	Known Q
Known Q (cfs)	= 15.60

Highlighted

Depth (ft)	= 0.06
Q (cfs)	= 15.60
Area (sqft)	= 10.54
Velocity (ft/s)	= 1.48
Wetted Perim (ft)	= 176.36
Crit Depth, Yc (ft)	= 0.07
Top Width (ft)	= 176.36
EGL (ft)	= 0.09

(Sta, El, n)-(Sta, El, n)...

(0.00, 7442.00)-(41.62, 7438.00, 0.030)-(216.21, 7438.00, 0.030)-(292.37, 7442.00, 0.030)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, May 27 2025

Channel #6 (Q100 = DP5 = 84.6 cfs)

User-defined

Invert Elev (ft)	= 7438.00
Slope (%)	= 4.40
N-Value	= 0.030

Calculations

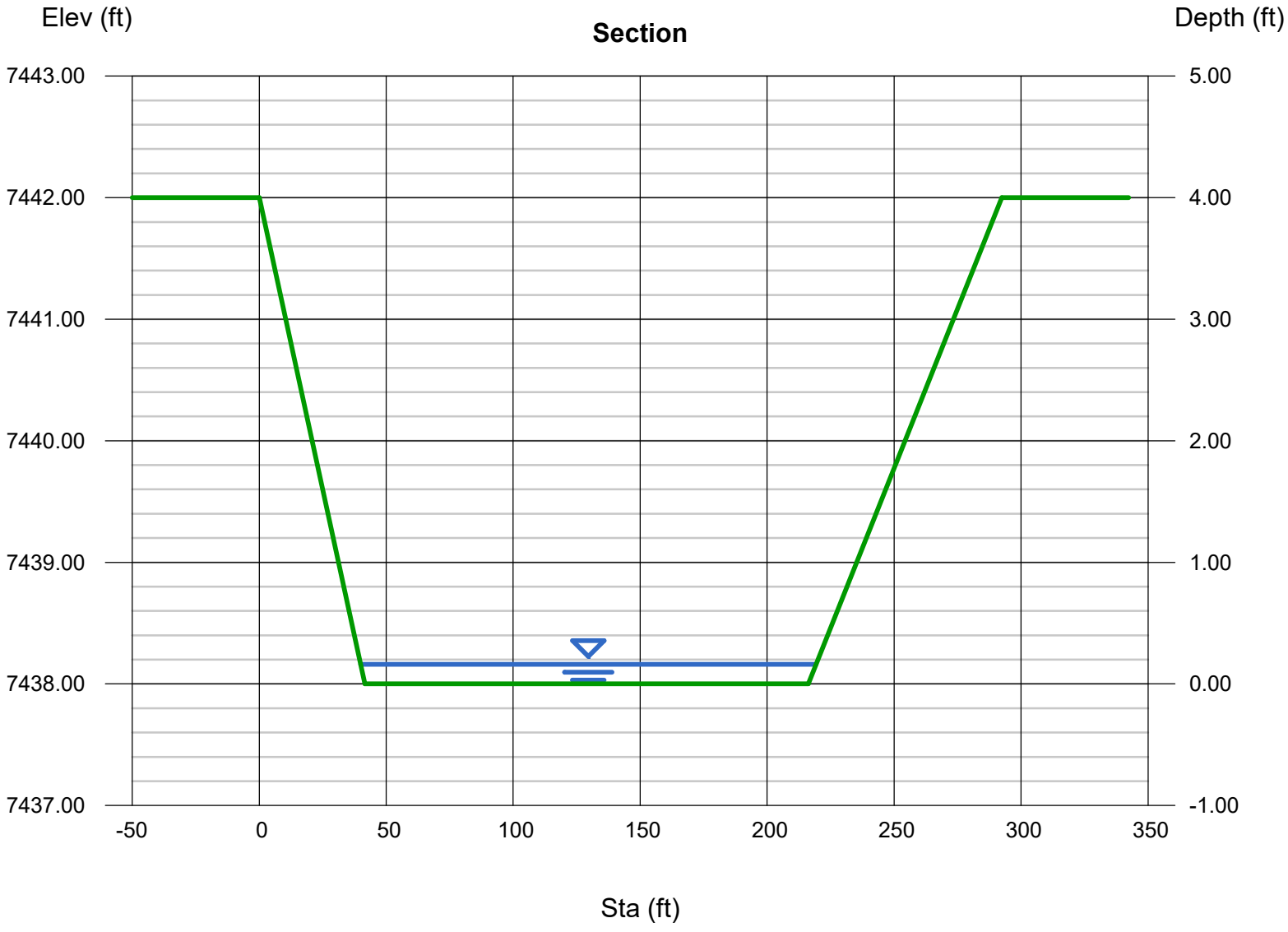
Compute by:	Known Q
Known Q (cfs)	= 84.60

Highlighted

Depth (ft)	= 0.16
Q (cfs)	= 84.60
Area (sqft)	= 28.34
Velocity (ft/s)	= 2.99
Wetted Perim (ft)	= 179.32
Crit Depth, Yc (ft)	= 0.20
Top Width (ft)	= 179.31
EGL (ft)	= 0.30

(Sta, El, n)-(Sta, El, n)...

(0.00, 7442.00)-(41.62, 7438.00, 0.030)-(216.21, 7438.00, 0.030)-(292.37, 7442.00, 0.030)



APPENDIX D – WATER QUALITY & DETENTION

2880 International Circle, Suite 110
Colorado Springs, CO 80910
Phone: 719-520-6300
Email: Stormwater@elpasoco.com
publicworks.elpasoco.com/stormwater/

EL PASO COUNTY
PCM APPLICABILITY FORM

EPC Project Number: SF2511

This form is to be used by the Engineer of Record to determine if the proposed construction activities are eligible for an exclusion to stormwater quality permanent control measure (PCM) requirements. All "applicable construction activity" within El Paso County (EPC) must comply with the post-construction stormwater management criteria. Reference ECM Appendix I for information about PCMs.

Note that this form only addresses stormwater quality for the site. Even if the site is fully excluded from needing a stormwater quality PCM, the site may still need to address stormwater detention (per DCMv1 Chap 1.5 and ECM Chap 3.2.8.B). However, if the site requires stormwater detention, then it must also address stormwater quality (per DCMv2 Chap 4.1 and ECM Appendix I.7.3). Refer to the Reference Information pages below for more guidance.

Part I. Project Summary			
Project Name:	JJ Ranch Subdivision		
Is Stormwater Detention Required?	☐ Yes ☒ No	**Is Water Quality Treatment Required? (i.e.: non-excluded disturbance >1ac)**	☐ Yes ☒ No
Is an ESQCP Required? If "No," Check Applicable Reason	☐ Yes ☒ No	☒ Not an Applicable Construction Activity ☐ Oil & Gas ☐ R-Factor	
Engineer of Record Email Address:	njokerst@allterraineng.com		

Part II. PCM Exclusions

Note: Questions A through K directly correlate to Part I.E.4.a.i (A) to (K) on page 27 of the 2016 CDPS Statewide Standard MS4 General Permit COR090000 (i.e.: the MS4 Permit), as amended. Document exclusions that apply to the whole project or parts of it.

Questions	Excluded Acreage	Yes	No	Notes
A. Is this project a "Pavement Management Site?"			X	This exclusion applies to the maintenance, rehabilitation, and reconstruction of pavement on existing roads, bridges, bike lanes, and parking along roads. Areas used primarily for parking (i.e.: separate lots not along roadway) or access to parking are not included. No increase in impervious area is allowable.
B. Review two options below to see if project is an "Excluded Roadway Development."				Does not include sidewalks. Does include curb & gutter.
• Does the project include improvements to an existing roadway that adds < 1 acre of paved or gravel area per mile of roadway?			X	If selected, list the proposed additional acreage per mile in Part IV Notes below.
• Does the project include improvements to an existing roadway that adds ≤ 8.25 ft of paved width at any location?			X	If selected, list the proposed additional width in Part IV Notes below.

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EL PASO COUNTY
PCM APPLICABILITY FORM

EPC Project Number: SF2511

Part II. PCM Exclusions (continued)				
Questions	**Excluded Acreage**	**Yes**	**No**	**Notes**
C. Does the project include "Excluded Existing Roadway Areas?"			X	For redevelopment of existing roadways. This exclusion only excludes the original roadway area, it does NOT apply to the entire project. This exclusion applies only when the proposed project will expand the existing roadway width by <2x on average. If selected, list the proposed expanded width in Part IV Notes below.
D. Is the project considered an Aboveground or Underground Utilities activity?			X	Activity can not permanently alter the terrain, ground cover, or drainage patterns from existing conditions.
E. Is the project considered a "Large Lot Single-Family Site"? *This exclusion only pertains to the lots and does not include roadways.*		X		Must be a single-family residential lot or agricultural zoned land with ≥ 2.5 acres per dwelling and total lot impervious area < 10%. If "Yes," notate the percent impervious below in Part IV: Notes.
F. Do Non-Residential or Non-Commercial Infiltration Conditions exist? *Post-development surface conditions do not result in concentrated stormwater flow or surface water discharge during an 80th percentile stormwater runoff event, and the 80th percentile event must be infiltrated.*			X	Exclusion does not apply to residential or commercial sites for buildings. A site-specific study is required and must show rainfall and soil conditions, allowable slopes, surface conditions, and ratios of imperviousness area to pervious area.
G. Is the project land disturbance to Undeveloped Land where undeveloped land remains undeveloped following the activity?			X	Project must be on land with no human made structures such as buildings or pavement. The proposed development must return the disturbed area to its historical condition. See CDPHE's "Standard MS4 Permit FAQ" for more detail on how this exclusion applies.
H. Is the project a Stream Stabilization Site?			X	
I. Is the project a Bike or Pedestrian Trail?			X	Bike lanes for roadways are not included in this exclusion but may qualify if attached to a larger roadway activity that is excluded in A, B or C above. Pedestrian trails (e.g. sidewalks) that are attached to a roadway do not apply.
J. Is the project Oil and Gas Exploration?			X	Activities and facilities associated with oil and gas exploration are excluded.
K. Is the project in a County Growth Area?				El Paso County does not apply this exclusion.

If any exclusions above apply (via a "Yes" for any row), runoff from those areas is excluded from stormwater quality treatment requirements. All runoff from remaining non-excluded disturbed areas will need to be treated by a stormwater quality PCM, unless remaining area is <1ac. If remaining area is >1ac, select at least one Design Standard on the next page.

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EL PASO COUNTY
PCM APPLICABILITY FORM

EPC Project Number: SF2511

Part III: PCM Information		
Questions	**Yes**	**No**
1. Which of the following Design Standard(s) will the project utilize? *(If a PCM is required, you must select at least one. See Control Measure Requirements identified in MS4 Permit Part I.E.4.a.iv on page 29.)*		
A. Water Quality Capture Volume (WQCV) Standard		
B. Pollutant Removal Standard - 80% Total Suspended Solids Removal (TSS) *(must treat runoff to <30mg/L of TSS)*		
C. Runoff Reduction Standard		
D. Applicable Development Site Draining to a Regional WQCV Control Measure *(no conveyance via "Waters of the State")*		
E. Applicable Development Site Draining to a Regional WQCV Facility *(conveyance allowable via "Waters of the State," if the 8 conditions in the MS4 permit are met and documented in the drainage report)*		
F. Constrained Redevelopment Sites Standard *(must be pre-approved by ECM Administrator)*		
G. Previous Permit Term Standard		
2. Will any of the PCMs be located within any other jurisdiction besides EPC?		

Part IV: Notes
Provide info regarding all applicable PCM(s) and PCM Exclusion(s) including location, PCM name(s)/number(s), and additional relevant filings or reports or maintenance agreements, etc. Attach an additional sheet if you need more space. Attaching a detailed summary table would replace the need for any notes here.
While the lots are being platted as 2.5+ acre lots, there will be no disturbance, change in ground cover or alteration of existing drainage patterns associated with JJ Ranch Subdivision. Therefore, permanent water quality treatment is not required.

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Colorado Springs, CO 80910
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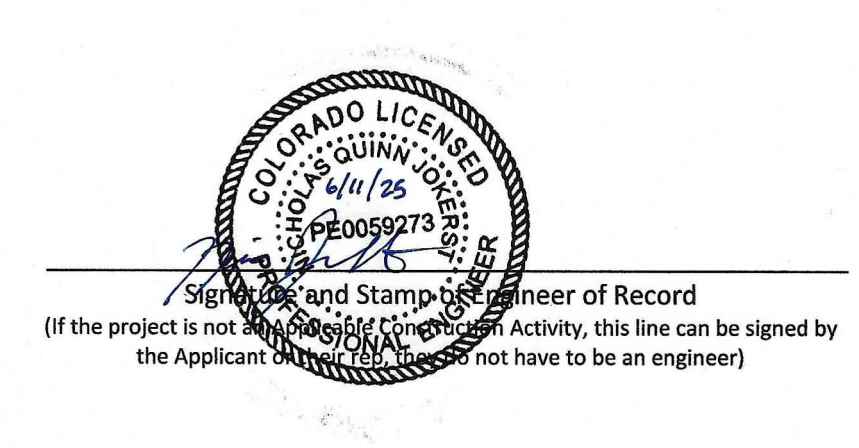
EL PASO COUNTY
PCM APPLICABILITY FORM

EPC Project Number: SF2511

Part V: Signatures

Applicant: This PCM Applicability Form was prepared under my direction and supervision and is correct to the best of my knowledge and belief. It was prepared along with the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required. And it has been reviewed for compliance with the Post Construction Stormwater Management criteria and MS4 Permit requirements.



Signature and Stamp of Engineer of Record
(If the project is not an Applicable Construction Activity, this line can be signed by the Applicant or their rep, they do not have to be an engineer)

06/11/2025
Date

El Paso County: This PCM Applicability Form has been reviewed and the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required, have been reviewed for compliance with the Post Construction Stormwater Management process and MS4 Permit requirements.

Signature of El Paso County Project Engineer

Date

Reference Information:

If a PCM is required, then these additional documents will also need to be submitted:

- PCM Maintenance Agreement
- PCM O&M Manual
- MHFD Detention Basin Design Workbook*
- Proof of Submittal of: Notice of Intent to Construct a Non-Jurisdictional Water Impoundment Structure*

*Not required for all PCMs, check ECM Appendix I for requirements

The following are screenshots of example Water Quality Treatment Summary Tables. The Excel versions can be found at the EPC DPW Stormwater website linked below. These are optional tables that can be used to summarize water quality treatment and applicable exclusions. Select the table that best suits the project based on the number of basins, PCMs, and/or exclusions. A PDF of the selected table(s) can be attached to this form and/or to the Drainage Report. It is helpful to also include a basic overview map with color shading or hatch patterns that shows areas tributary to each type of PCM (pond, runoff reduction, etc.) and those areas that are not captured by a PCM, with the applicable exclusion(s) labeled.

https://publicworks.elpasoco.com/stormwater/

Water Quality Treatment Summary Table		
Basin ID(s)	**PCM Tributary Area (ac)**	**PCM ID**
A1 - A5	4	Pond 1
B1 - B3	3.25	Pond 2
C, D	5.5	Runoff Reduction
E	10	Excluded*
* Excluded based on ECM App I.7.1.B.5		

Water Quality Treatment Summary Table							
Basin ID	**Total Area (ac)**	**Total Proposed Disturbed Area (ac)**	**Area Trib to Pond A (ac)**	**Disturbed Area Treated via Runoff Reduction (ac)**	**Disturbed Area Excluded from WQ per ECM App I.7.1.C.1 (ac)**	**Disturbed Area Excluded from WQ per ECM App I.7.1.B.# (ac)**	**Applicable WQ Exclusions (App I.7.1.B.#)**
A	4.50	4.50	4.50				
B	1.25	1.25		1.25			
C	6.00	4.00				4.00	ECM App I.7.1.B.5
D	2.50	2.50	1.00		0.50	1.00	ECM App I.7.1.B.7
E	3.00		3.00				
F	8.25						
Total	25.50	12.25	8.50	1.25	0.50	5.00	

Min Required Area to Receive WQ Treatment	**Total Proposed Disturbed Area (ac)**	**Total Proposed Treated Area (ac)**	**Total Proposed Disturbed Area Excluded from WQ (ac)**	**Net Treatment (ac)**
6.75	12.25	9.75	5.50	3.00

Design Standard D, definition of "Waters of the State of Colorado" per MS4 Permit:

> *"Any and all surface waters and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed. This definition can include water courses that are usually dry."*
>
> The following website shows Waters of the State of Colorado:
>
> https://cdphe.maps.arcgis.com/apps/Viewer/index.html?appid=f1541d2f21834642ba1551c674fd4a79

Design Standard E, additional info from the MS4 Permit:

> *Before discharging to a water of the state, at least 20 percent of the upstream imperviousness of the applicable development site must be disconnected from the storm drainage system and drain through a receiving pervious area control measure comprising a footprint of at least 10 percent of the upstream disconnected impervious area of the applicable development site. The control measure must be designed in accordance with a design manual identified by the permittee. In addition, the stream channel between the discharge point of the applicable development site and the regional WQCV facility must be stabilized.*
>
> Below are the 8 conditions that must be met:
>
> *1) The regional WQCV facility must be implemented, functional, and maintained following good engineering, hydrologic and pollution control practices.*
>
> *2) The regional WQCV facility must be designed and maintained for 100% WQCV for its entire drainage area.*
>
> *3) The regional WQCV facility must have capacity to accommodate the drainage from the applicable development site.*
>
> *4) The regional WQCV facility be designed and built to comply with all assumptions for the development activities planned by the permittee within its drainage area, including the imperviousness of its drainage area and the applicable development site.*
>
> *5) Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the facility. Consideration of drain time shall include maintaining vegetation necessary for operation of the facility (e.g., wetland vegetation).*
>
> *6) The permittee shall meet the requirements in Parts I.E.4.a.v. and vii. and Part I.E.4.b. for the regional WQCV facility consistent with requirements and actions for control measures.*
>
> *7) The regional WQCV facility must be subject to the permittee's authority consistent with requirements and actions for a Control Measure in accordance with Part I.E.4.a.iv.*
>
> *8) Regional Facilities must be designed and implemented with flood control or water quality as the primary use. Recreational ponds and reservoirs may not be considered Regional Facilities. Water bodies listed by name in surface water quality classifications and standards regulations (5 CCR 1002-32 through 5 CCR 1002-38) may not be considered regional facilities.*

APPENDIX E – REFERENCE MATERIAL

Existing Drainageway – Looking east at eastern property line

Existing Drainageway – Looking east towards Section #6

Existing Drainageway – approximate location of Section #2

Existing Drainageway - approximate location of Section #0 at western PL

Drainage Letter

for

Warner 4-Lot Subdivision

Owner/Applicant:
J. Brian Warner
Colorado Springs, CO 80908
(719) 600-7143

Prepared by:
Forsgren Associates
56 Inverness Drive East, Suite 112
Colorado Springs, CO 80923
(720) 214-5884

August, 2021

PCD File No. MS-21-004

SITE

N88°51'50"E 1320.68'

EXISTING FENCE

EXISTING PROPERTY LINE, TYP

POTENTIAL BUILDING LOCATION

LOT 1, WARNER SUBDIVISION
(ADDRESS)
PARCEL ID XXXXXXXXXX
5.00 ACRES

PROPOSED PROPERTY LINE, TYP

LOT 4, WARNER SUBDIVISION
(ADDRESS)
PARCEL ID XXXXXXXXXX
10.00 ACRES

A 26.42 AC 0.39

EXISTING STRUCTURE

POTENTIAL BUILDING LOCATION

EXISTING FENCE

OS-01 4.78 AC 0.35

20' UTILITY AND DRAINAGE EASEMENT

LOT 3, WARNER SUBDIVISION
(ADDRESS)
PARCEL ID XXXXXXXXXX
19.86 ACRES

EXISTING FIBER OPTIC, TYP

POTENTIAL BUILDING LOCATION

20' UTILITY AND DRAINAGE EASEMENT

20' UTILITY AND DRAINAGE EASEMENT

EXISTING STRUCTURE

EXISTING STRUCTURE

N00°07'05"W 1307.28'

S00°23'18"E 1316.22'

C 3.31 AC 0.39

EXISTING OVERHEAD ELECTRIC, TYP

LOT 2, WARNER SUBDIVISION
(ADDRESS)
PARCEL ID XXXXXXXXXX
5.00 ACRES

OS-02 2.02 AC 0.35

EXISTING ACCESS ROAD

D 2.02 AC 0.39

B 8.11 AC 0.39

EXISTING GAS LINE, TYP

EXISTING TELE LINE, TYP

EXISTING POWER POLE, TYP

EXISTING FENCE

GOSHAWK ROAD

GOSHAWK ROAD

EXISTING EDGE OF GRAVEL, TYP

S89°15'15"W 1326.76'

LEGEND:

- A 4.80 AC .80 — BASIN DESIGNATION; "C" COEFFICIENT (100 YR); BASIN AREA (ACRES)
- 4 — DESIGN POINT
- BASIN LINE
- PROPERTY LINE
- TIME OF CONCENTRATION PATH
- FLOW DIRECTION

N

GRAPHIC SCALE
0' 40' 80' 160' 240'
Scale: 1"=80'

DRAINAGE BASIN PLAN
SCALE: 1"=20'
1 C-01

NO.	REVISIONS	BY	DATE

FORSGREN Associates Inc.
56 Inverness Drive East, Suite 112, Englewood, CO 80112
PH: 720.214.5884 FAX: 720.000.0000

PROJECT NO.	04-18-0026
DRAWN	C. BURBA
DESIGNED	C. BURBA
APPROVED	C. BURBA
QA/QC	J. MOORE

OWNER
BRIAN WARNER
COLORADO SPRINGS, CO

4-LOT MINOR SUBDIVISION

PROPOSED CONDITIONS DRAINAGE MAP

SHEET NO: C-01
DATE: 08/19/2021
PAGE NO: 1 OF 1

C:\Users\cburba\Desktop\Warner 4-Lot Subdivision\CAD\Exhibit\Proposed Conditions Drainage Map.dwg - ---- - 8/24/2021 10:13 AM

FORSGREN Associates Inc.

Composite "C" Values (Proposed)									
Basin	**Desc.**	**Area**	**Area**	**% Imper.**	**Impervious Area**	**Pervious Area**	**2 Comp.**	**5 Comp.**	**100 Comp**
		(SF)	(Acres)	%	(Acres)	(Acres)	"C"	"C"	"C"
A	Basin A	1,151,039	26.42	7%	1.850	24.57	0.08	0.14	0.39
B	Basin B	353,054	8.11	7%	0.570	7.54	0.08	0.14	0.39
C	Basin C	143,995	3.31	7%	0.230	3.08	0.08	0.14	0.39
D	Basin D	88,163	2.02	7%	0.140	1.88	0.08	0.14	0.39
OS-01	Offsite Basin 01	208,375	4.78	0%	0.000	4.78	0.02	0.08	0.35
OS-02	Offsite Basin 02	87,935	2.02	0%	0.000	2.02	0.02	0.08	0.35
All Onsite Basins		**2,032,561**	**46.66**	**6%**	**2.65**	**44.01**	**0.07**	**0.13**	**0.38**
1	OS-01 + A	1,359,414	31.21	6%	1.850	29.36	0.07	0.13	0.39
2	OS-02 + B	440,989	10.12	6%	0.570	9.55	0.07	0.13	0.38
All Offsite Basins		**1,800,403**	**41.33**	**6%**	**2.42**	**38.91**	**0.07**	**0.13**	**0.39**

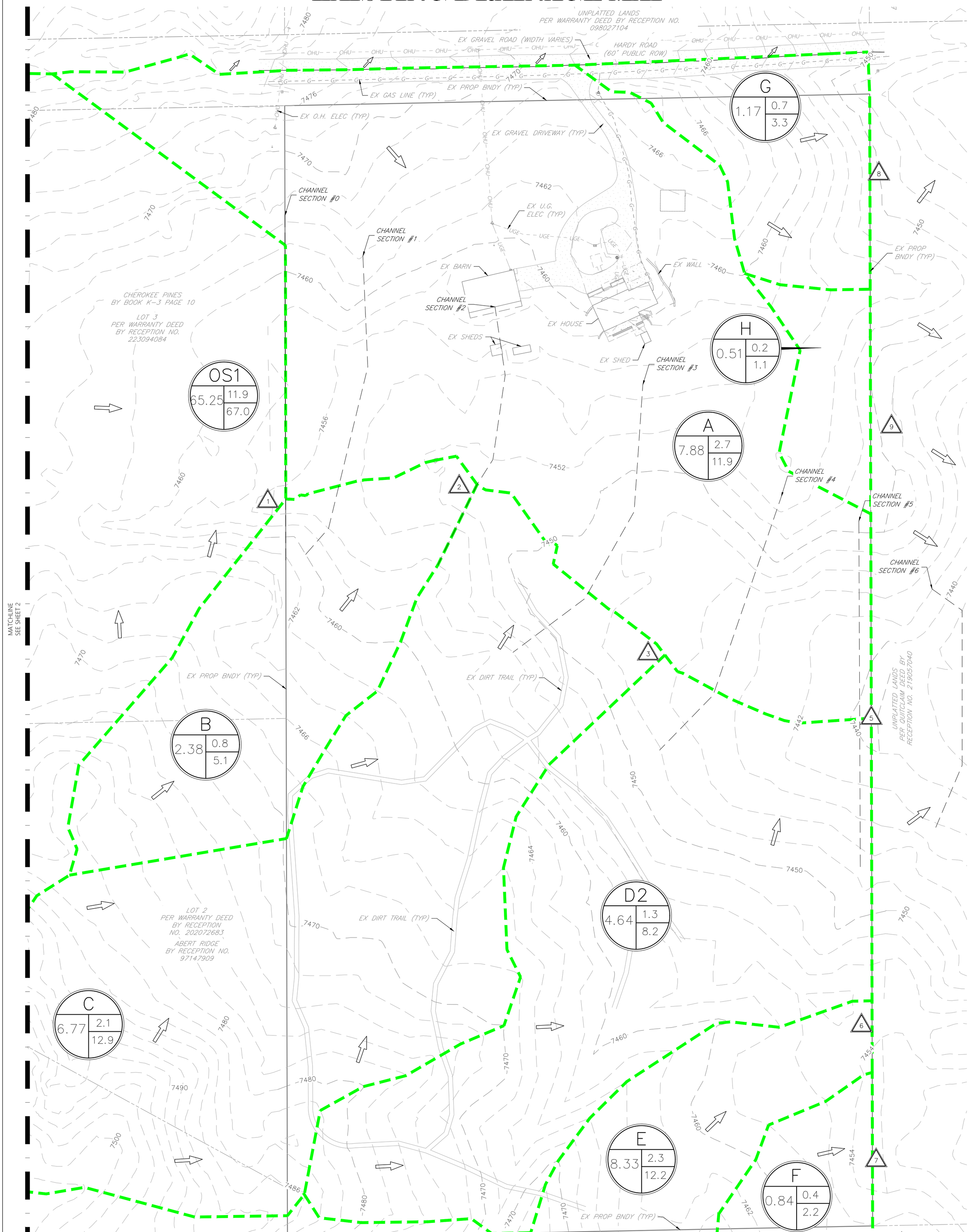
5 Impervious "C"	0.90
5 Pervious "C"	0.08
100 Impervious "C"	0.96
100 Pervious "C"	0.35
2 Impervious "C"	0.89
2 Pervious "C"	0.02

By: Conner Burba
Project: Warner 4-Lot Subdivision
Printed: 8/24/2021 10:06

APPENDIX F – DRAINAGE MAPS

JJ RANCH SUBDIVISION

EXISTING DRAINAGE MAP



EXISTING 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	7.88	7%	0.14	0.38	32.8	2.7	11.9
B	2.38	2%	0.09	0.36	14.9	0.8	5.1
C	6.77	4%	0.10	0.37	20.1	2.1	12.9
D1	5.66	3%	0.10	0.37	16.9	1.9	11.6
D2	4.64	4%	0.10	0.37	23.4	1.3	8.2
E	8.33	5%	0.12	0.38	33.6	2.3	12.2
F	0.84	4%	0.11	0.37	10.1	0.4	2.2
G	1.17	11%	0.15	0.40	9.1	0.7	3.3
H	0.51	2%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5%	0.11	0.38	52.9	11.9	67.0

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.1
3	12.3	70.2
4	1.9	11.6
5	14.9	83.7
6	2.3	12.2
7	0.4	2.2
8	0.7	3.3
9	0.2	1.1

LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		

BASIN ID — ID / AC / Q5 / Q100

DESIGN POINT DESIGNATION — 1

SUB-BASIN DRAINAGE AREA

N

50 25 0 50 100

ORIGINAL SCALE: 1" = 50'

EXISTING DRAINAGE MAP

JJ RANCH SUBDIVISION

JOB NO. 24023 | SHEET 1

LOCATION: EPC

05/27/2025

ALL TERRAIN ENGINEERING

JJ RANCH SUBDIVISION

EXISTING DRAINAGE MAP

EXISTING 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	7.88	7%	0.14	0.38	32.8	2.7	11.9
B	2.38	2%	0.09	0.36	14.9	0.8	5.1
C	6.77	4%	0.10	0.37	20.1	2.1	12.9
D1	5.66	3%	0.10	0.37	16.9	1.9	11.6
D2	4.64	4%	0.10	0.37	23.4	1.3	8.2
E	8.33	5%	0.12	0.38	33.6	2.3	12.2
F	0.84	4%	0.11	0.37	10.1	0.4	2.2
G	1.17	11%	0.15	0.40	9.1	0.7	3.3
H	0.51	2%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5%	0.11	0.38	52.9	11.9	67.0

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.1
3	12.3	70.2
4	1.9	11.6
5	14.9	83.7
6	2.3	12.2
7	0.4	2.2
8	0.7	3.3
9	0.2	1.1

LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		
BASIN ID	ID / AC / Q5 / Q100	
DESIGN POINT DESIGNATION	1	
SUB-BASIN DRAINAGE AREA		

100 50 0 100 200

ORIGINAL SCALE: 1" = 100'

EXISTING DRAINAGE MAP

JJ RANCH SUBDIVISION

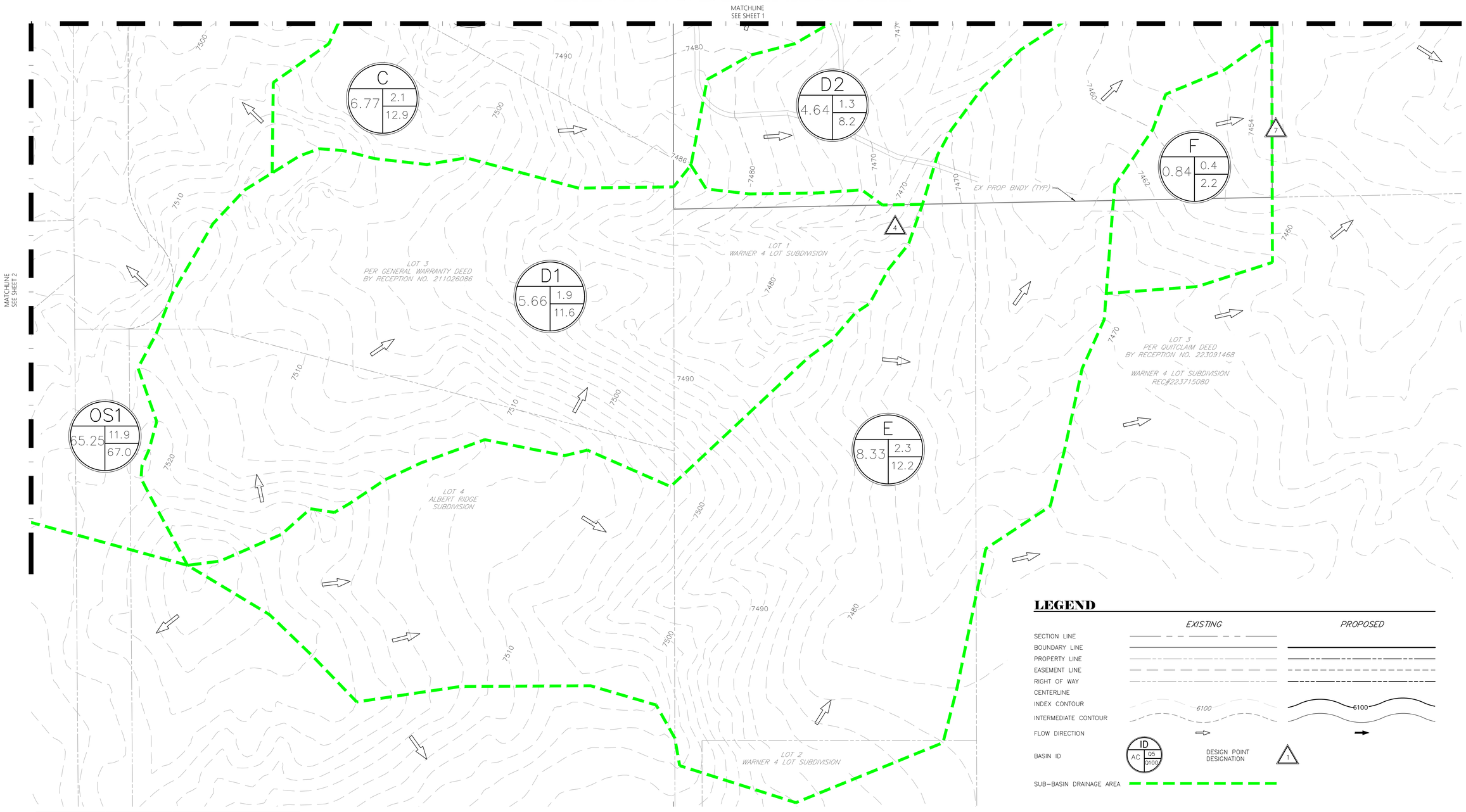
JOB NO. 24023
LOCATION: EPC
05/27/2025

SHEET 2

ALL TERRAIN ENGINEERING

JJ RANCH SUBDIVISION

EXISTING DRAINAGE MAP



LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		
BASIN ID	ID / AC / Q5 / Q100	DESIGN POINT DESIGNATION: 1
SUB-BASIN DRAINAGE AREA		

EXISTING 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	7.88	7%	0.14	0.38	32.8	2.7	11.9
B	2.38	2%	0.09	0.36	14.9	0.8	5.1
C	6.77	4%	0.10	0.37	20.1	2.1	12.9
D1	5.66	3%	0.10	0.37	16.9	1.9	11.6
D2	4.64	4%	0.10	0.37	23.4	1.3	8.2
E	8.33	5%	0.12	0.38	33.6	2.3	12.2
F	0.84	4%	0.11	0.37	10.1	0.4	2.2
G	1.17	11%	0.15	0.40	9.1	0.7	3.3
H	0.51	2%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5%	0.11	0.38	52.9	11.9	67.0

EXISTING CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.1
3	12.3	70.2
4	1.9	11.6
5	14.9	83.7
6	2.3	12.2
7	0.4	2.2
8	0.7	3.3
9	0.2	1.1

N

50 25 0 50 100

ORIGINAL SCALE: 1" = 50'

EXISTING DRAINAGE MAP

JJ RANCH SUBDIVISION

JOB NO. 24023 | SHEET 3

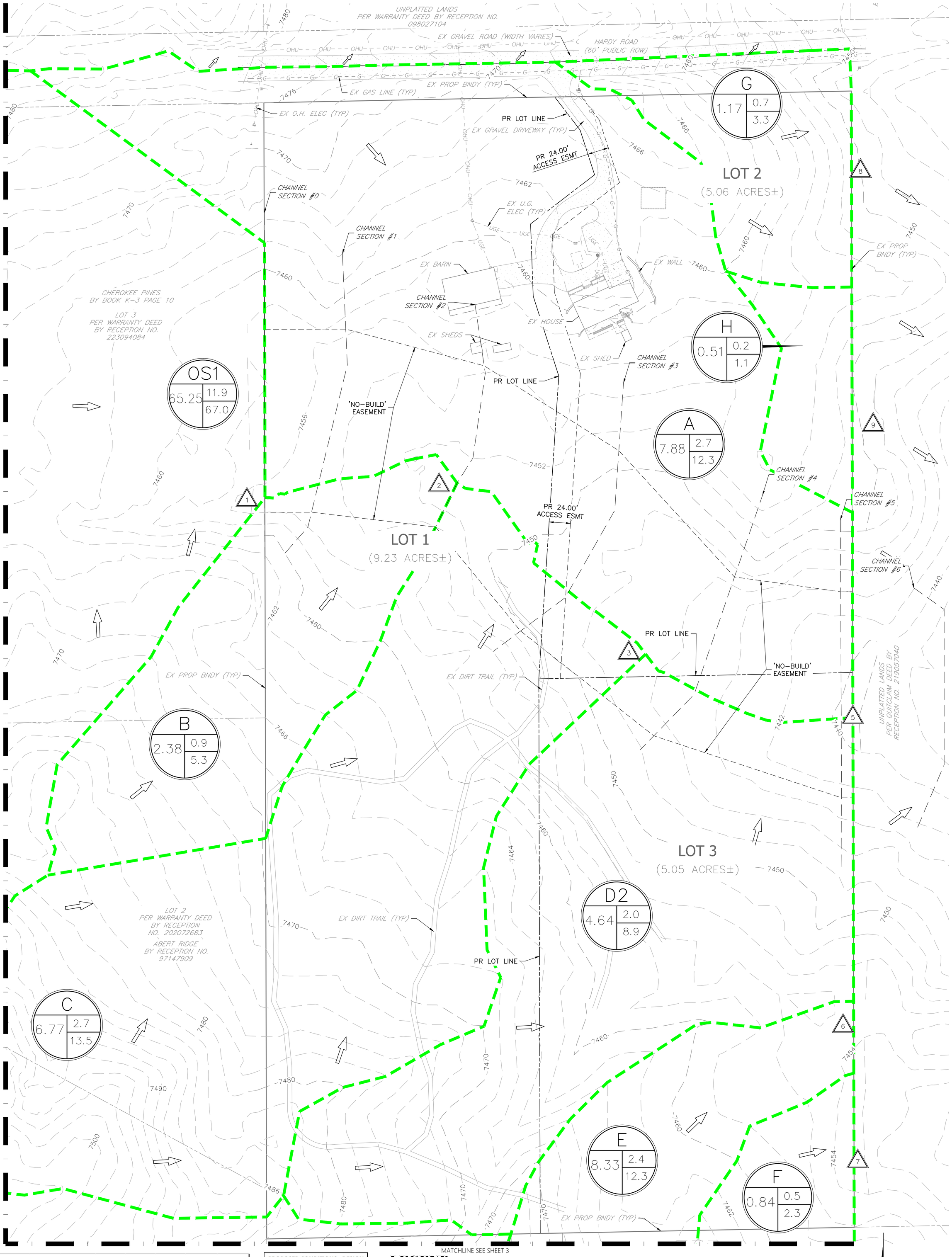
LOCATION: EPC

05/27/2025

ALL TERRAIN ENGINEERING

JJ RANCH SUBDIVISION

PROPOSED DRAINAGE MAP



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	7.88	9.2%	0.15	0.40	32.7	2.7	12.3
B	2.38	4.2%	0.11	0.37	14.7	0.9	5.3
C	6.77	6.3%	0.13	0.38	19.8	2.7	13.5
D1	5.66	3.0%	0.10	0.37	16.9	1.9	11.6
D2	4.64	8.4%	0.15	0.40	22.7	2.0	8.9
E	8.33	5.5%	0.13	0.38	33.5	2.4	12.3
F	0.84	7.0%	0.14	0.39	9.9	0.5	2.3
G	1.17	10.7%	0.15	0.40	9.1	0.7	3.3
H	0.51	2.0%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5.2%	0.11	0.38	52.9	11.9	67.0

PROPOSED CONDITIONS - DESIGN POINT SUMMARY TABLE		
DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.2
3	12.7	70.5
4	1.9	11.6
5	15.6	84.6
6	2.4	12.3
7	0.5	2.3
8	0.7	3.3
9	0.2	1.1

LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		
BASIN ID	ID / AC / Q5 / Q100	
DESIGN POINT DESIGNATION		1
SUB-BASIN DRAINAGE AREA		

N

50 25 0 50 100

ORIGINAL SCALE: 1" = 50'

PROPOSED DRAINAGE MAP

JJ RANCH SUBDIVISION

JOB NO. 24023
LOCATION: EPC
05/27/2025

SHEET 1

ALL TERRAIN ENGINEERING

JJ RANCH SUBDIVISION

PROPOSED DRAINAGE MAP

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	7.88	9.2%	0.15	0.40	32.7	2.7	12.3
B	2.38	4.2%	0.11	0.37	14.7	0.9	5.3
C	6.77	6.3%	0.13	0.38	19.8	2.7	13.5
D1	5.66	3.0%	0.10	0.37	16.9	1.9	11.6
D2	4.64	8.4%	0.15	0.40	22.7	2.0	8.9
E	8.33	5.5%	0.13	0.38	33.5	2.4	12.3
F	0.84	7.0%	0.14	0.39	9.9	0.5	2.3
G	1.17	10.7%	0.15	0.40	9.1	0.7	3.3
H	0.51	2.0%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5.2%	0.11	0.38	52.9	11.9	67.0

PROPOSED CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.2
3	12.7	70.5
4	1.9	11.6
5	15.6	84.6
6	2.4	12.3
7	0.5	2.3
8	0.7	3.3
9	0.2	1.1

LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		
BASIN ID	ID / AC / Q5 / Q100	
DESIGN POINT DESIGNATION	1	
SUB-BASIN DRAINAGE AREA		

PROPOSED DRAINAGE MAP

JJ RANCH SUBDIVISION

JOB NO. 24023 | SHEET 2

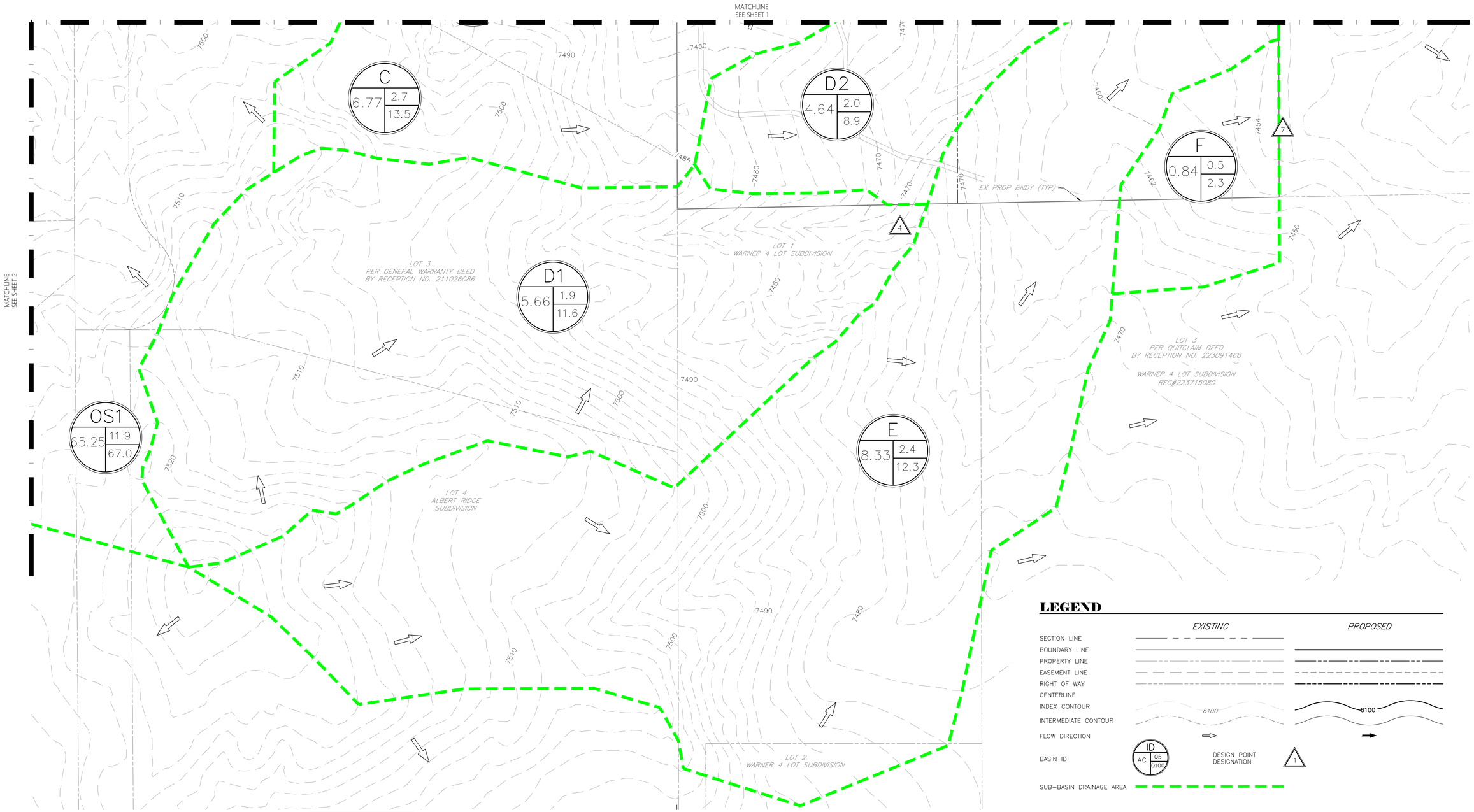
LOCATION: EPC

05/27/2025

ALL TERRAIN ENGINEERING

JJ RANCH SUBDIVISION

PROPOSED DRAINAGE MAP



LEGEND

	EXISTING	PROPOSED
SECTION LINE		
BOUNDARY LINE		
PROPERTY LINE		
EASEMENT LINE		
RIGHT OF WAY		
CENTERLINE		
INDEX CONTOUR	6100	6100
INTERMEDIATE CONTOUR		
FLOW DIRECTION		

BASIN ID — ID / AC / Q5 / Q100

DESIGN POINT DESIGNATION — 1

SUB-BASIN DRAINAGE AREA

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	7.88	9.2%	0.15	0.40	32.7	2.7	12.3
B	2.38	4.2%	0.11	0.37	14.7	0.9	5.3
C	6.77	6.3%	0.13	0.38	19.8	2.7	13.5
D1	5.66	3.0%	0.10	0.37	16.9	1.9	11.6
D2	4.64	8.4%	0.15	0.40	22.7	2.0	8.9
E	8.33	5.5%	0.13	0.38	33.5	2.4	12.3
F	0.84	7.0%	0.14	0.39	9.9	0.5	2.3
G	1.17	10.7%	0.15	0.40	9.1	0.7	3.3
H	0.51	2.0%	0.09	0.36	13.5	0.2	1.1
OS1	65.25	5.2%	0.11	0.38	52.9	11.9	67.0

PROPOSED CONDITIONS - DESIGN POINT SUMMARY TABLE

DP#	$Q_{5\text{-YR}}$	$Q_{100\text{-YR}}$
1	11.9	67.0
2	12.1	68.2
3	12.7	70.5
4	1.9	11.6
5	15.6	84.6
6	2.4	12.3
7	0.5	2.3
8	0.7	3.3
9	0.2	1.1

50 25 0 50 100

ORIGINAL SCALE: 1" = 50'

PROPOSED DRAINAGE MAP

JJ RANCH SUBDIVISION

JOB NO. 24023 | SHEET 3

LOCATION: EPC

05/27/2025

ALL TERRAIN ENGINEERING