PRELIMINARY DRAINAGE REPORT: FITWELL HEALTH CAMPUS MENIFEE

Proposed Commercial Development

Menifee, California

ACG Project No. 1010602

July 16, 2025

Site Location:

Parcel 3 of PM 18039
Haun Road
Menifee, CA 92584

Prepared For:

NT Thomas Construction
PO Box 5810
Orange, CA 92863
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Prepared By:

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HYDROLOGY MANUAL PLATES USED

PRELIMINARY GRADING AND DRAINAGE PLAN

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INTRODUCTION

This preliminary drainage report has been prepared for the proposed Fitwell Health Campus development, located on Parcel 3 of Parcel Map 18039 in the City of Menifee, California. The site is approximately 4,000 feet north of the intersection of Haun Road and Scott Road and encompasses approximately 8.27 acres. The property is bordered by undeveloped fallow farmland to the north and west, a storage facility to the south, and the 215 Freeway drainage channel to the east (hereafter referred to as the "Property"). The site location and surrounding areas are illustrated in Figure 1, Vicinity Map.

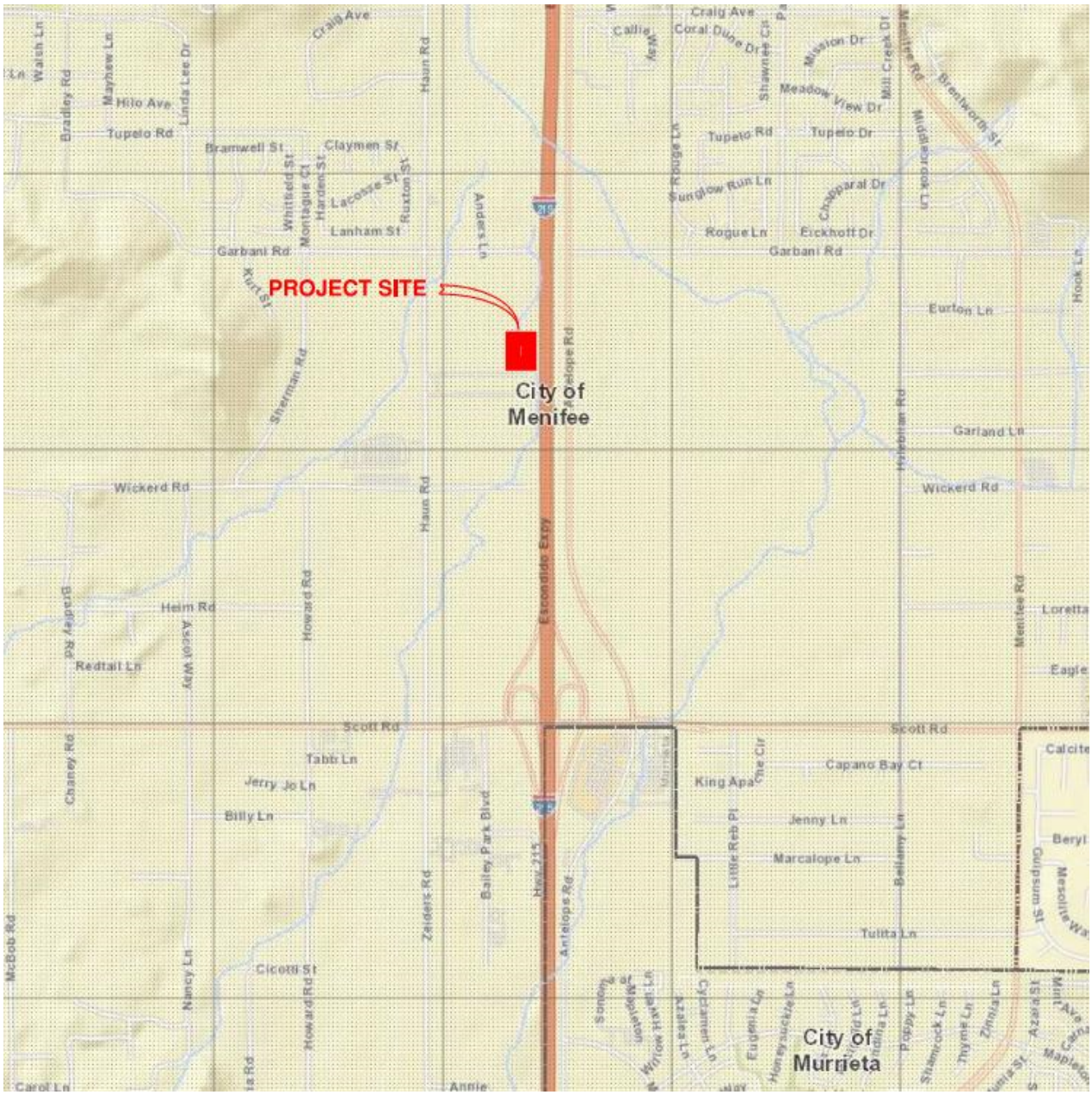


FIGURE 1: Vicinity Map (North is up) Source: Riverside County GIS

EXISTING CONDITION

The site is currently undeveloped fallow farmland. Stormwater generally sheet flows toward a low point located in the northeast portion of the site. Historically, runoff from the project area and surrounding properties has drained toward a natural flow line near the center of the site and ultimately flowed northeasterly into the 215 Freeway drainage channel. An aerial image of the site is shown in Figure 2.



FIGURE 2: Aerial Image Source: Google Earth

According to the FEMA Flood Map (see Appendices), the Property is located within Flood Zone "X" (Area of Minimal Flood Hazard).

PROPOSED CONDITION

The proposed development includes a 63,802-square-foot main building comprising a fitness gym, multipurpose center, and bodybuilding museum. A potential future office building of approximately 16,000 square feet is also planned, along with associated parking areas and landscaping (the "Project").

Under proposed conditions, stormwater will continue to sheet flow in a northeasterly direction across the parking lot, where it will be collected by a series of biofiltration planters. After treatment, runoff will enter a private storm drain system consisting of PVC pipes, area drain inlets, and three 24"x24" grated inlets. The flows will be conveyed to two underground storage chambers with a combined capacity of 4,274 cubic feet (see Preliminary Detention Sizing section), and then discharged through a headwall at the north property line at the site's existing low point. The proposed drainage pattern maintains the historical flow direction.

The drainage system is designed to convey the 10-year storm event under open channel flow conditions and the 100-year storm event under pressure flow with overland relief. Since the site drains to a low point at elevation 1470.00 at the northern boundary, all site areas above this elevation are not at risk of flooding, thereby confirming the system's ability to safely convey the 100-year storm.

Although the site does not discharge to receiving waters susceptible to hydromodification, the system has been designed to detain the increase in runoff volume between the existing and proposed 100-year storm conditions as a precautionary measure.

The Project is subject to the Santa Ana Watershed Water Quality Management Plan (WQMP) requirements. A separate WQMP has been prepared, detailing the stormwater quality measures. Infiltration and harvest/reuse options were evaluated but deemed infeasible. As a result, biofiltration planters will be used to meet water quality treatment standards.

Flow rates for the 10-, 25-, and 100-year storm events were calculated using the Rational Method from the County of Riverside Hydrology Manual. Results are summarized in a section below.

Offsite Drainage Note

There is no offsite run-on to consider as part of the onsite drainage system, so this report focuses on onsite preliminary drainage. However, rational method information for two offsite drainage areas (Drainage Areas A and C) that will drain to the new public street being constructed as part of the Project within the existing City right-of-way. The pre-development and post-development peak flows are included to show that there is a very minor increase in peak flow within the City right-of-way. Please note that the water quality impacts for these improvements are addressed in the Project WQMP with prefabricated biofiltration devices. Those devices have some inherent detention features that will help mitigate the minor increase in peak runoff and increase in drainage volume.

RESULTS

Peak Flow Rates

Drainage Area A

	Pre-Development:	Post Development:
Q(10) =	7.4 cfs	7.8 cfs
Q(25) =	9.1 cfs	9.6 cfs
Q(100) =	12.5 cfs	13.2 cfs

Drainage Area B

	Pre-Development:	Post Development:
Q(10) =	8.5 cfs	13.5 cfs
Q(25) =	10.5 cfs	16.0 cfs
Q(100) =	14.4 cfs	20.8 cfs

Drainage Area C

	Pre-Development:	Post Development:
Q(10) =	3.1 cfs	3.3 cfs
Q(25) =	3.8 cfs	4.0 cfs
Q(100) =	5.2 cfs	5.5 cfs

Preliminary Drainage Pipe Sizing

Stormwater will be conveyed via a private system of PVC pipes, area drain inlets, and three 24”x24” grated inlets. Prior to entering this system, runoff will be treated by the biofiltration planters. Flow will be directed to two underground detention chambers, which store up to 4,274 cubic feet before discharging at the north property line. This configuration maintains consistency with historic drainage conditions.

The on-site drainage system is designed to accommodate the 10-year storm under open channel conditions, with overland relief at the project’s low point to manage larger storm events. A summary of preliminary pipe sizing is provided below. Final hydraulic calculations will be completed during final design.

Pipe Size (inches)	Slope (ft/ft)	Q (cfs)
12”	0.005	2.19
18”	0.005	6.92
24”	0.005	10.90
30”	0.005	27.00

Preliminary Detention Sizing

Detention sizing was determined by comparing unit hydrographs for the existing and proposed 100-year storm conditions using the Riverside County Flood Control HEC-HMS tool. The detention volume was calculated to offset the increase in runoff volume. Based on this analysis, a detention capacity of 3,920 cubic feet is required.

Two underground storage chambers will provide a total of 4,274 cubic feet:

- Basin B-1: 2,571 cubic feet
- Basin B-2: 1,703 cubic feet

These volumes exceed the required detention volume and have been allocated proportionally to each drainage area, thereby satisfying the mitigation requirements.

RECOMMENDATIONS

This analysis demonstrates that the Project will not adversely impact stormwater runoff on-site or downstream. The 100-year storm can be safely conveyed through the designed system. Any increase in peak runoff will be mitigated by on-site detention. Water quality requirements will be met through biofiltration in accordance with the WQMP.

As the Project moves into final design and construction, the flow rates and drainage strategies outlined in this report should be used to refine and finalize pipe sizing and system layout.

APPENDICES

HYDROLOGY MAP - EXISTING CONDITION

HYDROLOGY MAP - PROPOSED CONDITION

RATIONAL METHOD AES CALCULATIONS

UNIT HYDROGRAPH EXSITING CONDITIONS 100 YEAR

UNIT HYDROGRAPH PROPOSED CONDITIONS 100 YEAR

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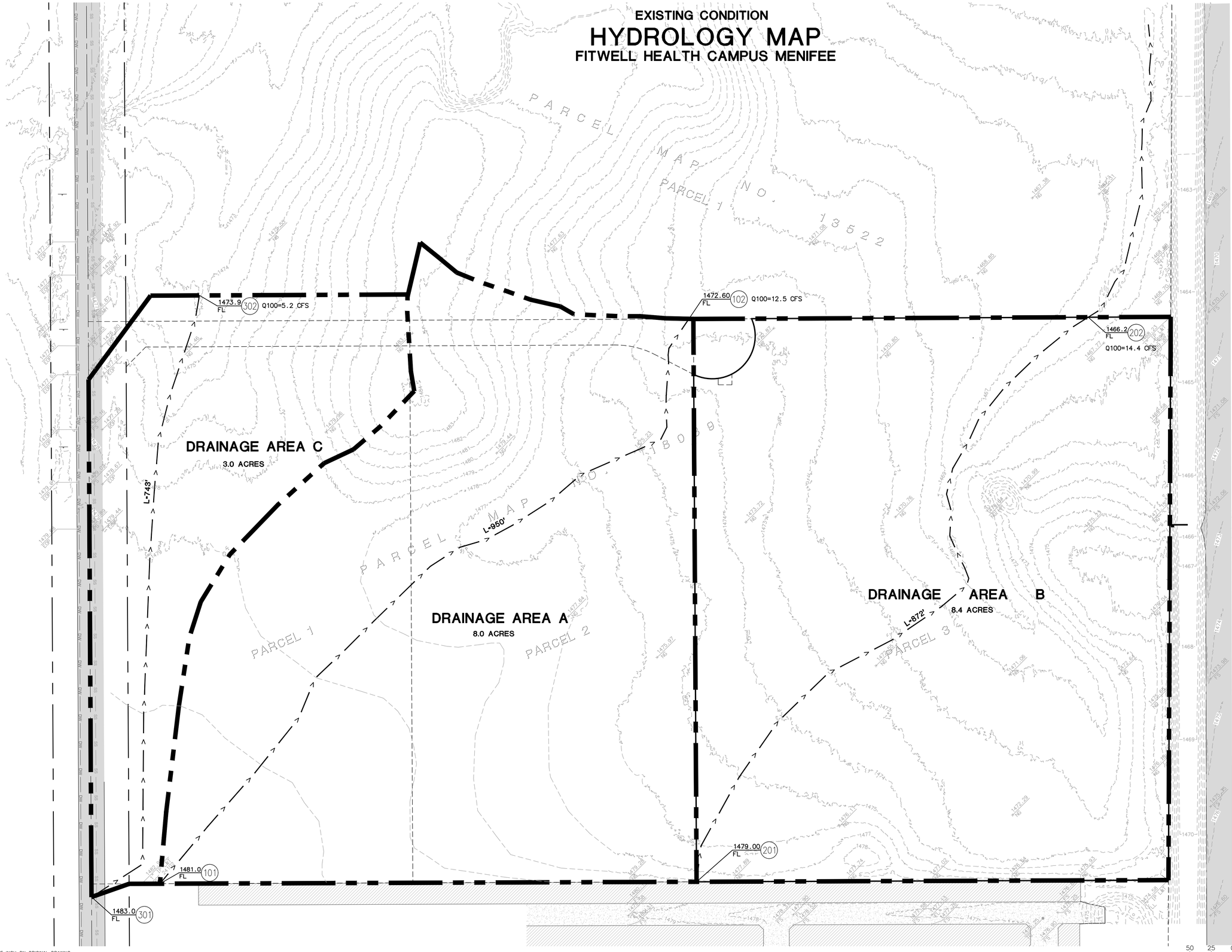
HYDROLOGY MAP

EXISTING CONDITION

EXISTING CONDITION

HYDROLOGY MAP

FITWELL HEALTH CAMPUS MENIFEE



BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

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SEAL—ENGINEER

REGISTERED PROFESSIONAL ENGINEER
R. STEVEN AUSTIN
No. 68795
CIVIL
STATE OF CALIFORNIA

FITWELL HEALTH CAMPUS MENIFEE
EXISTING CONDITIONS - HYDROLOGY MAP
APN: 360-350-014
MENIFEE, CA

DRAWN BY:	JRW
DESIGNED BY:	JRW
CHECKED BY:	RSA
APPROVED BY:	RSA
DATE:	7/15/2025
REVISIONS:	
PROJECT NUMBER:	1010602

SHEET NO.

HYDRO-E

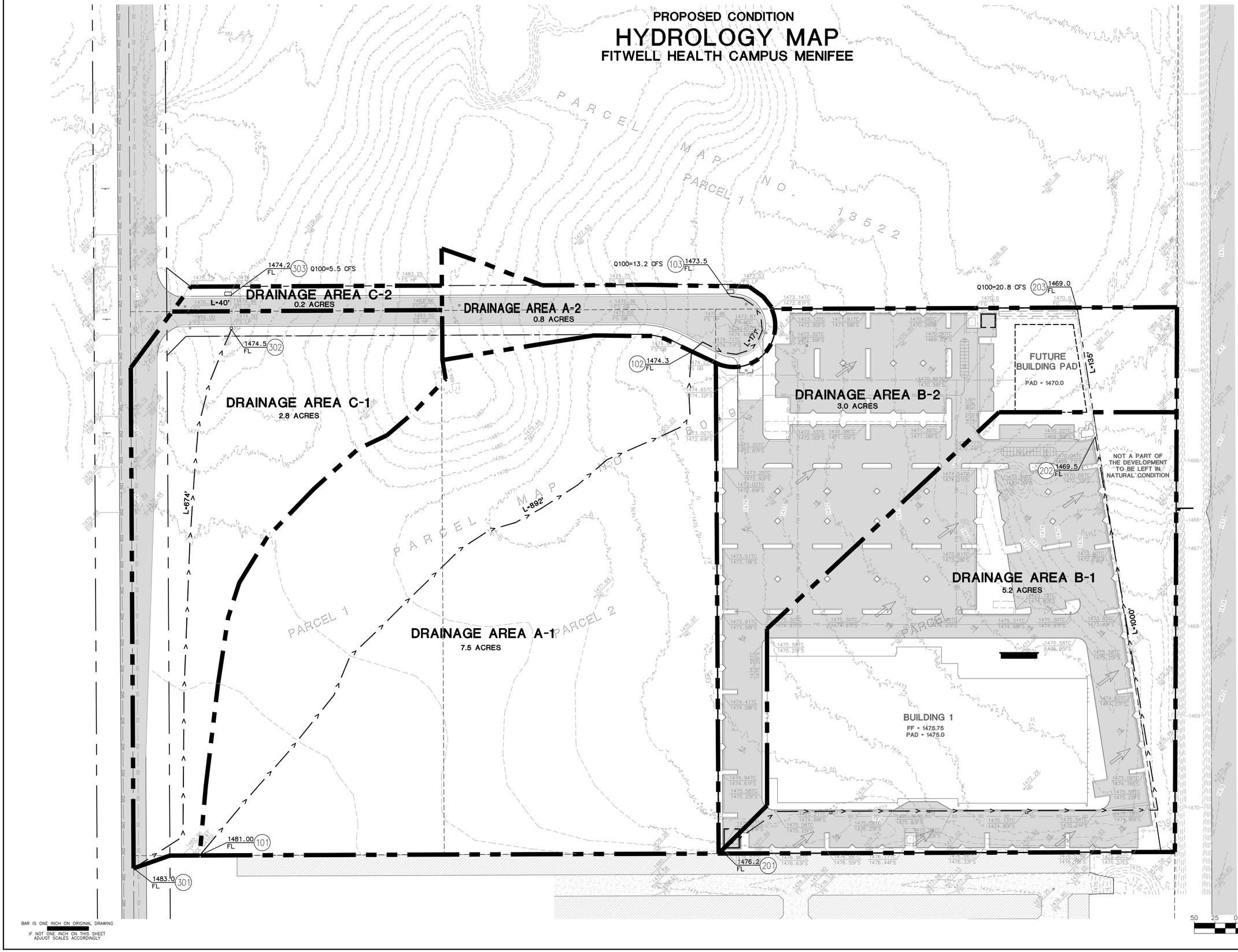
HYDROLOGY MAP

PROPSED CONDITION

PROPOSED CONDITION

HYDROLOGY MAP

FITWELL HEALTH CAMPUS MENIFEE



BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

SCALE: 1"=50'

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PROPOSED CONDITIONS - HYDROLOGY MAP
APN: 360-350-014
MENIFEE, CA

DRAWN BY: JRW
DESIGNED BY: JRW
CHECKED BY: RSA
APPROVED BY: RSA
DATE: 7/15/2025
REVISIONS:

PROJECT NUMBER: 1010602

SHEET NO.

HYDRO-P

2 OF 2

RATIONAL METHOD

AES CALCULATIONS

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
          RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                        (RCFC&WCD)  1978 HYDROLOGY MANUAL
           (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                        (Rational Tabling Version 23.0)
                    Release Date: 07/01/2016  License ID 1591

                              Analysis prepared by:

                            Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* EXISTING CONDITION                                                    *
* 10 YEAR                                                               *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: EX10YR.DAT
  TIME/DATE OF STUDY: 12:31 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.817
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *PIPE MAY BE SIZED TO HAVE A FLOW CAPACITY LESS THAN
```

```
   UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1472.60
  ELEVATION DIFFERENCE(FEET) =      8.40
  TC = 0.533*[(  950.00**3)/(     8.40)]**.2 =   21.290
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.444
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6361
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      7.35
  TOTAL AREA(ACRES) =      8.00   TOTAL RUNOFF(CFS) =      7.35   DRAINAGE AREA A

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.00
  UPSTREAM ELEVATION(FEET) =   1479.00
  DOWNSTREAM ELEVATION(FEET) =   1466.20
  ELEVATION DIFFERENCE(FEET) =     12.80
  TC = 0.533*[(  872.00**3)/(    12.80)]**.2 =   18.590
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.556
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6498
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      8.49
  TOTAL AREA(ACRES) =      8.40   TOTAL RUNOFF(CFS) =      8.49   DRAINAGE AREA B

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   743.00
  UPSTREAM ELEVATION(FEET) =   1483.00
```

```
  DOWNSTREAM ELEVATION(FEET) =   1473.90
  ELEVATION DIFFERENCE(FEET) =      9.10
  TC = 0.533*[(  743.00**3)/(     9.10)]**.2 =   18.080
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.580
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6525
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      3.09
  TOTAL AREA(ACRES) =      3.00   TOTAL RUNOFF(CFS) =      3.09
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.0  TC(MIN.) =     18.08
  PEAK FLOW RATE(CFS)   =       3.09
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

DRAINAGE AREA C

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1591

                          Analysis prepared by:

                        Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* EXISTING CONDITION                                                    *
* 25 YEAR                                                               *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: EX25YR.DAT
  TIME/DATE OF STUDY: 13:12 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) =   0.965
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *PIPE MAY BE SIZED TO HAVE A FLOW CAPACITY LESS THAN
```

```
   UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1472.60
  ELEVATION DIFFERENCE(FEET) =      8.40
  TC = 0.533*[(  950.00**3)/(     8.40)]**.2 =   21.290
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.706
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6661
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      9.09
  TOTAL AREA(ACRES) =      8.00   TOTAL RUNOFF(CFS) =      9.09   DRAINAGE AREA A

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.00
  UPSTREAM ELEVATION(FEET) =   1479.00
  DOWNSTREAM ELEVATION(FEET) =   1466.20
  ELEVATION DIFFERENCE(FEET) =     12.80
  TC = 0.533*[(  872.00**3)/(    12.80)]**.2 =   18.590
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.838
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6788
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     10.48
  TOTAL AREA(ACRES) =      8.40   TOTAL RUNOFF(CFS) =     10.48   DRAINAGE AREA B

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   743.00
  UPSTREAM ELEVATION(FEET) =   1483.00
```

```
  DOWNSTREAM ELEVATION(FEET) =   1473.90
  ELEVATION DIFFERENCE(FEET) =      9.10
  TC = 0.533*[(  743.00**3)/(     9.10)]**.2 =   18.080
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.867
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6813
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      3.82
  TOTAL AREA(ACRES) =      3.00   TOTAL RUNOFF(CFS) =      3.82
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.0  TC(MIN.) =     18.08
  PEAK FLOW RATE(CFS)   =       3.82
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

DRAINAGE AREA C

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
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                Release Date: 07/01/2016  License ID 1591

                          Analysis prepared by:

                        Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* EXISTING CONDITION                                                    *
* 100 YEAR                                                              *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: EX100YR.DAT
  TIME/DATE OF STUDY: 13:20 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.250
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
```

```
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
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============================================================================
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  INITIAL SUBAREA FLOW-LENGTH(FEET) =   950.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1472.60
  ELEVATION DIFFERENCE(FEET) =      8.40
  TC = 0.533*[(  950.00**3)/(     8.40)]**.2 =   21.290
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.210
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7081
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     12.52
  TOTAL AREA(ACRES) =      8.00   TOTAL RUNOFF(CFS) =     12.52    DRAINAGE AREA A

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   872.00
  UPSTREAM ELEVATION(FEET) =   1479.00
  DOWNSTREAM ELEVATION(FEET) =   1466.20
  ELEVATION DIFFERENCE(FEET) =     12.80
  TC = 0.533*[(  872.00**3)/(    12.80)]**.2 =   18.590
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.381
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7191
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     14.38
  TOTAL AREA(ACRES) =      8.40   TOTAL RUNOFF(CFS) =     14.38    DRAINAGE AREA B

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   743.00
  UPSTREAM ELEVATION(FEET) =   1483.00
```

```
  DOWNSTREAM ELEVATION(FEET) =   1473.90
  ELEVATION DIFFERENCE(FEET) =      9.10
  TC = 0.533*[(  743.00**3)/(     9.10)]**.2 =   18.080
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.418
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7213
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      5.23
  TOTAL AREA(ACRES) =      3.00   TOTAL RUNOFF(CFS) =      5.23
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =        3.0  TC(MIN.) =     18.08
  PEAK FLOW RATE(CFS)   =       5.23
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

DRAINAGE AREA C

```
******************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
          RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                       (RCFC&WCD)  1978 HYDROLOGY MANUAL
           (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                       (Rational Tabling Version 23.0)
                   Release Date: 07/01/2016  License ID 1591

                              Analysis prepared by:

                            Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED CONDITION                                                    *
* 10 YEAR                                                               *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: PR10YR.DAT
  TIME/DATE OF STUDY: 15:51 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   10.00   1-HOUR INTENSITY(INCH/HOUR) =   0.817
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *PIPE MAY BE SIZED TO HAVE A FLOW CAPACITY LESS THAN
```

```
   UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   892.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1474.30
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.533*[(  892.00**3)/(     6.70)]**.2 =   21.449
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.438
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6353
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      6.85
  TOTAL AREA(ACRES) =      7.50   TOTAL RUNOFF(CFS) =      6.85

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1474.30  DOWNSTREAM ELEVATION(FEET) = 1473.50
  STREET LENGTH(FEET) =   171.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       7.34
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.50
    HALFSTREET FLOOD WIDTH(FEET) =   19.10
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.13
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.07
  STREET FLOW TRAVEL TIME(MIN.) =   1.34   Tc(MIN.) =   22.79
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.391
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8729
  SOIL CLASSIFICATION IS "C"
```

```
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    0.97
  TOTAL AREA(ACRES) =        8.3        PEAK FLOW RATE(CFS) =       7.82    DRAINAGE AREA A

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.51   HALFSTREET FLOOD WIDTH(FEET) =  19.57
  FLOW VELOCITY(FEET/SEC.) =  2.16   DEPTH*VELOCITY(FT*FT/SEC.) =   1.11
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =    1063.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =   1476.20
  DOWNSTREAM ELEVATION(FEET) =   1469.50
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.303*[( 1000.00**3)/(     6.70)]**.2 =   13.073
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.888
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8783
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      8.62
  TOTAL AREA(ACRES) =      5.20   TOTAL RUNOFF(CFS) =      8.62

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1467.50  DOWNSTREAM(FEET) =  1467.00
  FLOW LENGTH(FEET) =   135.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.53
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       8.62
  PIPE TRAVEL TIME(MIN.) =   0.50    Tc(MIN.) =   13.57
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =    1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.850
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8780
  SOIL CLASSIFICATION IS "C"
```

```
  SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    4.87
  TOTAL AREA(ACRES) =        8.2   TOTAL RUNOFF(CFS) =      13.50
  TC(MIN.) =   13.57

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   674.00
  UPSTREAM ELEVATION(FEET) =   1483.00
  DOWNSTREAM ELEVATION(FEET) =   1474.50
  ELEVATION DIFFERENCE(FEET) =      8.50
  TC = 0.533*[(  674.00**3)/(     8.50)]**.2 =   17.287
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.619
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6569
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      2.98
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =      2.98

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1470.50  DOWNSTREAM(FEET) =  1470.20
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   9.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.48
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       2.98
  PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =   17.44
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    303.00 =     714.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    10 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.611
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8756
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.28
  TOTAL AREA(ACRES) =        3.0   TOTAL RUNOFF(CFS) =      3.26
  TC(MIN.) =   17.44
============================================================================
```

DRAINAGE AREA B

DRAINAGE AREA C

```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         3.0  TC(MIN.) =     17.44
  PEAK FLOW RATE(CFS)   =        3.26
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
         (c) Copyright 1982-2016 Advanced Engineering Software (aes)
                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1591

                          Analysis prepared by:

                        Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED CONDITION                                                    *
* 25 YEAR                                                               *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: PR25YR.DAT
  TIME/DATE OF STUDY: 15:57 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =   25.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =   25.00   1-HOUR INTENSITY(INCH/HOUR) =   0.965
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *PIPE MAY BE SIZED TO HAVE A FLOW CAPACITY LESS THAN
```

```
   UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   892.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1474.30
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.533*[(  892.00**3)/(     6.70)]**.2 =   21.449
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.699
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6654
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      8.48
  TOTAL AREA(ACRES) =      7.50   TOTAL RUNOFF(CFS) =      8.48

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1474.30  DOWNSTREAM ELEVATION(FEET) = 1473.50
  STREET LENGTH(FEET) =   171.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       9.06
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.53
    HALFSTREET FLOOD WIDTH(FEET) =   20.74
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.24
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.20
  STREET FLOW TRAVEL TIME(MIN.) =   1.27   Tc(MIN.) =   22.72
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.646
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8760
  SOIL CLASSIFICATION IS "C"
```

```
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    1.15
  TOTAL AREA(ACRES) =        8.3        PEAK FLOW RATE(CFS) =       9.63

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.54   HALFSTREET FLOOD WIDTH(FEET) =  21.29
  FLOW VELOCITY(FEET/SEC.) =  2.27   DEPTH*VELOCITY(FT*FT/SEC.) =   1.23
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =    1063.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =   1476.20
  DOWNSTREAM ELEVATION(FEET) =   1469.50
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.303*[( 1000.00**3)/(     6.70)]**.2 =   13.073
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.231
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8809
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     10.22
  TOTAL AREA(ACRES) =      5.20   TOTAL RUNOFF(CFS) =     10.22

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1467.50  DOWNSTREAM(FEET) =  1467.00
  FLOW LENGTH(FEET) =   135.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  15.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.80
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.22
  PIPE TRAVEL TIME(MIN.) =   0.47    Tc(MIN.) =   13.54
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =    1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.188
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8807
  SOIL CLASSIFICATION IS "C"
```

DRAINAGE AREA A

```
  SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    5.78
  TOTAL AREA(ACRES) =        8.2   TOTAL RUNOFF(CFS) =      16.00
  TC(MIN.) =   13.54

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   674.00
  UPSTREAM ELEVATION(FEET) =   1483.00
  DOWNSTREAM ELEVATION(FEET) =   1474.50
  ELEVATION DIFFERENCE(FEET) =      8.50
  TC = 0.533*[(  674.00**3)/(     8.50)]**.2 =   17.287
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.913
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6854
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      3.67
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =      3.67

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1470.50  DOWNSTREAM(FEET) =  1470.20
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   8.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.86
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.67
  PIPE TRAVEL TIME(MIN.) =   0.14    Tc(MIN.) =   17.42
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    303.00 =     714.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
    25 YEAR RAINFALL INTENSITY(INCH/HOUR) =  1.905
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8785
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.33
  TOTAL AREA(ACRES) =        3.0   TOTAL RUNOFF(CFS) =      4.01
  TC(MIN.) =   17.42
============================================================================
```

DRAINAGE AREA B

DRAINAGE AREA C

```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         3.0  TC(MIN.) =     17.42
  PEAK FLOW RATE(CFS)   =       4.01
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

```
**************************************************************************
          RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM BASED ON
        RIVERSIDE COUNTY FLOOD CONTROL & WATER CONSERVATION DISTRICT
                    (RCFC&WCD)  1978 HYDROLOGY MANUAL
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                    (Rational Tabling Version 23.0)
                Release Date: 07/01/2016  License ID 1591

                          Analysis prepared by:

                        Advanced Civil Group, Inc.



 ************************* DESCRIPTION OF STUDY *************************
* PROPOSED CONDITION                                                    *
* 100 YEAR                                                              *
* FITWELL CAMPUS MENIFEE                                                *
 ************************************************************************

  FILE NAME: PR100YR.DAT
  TIME/DATE OF STUDY: 16:03 07/17/2025
--------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
--------------------------------------------------------------------------
  USER SPECIFIED STORM EVENT(YEAR) =  100.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   4.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 1.00
  2-YEAR, 1-HOUR PRECIPITATION(INCH) =  0.500
  100-YEAR, 1-HOUR PRECIPITATION(INCH) =  1.250
  COMPUTED RAINFALL INTENSITY DATA:
  STORM EVENT =  100.00   1-HOUR INTENSITY(INCH/HOUR) =   1.250
  SLOPE OF INTENSITY DURATION CURVE = 0.5500
  RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: COMPUTE CONFLUENCE VALUES ACCORDING TO RCFC&WCD HYDROLOGY MANUAL
        AND IGNORE OTHER CONFLUENCE COMBINATIONS FOR DOWNSTREAM ANALYSES
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0312 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
```

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   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   892.00
  UPSTREAM ELEVATION(FEET) =   1481.00
  DOWNSTREAM ELEVATION(FEET) =   1474.30
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.533*[(  892.00**3)/(     6.70)]**.2 =   21.449
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.201
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7075
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     11.68
  TOTAL AREA(ACRES) =      7.50   TOTAL RUNOFF(CFS) =     11.68

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  62
----------------------------------------------------------------------------
  >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
  UPSTREAM ELEVATION(FEET) = 1474.30  DOWNSTREAM ELEVATION(FEET) = 1473.50
  STREET LENGTH(FEET) =   171.00   CURB HEIGHT(INCHES) =  8.0
  STREET HALFWIDTH(FEET) = 30.00

  DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
  INSIDE STREET CROSSFALL(DECIMAL) =  0.018
  OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

  SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
  STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
  Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
  Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      12.43
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.58
    HALFSTREET FLOOD WIDTH(FEET) =   23.55
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    2.41
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    1.41
  STREET FLOW TRAVEL TIME(MIN.) =   1.18   Tc(MIN.) =   22.63
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.137
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8803
  SOIL CLASSIFICATION IS "C"
```

```
  SUBAREA AREA(ACRES) =    0.80      SUBAREA RUNOFF(CFS) =    1.51
  TOTAL AREA(ACRES) =        8.3        PEAK FLOW RATE(CFS) =      13.18   DRAINAGE AREA A

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.59   HALFSTREET FLOOD WIDTH(FEET) =  24.10
  FLOW VELOCITY(FEET/SEC.) =  2.45   DEPTH*VELOCITY(FT*FT/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =    1063.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS COMMERCIAL
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =  1000.00
  UPSTREAM ELEVATION(FEET) =   1476.20
  DOWNSTREAM ELEVATION(FEET) =   1469.50
  ELEVATION DIFFERENCE(FEET) =      6.70
  TC = 0.303*[( 1000.00**3)/(     6.70)]**.2 =   13.073
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.890
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8845
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =     13.29
  TOTAL AREA(ACRES) =      5.20   TOTAL RUNOFF(CFS) =     13.29

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1467.50  DOWNSTREAM(FEET) =  1467.00
  FLOW LENGTH(FEET) =   135.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  19.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.99
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      13.29
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =   13.52
  LONGEST FLOWPATH FROM NODE    201.00 TO NODE    203.00 =    1135.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.837
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8843
  SOIL CLASSIFICATION IS "C"
```

```
  SUBAREA AREA(ACRES) =    3.00   SUBAREA RUNOFF(CFS) =    7.53
  TOTAL AREA(ACRES) =        8.2   TOTAL RUNOFF(CFS) =      20.82
  TC(MIN.) =   13.52

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
         ASSUMED INITIAL SUBAREA UNIFORM
         DEVELOPMENT IS: UNDEVELOPED WITH POOR COVER
  TC = K*[(LENGTH**3)/(ELEVATION CHANGE)]**.2
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   674.00
  UPSTREAM ELEVATION(FEET) =   1483.00
  DOWNSTREAM ELEVATION(FEET) =   1474.50
  ELEVATION DIFFERENCE(FEET) =      8.50
  TC = 0.533*[(  674.00**3)/(     8.50)]**.2 =   17.287
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.478
  UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .7248
  SOIL CLASSIFICATION IS "C"
  SUBAREA RUNOFF(CFS) =      5.03
  TOTAL AREA(ACRES) =      2.80   TOTAL RUNOFF(CFS) =      5.03

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    303.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =  1470.50  DOWNSTREAM(FEET) =  1470.20
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  11.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.16
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.03
  PIPE TRAVEL TIME(MIN.) =   0.13    Tc(MIN.) =   17.42
  LONGEST FLOWPATH FROM NODE    301.00 TO NODE    303.00 =     714.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    303.00 TO NODE    303.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.468
  COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8824
  SOIL CLASSIFICATION IS "C"
  SUBAREA AREA(ACRES) =    0.20   SUBAREA RUNOFF(CFS) =    0.44
  TOTAL AREA(ACRES) =        3.0   TOTAL RUNOFF(CFS) =      5.47
  TC(MIN.) =   17.42
============================================================================
```

DRAINAGE AREA B

DRAINAGE AREA C

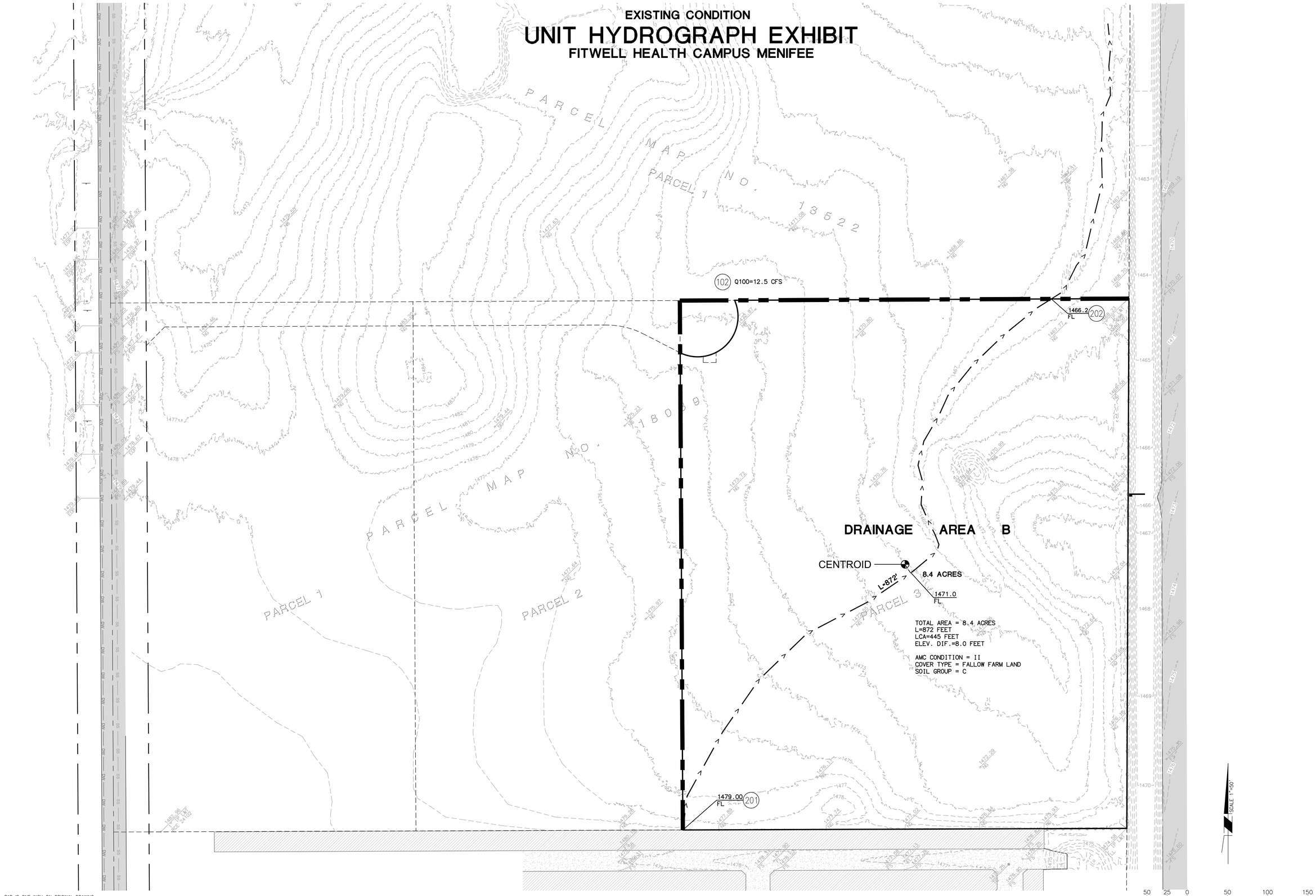
```
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =         3.0  TC(MIN.) =     17.42
  PEAK FLOW RATE(CFS)   =       5.47
================================================================================
================================================================================
  END OF RATIONAL METHOD ANALYSIS
```

UNIT HYDROGRAPH
EXISTING CONDITION
100 YEAR

EXISTING CONDITION

UNIT HYDROGRAPH EXHIBIT

FITWELL HEALTH CAMPUS MENIFEE



BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET
ADJUST SCALES ACCORDINGLY

ADVANCED CIVIL GROUP

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SEAL—ENGINEER

REGISTERED PROFESSIONAL ENGINEER
R. STEVEN AUSTIN
No. 68795
CIVIL
STATE OF CALIFORNIA

FITWELL HEALTH CAMPUS MENIFEE
EXISTING CONDITIONS - UNIT HYDROGRAPH
APN: 360-350-014
MENIFEE, CA

DRAWN BY:	JRW
DESIGNED BY:	JRW
CHECKED BY:	RSA
APPROVED BY:	RSA
DATE:	7/15/2025
REVISIONS:	
PROJECT NUMBER:	1010602

SHEET NO.

HYDRO-E

1 OF 2

HEC HMS Preprocessor

User Manual
Contact Project Planning **(951) 955-1200**

Watershed Area [ ] sq mi

1 Hour Storm	*3 Hour Storm*	*6 Hour Storm*	*24 Hour Storm*
Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [4.7] in.
Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [100] %
Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation 4.7
Slope of Rainfall Intensity - Duration Curve [ ]			

Lag Time Calculator

Basin Factor - n	0.015	
Length along longest watercourse - L	872	ft
Length along longest watercourse measured upstream to a point opposite the centroid of the area - Lca	445	ft
Elevation Difference	8	ft
Lag Time	**0.034**	**hr**
40% Lag Time	0.8	min

Run

Loss Rate Data Effective Rainfall S-Graphs

(●) Average Adjusted Loss Rate Calculator (Plate E-2.1) ( ) Average Adjusted Loss Rate (Manual Entry)

Add Loss Rate Values

AMC Condition: II

Soil Group / Cover Type View Chart	RI Number	Perv. Area Infiltrn Rate (in/hr)	Land Use	Imp. Area Decimal %	Adj.Infiltrn Rate (in/hr)	Area (acres)		
-							Add	

Soil Group / Cover Type	RI Number	Perv. Area Infiltrn Rate (in/hr)	Land Use	Imp. Area Decimal %	Adj.Infiltrn Rate (in/hr)	Area (acres)	Area/ Total Area	Ave. Adj. Rate (in/hr)
Fallow N/A C	90	0.13000	Natural or Agriculture (0)	0	0.13	8.4	1	0.13 X
					Total area =	8.4		
							Average Soil Loss =	0.13

HEC HMS Preprocessor

User Manual
Contact Project Planning **(951) 955-1200**

Watershed Area [ ] sq mi

1 Hour Storm	*3 Hour Storm*	*6 Hour Storm*	*24 Hour Storm*
Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [4.7] in.
Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [100] %
Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation 4.7
Slope of Rainfall Intensity - Duration Curve [ ]			

Lag Time Calculator

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Elevation Difference	8	ft
Lag Time	**0.034**	**hr**
40% Lag Time	0.8	min

Run

Loss Rate Data Effective Rainfall S-Graphs

Unit Time Period [15] min (Use interval less than 40% of lag time)
Low Loss [90] %
Fm (Percentage of F) (24-hour Storm Only) [75] % (Typically 50-75%)

Run

1 Hour

Unit Time	Effective Rainfall (inches)

3 Hour

Unit Time	Effective Rainfall (inches)

6 Hour

Unit Time	Effective Rainfall (inches)

24 Hour

Unit Time	Effective Rainfall (inches)
00:15	0.0009
00:30	0.0014
00:45	0.0014
01:00	0.0019
01:15	0.0014
01:30	0.0014
01:45	0.0014
02:00	0.0019
02:15	0.0019
02:30	0.0019
02:45	0.0024
03:00	0.0024
03:15	0.0024
03:30	0.0024
03:45	0.0024
04:00	0.0028
04:15	0.0028
04:30	0.0033
04:45	0.0033
05:00	0.0038
05:15	0.0028
05:30	0.0033
05:45	0.0038
06:00	0.0038
06:15	0.0048
06:30	0.0051
06:45	0.0101
07:00	0.0103
07:15	0.0106
07:30	0.0156
07:45	0.0206
08:00	0.0255
08:15	0.0352
08:30	0.0355
08:45	0.0404
09:00	0.0454
09:15	0.0550
09:30	0.0600
09:45	0.0650
10:00	0.0699
10:15	0.0373
10:30	0.0375
10:45	0.0612
11:00	0.0615
11:15	0.0570
11:30	0.0573

11:45	0.0481
12:00	0.0530
12:15	0.0862
12:30	0.0911
12:45	0.1007
13:00	0.1056
13:15	0.1293
13:30	0.1296
13:45	0.0781
14:00	0.0783
14:15	0.0973
14:30	0.0928
14:45	0.0930
15:00	0.0885
15:15	0.0840
15:30	0.0795
15:45	0.0609
16:00	0.0611
16:15	0.0019
16:30	0.0019
16:45	0.0014
17:00	0.0014
17:15	0.0024
17:30	0.0024
17:45	0.0024
18:00	0.0019
18:15	0.0019
18:30	0.0019
18:45	0.0014
19:00	0.0009
19:15	0.0014
19:30	0.0019
19:45	0.0014
20:00	0.0009
20:15	0.0014
20:30	0.0014
20:45	0.0014
21:00	0.0009
21:15	0.0014
21:30	0.0009
21:45	0.0014
22:00	0.0009
22:15	0.0014
22:30	0.0009
22:45	0.0009
23:00	0.0009
23:15	0.0009
23:30	0.0009
23:45	0.0009
00:00	0.0009

Unit Hydrograph Calculation - Existing 100 year

Total Storm Rain (in):	4.7
Drainage Area (ac):	8.4
Total Effective Rain (in):	2.48
Runoff Volume (ac-ft):	1.74

#	Time (min)	Pattern %	Storm Rain (in/hr)	RCFCD Preprocessor Effective Rain (in)
1	15	0.2	0.0094	0.0009
2	30	0.3	0.0141	0.0014
3	45	0.3	0.0141	0.0014
4	60	0.4	0.0188	0.0019
5	75	0.3	0.0141	0.0014
6	90	0.3	0.0141	0.0014
7	105	0.3	0.0141	0.0014
8	120	0.4	0.0188	0.0019
9	135	0.4	0.0188	0.0019
10	150	0.4	0.0188	0.0019
11	165	0.5	0.0235	0.0024
12	180	0.5	0.0235	0.0024
13	195	0.5	0.0235	0.0024
14	210	0.5	0.0235	0.0024
15	225	0.5	0.0235	0.0024
16	240	0.6	0.0282	0.0028
17	255	0.6	0.0282	0.0028
18	270	0.7	0.0329	0.0033
19	285	0.7	0.0329	0.0033
20	300	0.8	0.0376	0.0038
21	315	0.6	0.0282	0.0028
22	330	0.7	0.0329	0.0033
23	345	0.8	0.0376	0.0038
24	360	0.8	0.0376	0.0038
25	375	0.9	0.0423	0.0048
26	390	0.9	0.0423	0.0051
27	405	1	0.047	0.0101
28	420	1	0.047	0.0103
29	435	1	0.047	0.0106
30	450	1.1	0.0517	0.0156
31	465	1.2	0.0564	0.0206
32	480	1.3	0.0611	0.0255
33	495	1.5	0.0705	0.0352

34	510	1.5	0.0705	0.0355
35	525	1.6	0.0752	0.0404
36	540	1.7	0.0799	0.0454
37	555	1.9	0.0893	0.055
38	570	2	0.094	0.06
39	585	2.1	0.0987	0.065
40	600	2.2	0.1034	0.0699
41	615	1.5	0.0705	0.0373
42	630	1.5	0.0705	0.0375
43	645	2	0.094	0.0612
44	660	2	0.094	0.0615
45	675	1.9	0.0893	0.057
46	690	1.9	0.0893	0.0573
47	705	1.7	0.0799	0.0481
48	720	1.8	0.0846	0.053
49	735	2.5	0.1175	0.0862
50	750	2.6	0.1222	0.0911
51	765	2.8	0.1316	0.1007
52	780	2.9	0.1363	0.1056
53	795	3.4	0.1598	0.1293
54	810	3.4	0.1598	0.1296
55	825	2.3	0.1081	0.0781
56	840	2.3	0.1081	0.0783
57	855	2.7	0.1269	0.0973
58	870	2.6	0.1222	0.0928
59	885	2.6	0.1222	0.093
60	900	2.5	0.1175	0.0885
61	915	2.4	0.1128	0.084
62	930	2.3	0.1081	0.0795
63	945	1.9	0.0893	0.0609
64	960	1.9	0.0893	0.0611
65	975	0.4	0.0188	0.0019
66	990	0.4	0.0188	0.0019
67	1005	0.3	0.0141	0.0014
68	1020	0.3	0.0141	0.0014
69	1035	0.5	0.0235	0.0024
70	1050	0.5	0.0235	0.0024
71	1065	0.5	0.0235	0.0024
72	1080	0.4	0.0188	0.0019
73	1095	0.4	0.0188	0.0019
74	1110	0.4	0.0188	0.0019
75	1125	0.3	0.0141	0.0014
76	1140	0.2	0.0094	0.0009
77	1155	0.3	0.0141	0.0014

78	1170	0.4	0.0188	0.0019
79	1185	0.3	0.0141	0.0014
80	1200	0.2	0.0094	0.0009
81	1215	0.3	0.0141	0.0014
82	1230	0.3	0.0141	0.0014
83	1245	0.3	0.0141	0.0014
84	1260	0.2	0.0094	0.0009
85	1275	0.3	0.0141	0.0014
86	1290	0.2	0.0094	0.0009
87	1305	0.3	0.0141	0.0014
88	1320	0.2	0.0094	0.0009
89	1335	0.3	0.0141	0.0014
90	1350	0.2	0.0094	0.0009
91	1365	0.2	0.0094	0.0009
92	1380	0.2	0.0094	0.0009
93	1395	0.2	0.0094	0.0009
94	1410	0.2	0.0094	0.0009
95	1425	0.2	0.0094	0.0009
96	1440	0.2	0.0094	0.0009

UNIT HYDROGRAPH
PROPOSED CONDITION
100 YEAR

PROPOSED CONDITION

UNIT HYDROGRAPH EXHIBIT

FITWELL HEALTH CAMPUS MENIFEE

PARCEL MAP NO. 37022

PARCEL 1

PARCEL 2

L=40'

L=1000'

FUTURE BUILDING PAD

PAD = 1470.0

NOT A PART OF THE DEVELOPMENT TO BE LEFT IN NATURAL CONDITION

DRAINAGE AREA B

8.2 ACRES

CENTROID

TOTAL AREA = 8.2 ACRES
L=1,000 FEET
LCA=860 FEET
ELEV. DIF.=4.2 FEET

AMC CONDITION = II
COVER TYPE = IMPERVIOUS 75% +/-
SOIL GROUP = C

BUILDING 1

FF = 1475.75
PAD = 1475.0

201 1476.2 FL

202 1469.5 FL

1472.0 FL

BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

SCALE 1"=50'

50 25 0 50 100 150

SCALE: 1"=50'

ADVANCED CIVIL GROUP

ADVANCED CIVIL GROUP INC.

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WWW.ADVANCEDCIVILGROUP.COM

SEAL—ENGINEER

REGISTERED PROFESSIONAL ENGINEER
R. STEVEN AUSTIN
No. 68795
CIVIL
STATE OF CALIFORNIA

FITWELL HEALTH CAMPUS MENIFEE
PROPOSED CONDITIONS - UNIT HYDROGRAPH
APN: 360-350-014
MENIFEE, CA

DRAWN BY: JRW
DESIGNED BY: JRW
CHECKED BY: RSA
APPROVED BY: RSA
DATE: 7/15/2025
REVISIONS:

PROJECT NUMBER: 1010602

SHEET NO.

HYDRO-P

2 OF 2

HEC HMS Preprocessor

User Manual
Contact Project Planning **(951) 955-1200**

Watershed Area [ ] sq mi

1 Hour Storm	*3 Hour Storm*	*6 Hour Storm*	*24 Hour Storm*
Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [4.7] in.
Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [100] %
Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation 4.7
Slope of Rainfall Intensity - Duration Curve [ ]			

Lag Time Calculator

Basin Factor - n	0.015	
Length along longest watercourse - L	1000	ft
Length along longest watercourse measured upstream to a point opposite the centroid of the area - Lca	860	ft
Elevation Difference	4.2	ft
Lag Time	**0.053**	**hr**
40% Lag Time	1.3	min

Run

Loss Rate Data Effective Rainfall S-Graphs

(●) Average Adjusted Loss Rate Calculator (Plate E-2.1) ( ) Average Adjusted Loss Rate (Manual Entry)

Add Loss Rate Values

AMC Condition: II

Soil Group / Cover Type View Chart	RI Number	Perv. Area Infiltrn Rate (in/hr)	Land Use	Imp. Area Decimal %	Adj.Infiltrn Rate (in/hr)	Area (acres)		
-							Add	

Soil Group / Cover Type	RI Number	Perv. Area Infiltrn Rate (in/hr)	Land Use	Imp. Area Decimal %	Adj.Infiltrn Rate (in/hr)	Area (acres)	Area/ Total Area	Ave. Adj. Rate (in/hr)
Turf Good C	72	0.33800	Mobile Home Park (75)	75	0.11	8.2	1	0.11 X
					Total area =	8.2		
							Average Soil Loss =	0.11

HEC HMS Preprocessor

User Manual
Contact Project Planning **(951) 955-1200**

Watershed Area [ ] sq mi

1 Hour Storm	*3 Hour Storm*	*6 Hour Storm*	*24 Hour Storm*
Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [ ] in.	Point Precipitation [4.7] in.
Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [ ] %	Areal Adjustment Factor [100] %
Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation	Adjusted Point Precipitation 4.7
Slope of Rainfall Intensity - Duration Curve [ ]			

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Elevation Difference	4.2	ft
Lag Time	**0.053**	**hr**
40% Lag Time	1.3	min

Run

Loss Rate Data Effective Rainfall S-Graphs

Unit Time Period [15] min (Use interval less than 40% of lag time)
Low Loss [90] %
Fm (Percentage of F) (24-hour Storm Only) [75] % (Typically 50-75%)

Run

1 Hour

Unit Time	Effective Rainfall (inches)

3 Hour

Unit Time	Effective Rainfall (inches)

6 Hour

Unit Time	Effective Rainfall (inches)

24 Hour

Unit Time	Effective Rainfall (inches)
00:15	0.0009
00:30	0.0014
00:45	0.0014
01:00	0.0019
01:15	0.0014
01:30	0.0014
01:45	0.0014
02:00	0.0019
02:15	0.0019
02:30	0.0019
02:45	0.0024
03:00	0.0024
03:15	0.0024
03:30	0.0024
03:45	0.0024
04:00	0.0028
04:15	0.0028
04:30	0.0033
04:45	0.0033
05:00	0.0046
05:15	0.0028
05:30	0.0004
05:45	0.0054
06:00	0.0056
06:15	0.0106
06:30	0.0108
06:45	0.0157
07:00	0.0160
07:15	0.0162
07:30	0.0211
07:45	0.0261
08:00	0.0310
08:15	0.0406
08:30	0.0409
08:45	0.0458
09:00	0.0507
09:15	0.0603
09:30	0.0652
09:45	0.0701
10:00	0.0751
10:15	0.0424
10:30	0.0426
10:45	0.0663
11:00	0.0665
11:15	0.0620
11:30	0.0622

11:45	0.0530
12:00	0.0579
12:15	0.0910
12:30	0.0959
12:45	0.1055
13:00	0.1103
13:15	0.1340
13:30	0.1342
13:45	0.0827
14:00	0.0829
14:15	0.1018
14:30	0.0973
14:45	0.0975
15:00	0.0930
15:15	0.0884
15:30	0.0839
15:45	0.0652
16:00	0.0654
16:15	0.0019
16:30	0.0019
16:45	0.0014
17:00	0.0014
17:15	0.0003
17:30	0.0005
17:45	0.0006
18:00	0.0019
18:15	0.0019
18:30	0.0019
18:45	0.0014
19:00	0.0009
19:15	0.0014
19:30	0.0019
19:45	0.0014
20:00	0.0009
20:15	0.0014
20:30	0.0014
20:45	0.0014
21:00	0.0009
21:15	0.0014
21:30	0.0009
21:45	0.0014
22:00	0.0009
22:15	0.0014
22:30	0.0009
22:45	0.0009
23:00	0.0009
23:15	0.0009
23:30	0.0009
23:45	0.0009
00:00	0.0009

Unit Hydrograph Calculation - Proposed 100 year

Total Storm Rain (in):	4.7
Drainage Area (ac):	8.2
Total Effective Rain (in):	2.68
Runoff Volume (ac-ft):	1.83

#	Time (min)	Pattern %	Storm Rain (in/hr)	RCFCD Preprocessor Effective Rain (in)
1	15	0.2	0.0094	0.0009
2	30	0.3	0.0141	0.0014
3	45	0.3	0.0141	0.0014
4	60	0.4	0.0188	0.0019
5	75	0.3	0.0141	0.0014
6	90	0.3	0.0141	0.0014
7	105	0.3	0.0141	0.0014
8	120	0.4	0.0188	0.0019
9	135	0.4	0.0188	0.0019
10	150	0.4	0.0188	0.0019
11	165	0.5	0.0235	0.0024
12	180	0.5	0.0235	0.0024
13	195	0.5	0.0235	0.0024
14	210	0.5	0.0235	0.0024
15	225	0.5	0.0235	0.0024
16	240	0.6	0.0282	0.0028
17	255	0.6	0.0282	0.0028
18	270	0.7	0.0329	0.0033
19	285	0.7	0.0329	0.0033
20	300	0.8	0.0376	0.0046
21	315	0.6	0.0282	0.0028
22	330	0.7	0.0329	0.0004
23	345	0.8	0.0376	0.0054
24	360	0.8	0.0376	0.0056
25	375	0.9	0.0423	0.0106
26	390	0.9	0.0423	0.0108
27	405	1	0.047	0.0157
28	420	1	0.047	0.016
29	435	1	0.047	0.0162
30	450	1.1	0.0517	0.0211
31	465	1.2	0.0564	0.0261
32	480	1.3	0.0611	0.031
33	495	1.5	0.0705	0.0406

34	510	1.5	0.0705	0.0409
35	525	1.6	0.0752	0.0458
36	540	1.7	0.0799	0.0507
37	555	1.9	0.0893	0.0603
38	570	2	0.094	0.0652
39	585	2.1	0.0987	0.0701
40	600	2.2	0.1034	0.0751
41	615	1.5	0.0705	0.0424
42	630	1.5	0.0705	0.0426
43	645	2	0.094	0.0663
44	660	2	0.094	0.0665
45	675	1.9	0.0893	0.062
46	690	1.9	0.0893	0.0622
47	705	1.7	0.0799	0.053
48	720	1.8	0.0846	0.0579
49	735	2.5	0.1175	0.091
50	750	2.6	0.1222	0.0959
51	765	2.8	0.1316	0.1055
52	780	2.9	0.1363	0.1103
53	795	3.4	0.1598	0.134
54	810	3.4	0.1598	0.1342
55	825	2.3	0.1081	0.0827
56	840	2.3	0.1081	0.0829
57	855	2.7	0.1269	0.1018
58	870	2.6	0.1222	0.0973
59	885	2.6	0.1222	0.0975
60	900	2.5	0.1175	0.093
61	915	2.4	0.1128	0.0884
62	930	2.3	0.1081	0.0839
63	945	1.9	0.0893	0.0652
64	960	1.9	0.0893	0.0654
65	975	0.4	0.0188	0.0019
66	990	0.4	0.0188	0.0019
67	1005	0.3	0.0141	0.0014
68	1020	0.3	0.0141	0.0014
69	1035	0.5	0.0235	0.0003
70	1050	0.5	0.0235	0.0005
71	1065	0.5	0.0235	0.0006
72	1080	0.4	0.0188	0.0019
73	1095	0.4	0.0188	0.0019
74	1110	0.4	0.0188	0.0019
75	1125	0.3	0.0141	0.0014
76	1140	0.2	0.0094	0.0009
77	1155	0.3	0.0141	0.0014

78	1170	0.4	0.0188	0.0019
79	1185	0.3	0.0141	0.0014
80	1200	0.2	0.0094	0.0009
81	1215	0.3	0.0141	0.0014
82	1230	0.3	0.0141	0.0014
83	1245	0.3	0.0141	0.0014
84	1260	0.2	0.0094	0.0009
85	1275	0.3	0.0141	0.0014
86	1290	0.2	0.0094	0.0009
87	1305	0.3	0.0141	0.0014
88	1320	0.2	0.0094	0.0009
89	1335	0.3	0.0141	0.0014
90	1350	0.2	0.0094	0.0009
91	1365	0.2	0.0094	0.0009
92	1380	0.2	0.0094	0.0009
93	1395	0.2	0.0094	0.0009
94	1410	0.2	0.0094	0.0009
95	1425	0.2	0.0094	0.0009
96	1440	0.2	0.0094	0.0009

DETENTION BASIN SIZING

Unit Hydrograph Comparison for Detention Basin Sizing

Existing 100 Year Runoff Volume	1.74	ac-ft
	75,794	cubic ft
Proposed 100 Year Runoff Volume	1.83	ac-ft
	79,715	cubic ft
Difference	**3,920**	**cubic ft**

Required Detention

Basin B-1 (63% of Storage)	2,470	cubic ft
Basin B-2 (37% of Storage)	1,451	cubic ft
Total Required	**3,920**	**cubic ft**
Basin B-1 Max Length	60	ft
Basin B-2 Max Length	60	ft

Provided Detention

Basin B-1 (63% of Storage)	2,571	cubic ft
Basin B-2 (37% of Storage)	1,703	cubic ft
Total Provided	**4,274**	**cubic ft**

BASIN B-1

User Inputs

Chamber Model:	MC-7200
Outlet Control Structure:	No
Project Name:	Fitwell
Engineer:	Steve Austin
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	2500 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Design Constraint Dimensions:	(18 ft. x 70 ft.)

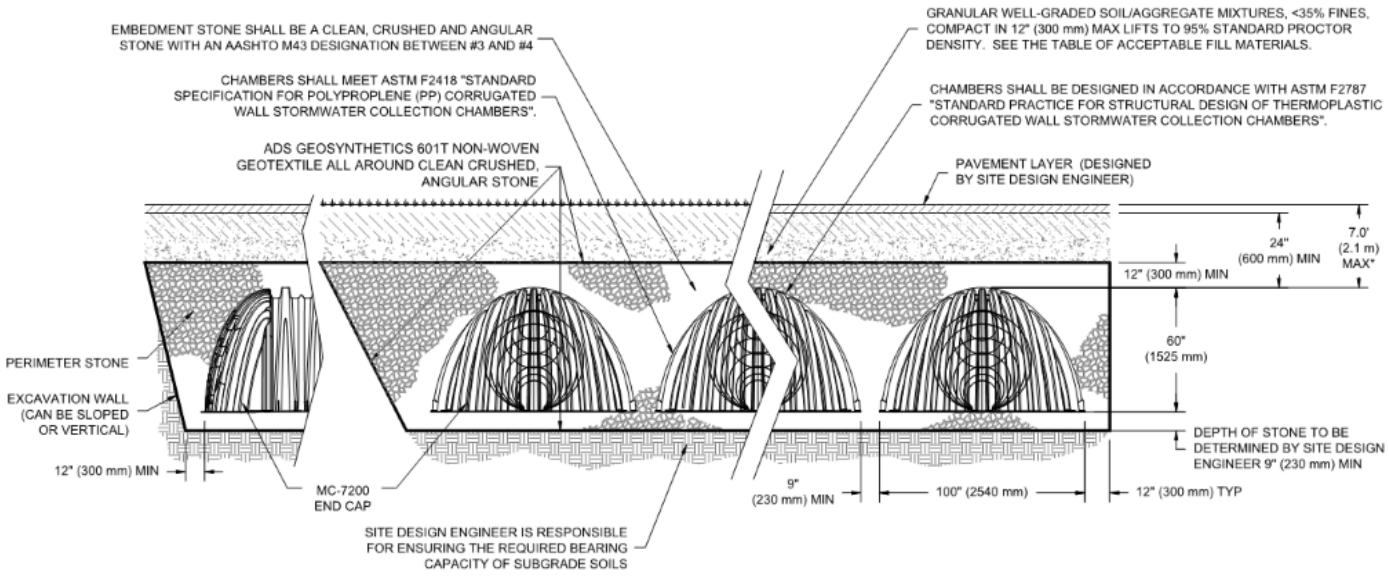
Results

System Volume and Bed Size

Installed Storage Volume:	2571.36 cubic ft.
Storage Volume Per Chamber:	175.90 cubic ft.
Number Of Chambers Required:	8
Number Of End Caps Required:	2
Chamber Rows:	1
Maximum Length:	60.20 ft.
Maximum Width:	10.33 ft.
Approx. Bed Size Required:	622.07 square ft.
Average Cover Over Chambers:	N/A .

System Components

Amount Of Stone Required:	101 cubic yards
Volume Of Excavation (Not Including Fill):	156 cubic yards
Total Non-woven Geotextile Required:	293 square yards
Woven Geotextile Required (excluding Isolator Row):	0 square yards
Woven Geotextile Required (Isolator Row):	136 square yards
Total Woven Geotextile Required:	136 square yards
Impervious Liner Required:	0 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

BASIN B-2

User Inputs

Chamber Model:	MC-7200
Outlet Control Structure:	No
Project Name:	Fitwell
Engineer:	Steve Austin
Project Location:	California
Measurement Type:	Imperial
Required Storage Volume:	1500 cubic ft.
Stone Porosity:	40%
Stone Foundation Depth:	9 in.
Stone Above Chambers:	12 in.
Design Constraint Dimensions:	(18 ft. x 70 ft.)

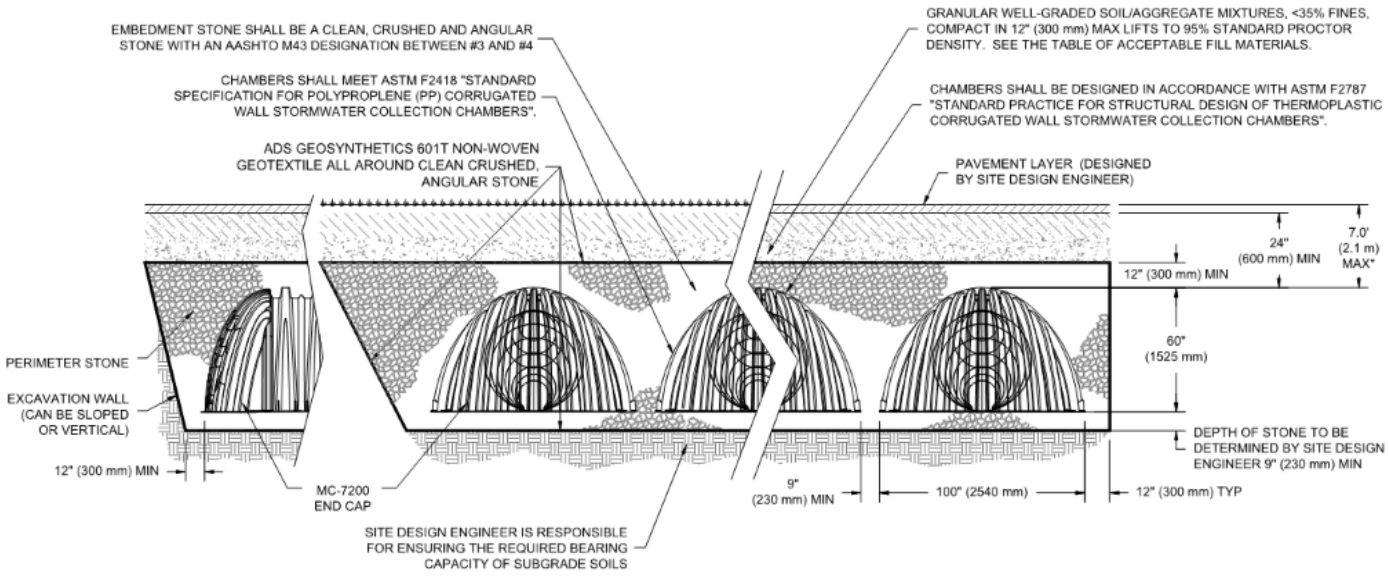
Results

System Volume and Bed Size

Installed Storage Volume:	1703.02 cubic ft.
Storage Volume Per Chamber:	175.90 cubic ft.
Number Of Chambers Required:	5
Number Of End Caps Required:	2
Chamber Rows:	1
Maximum Length:	40.43 ft.
Maximum Width:	10.33 ft.
Approx. Bed Size Required:	417.73 square ft.
Average Cover Over Chambers:	N/A .

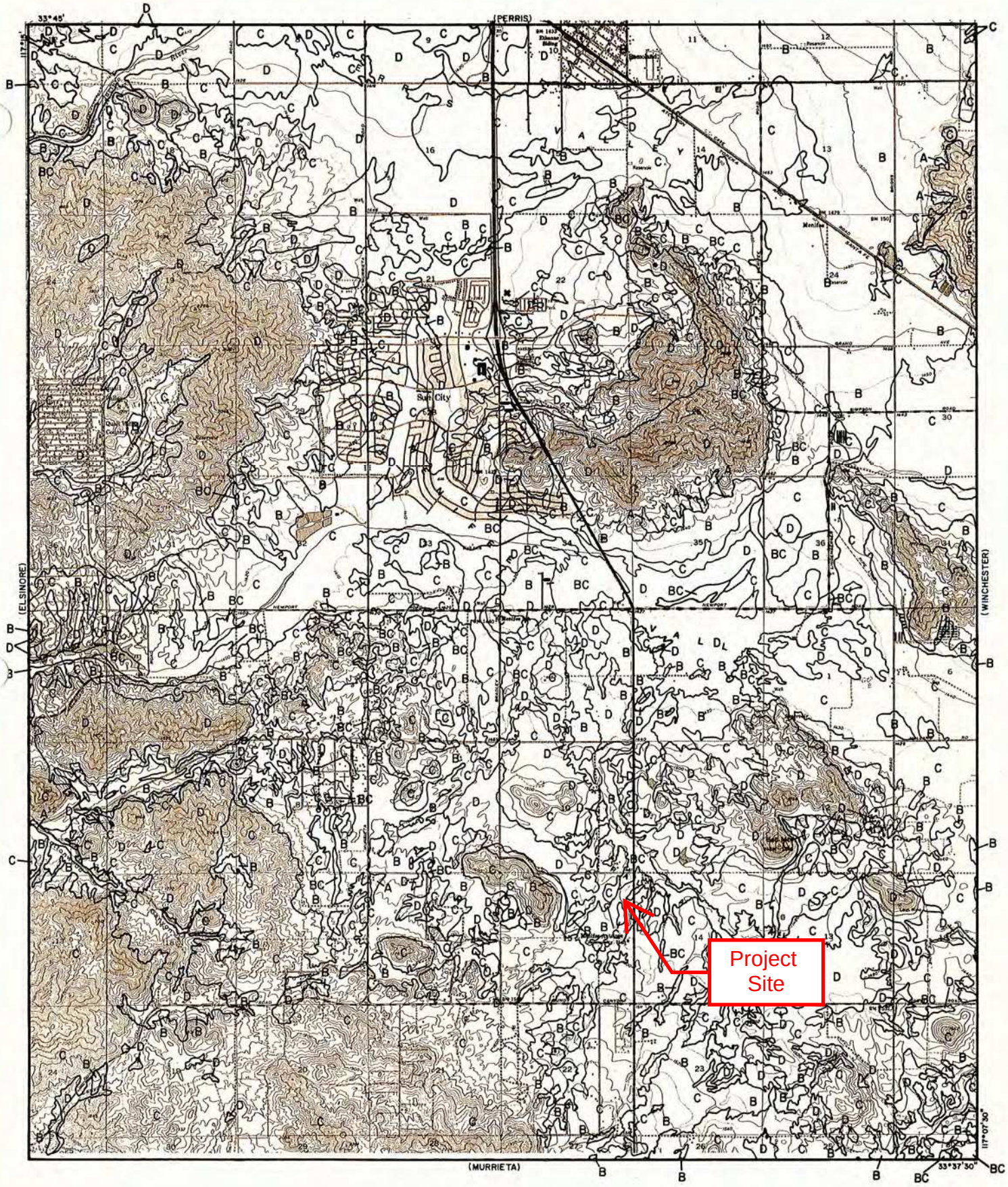
System Components

Amount Of Stone Required:	69 cubic yards
Volume Of Excavation (Not Including Fill):	105 cubic yards
Total Non-woven Geotextile Required:	203 square yards
Woven Geotextile Required (excluding Isolator Row):	0 square yards
Woven Geotextile Required (Isolator Row):	90 square yards
Total Woven Geotextile Required:	90 square yards
Impervious Liner Required:	0 square yards



*MINIMUM COVER TO BOTTOM OF FLEXIBLE PAVEMENT. FOR UNPAVED INSTALLATIONS WHERE RUTTING FROM VEHICLES MAY OCCUR, INCREASE COVER TO 30" (750 mm).

HYDROLOGY MANUAL PLATES USED



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR ROMOLAND

PLATE C-1.42

RAINFALL INTENSITY–INCHES PER HOUR

RIVERSIDE			RIVERSIDE (FOOTHILL AREAS)			RUBIDOUX			SAN JACINTO			SUN CITY		
DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY		DURATION MINUTES	FREQUENCY	
	10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR		10 YEAR	100 YEAR
5	2.75	3.92	5	3.14	4.71	5	3.18	4.71	5	2.81	4.16	5	3.25	4.85
6	2.48	3.55	6	2.84	4.26	6	2.87	4.26	6	2.56	3.79	6	2.95	4.40
7	2.28	3.26	7	2.61	3.91	7	2.64	3.91	7	2.37	3.51	7	2.72	4.06
8	2.12	3.03	8	2.42	3.63	8	2.45	3.63	8	2.22	3.29	8	2.53	3.78
9	1.99	2.84	9	2.27	3.41	9	2.30	3.41	9	2.09	3.10	9	2.38	3.55
10	1.88	2.68	10	2.14	3.21	10	2.17	3.21	10	1.98	2.94	10	2.25	3.36
11	1.78	2.54	11	2.03	3.05	11	2.06	3.05	11	1.89	2.80	11	2.14	3.19
12	1.70	2.42	12	1.94	2.91	12	1.96	2.91	12	1.81	2.68	12	2.04	3.05
13	1.62	2.32	13	1.86	2.78	13	1.88	2.78	13	1.74	2.58	13	1.96	2.92
14	1.56	2.23	14	1.78	2.67	14	1.80	2.67	14	1.68	2.48	14	1.88	2.81
15	1.50	2.14	15	1.71	2.57	15	1.74	2.57	15	1.62	2.40	15	1.81	2.71
16	1.45	2.07	16	1.66	2.48	16	1.68	2.48	16	1.57	2.32	16	1.75	2.62
17	1.40	2.00	17	1.60	2.40	17	1.62	2.40	17	1.52	2.25	17	1.70	2.54
18	1.36	1.94	18	1.55	2.33	18	1.57	2.33	18	1.48	2.19	18	1.65	2.46
19	1.32	1.88	19	1.51	2.26	19	1.52	2.26	19	1.44	2.13	19	1.60	2.39
20	1.28	1.83	20	1.46	2.20	20	1.48	2.20	20	1.40	2.08	20	1.56	2.33
22	1.22	1.74	22	1.39	2.08	22	1.41	2.08	22	1.34	1.98	22	1.48	2.21
24	1.16	1.66	24	1.32	1.99	24	1.34	1.99	24	1.28	1.90	24	1.41	2.11
26	1.11	1.58	26	1.27	1.90	26	1.28	1.90	26	1.23	1.82	26	1.36	2.03
28	1.06	1.52	28	1.22	1.82	28	1.23	1.82	28	1.19	1.76	28	1.30	1.95
30	1.02	1.46	30	1.17	1.76	30	1.19	1.76	30	1.15	1.70	30	1.26	1.88
32	.99	1.41	32	1.13	1.70	32	1.14	1.70	32	1.11	1.64	32	1.21	1.81
34	.96	1.37	34	1.09	1.64	34	1.11	1.64	34	1.08	1.59	34	1.18	1.76
36	.93	1.32	36	1.06	1.59	36	1.07	1.59	36	1.05	1.55	36	1.14	1.70
38	.90	1.29	38	1.03	1.54	38	1.04	1.54	38	1.02	1.51	38	1.11	1.66
40	.87	1.25	40	1.00	1.50	40	1.01	1.50	40	.99	1.47	40	1.08	1.61
45	.82	1.17	45	.94	1.41	45	.95	1.41	45	.94	1.39	45	1.01	1.51
50	.77	1.11	50	.88	1.33	50	.90	1.33	50	.89	1.31	50	.96	1.43
55	.73	1.05	55	.84	1.26	55	.85	1.26	55	.85	1.25	55	.91	1.36
60	.70	1.00	60	.80	1.20	60	.81	1.20	60	.81	1.20	60	.87	1.30
65	.67	.96	65	.77	1.15	65	.78	1.15	65	.78	1.15	65	.83	1.25
70	.64	.92	70	.73	1.10	70	.74	1.10	70	.75	1.11	70	.80	1.20
75	.62	.88	75	.71	1.06	75	.72	1.06	75	.72	1.07	75	.77	1.15
80	.60	.85	80	.68	1.02	80	.69	1.02	80	.70	1.04	80	.75	1.12
85	.58	.83	85	.66	.99	85	.67	.99	85	.68	1.01	85	.72	1.08
SLOPE = .550			SLOPE = .550			SLOPE = .550			SLOPE = .500			SLOPE = .530		

RCFC & WCD

HYDROLOGY MANUAL

STANDARD INTENSITY–DURATION CURVES DATA

PLATE D-4.1(5 of 6)

PROJECT SITE
2 YEAR = 0.50"

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 1-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: R.A.S.	SHEET No.
DATE	PLATE D-4.3	DR. No.
REVISED:		

PROJECT SITE
100 YEAR = 1.25"

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100-YEAR — 1-HOUR PRECIPITATION

APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED
DRAWN BY: A.A.S.
SHEET NO.
PLATE D-4.4
DR. NO.

PROJECT SITE
100 YEAR 24 HOUR= 4.7"

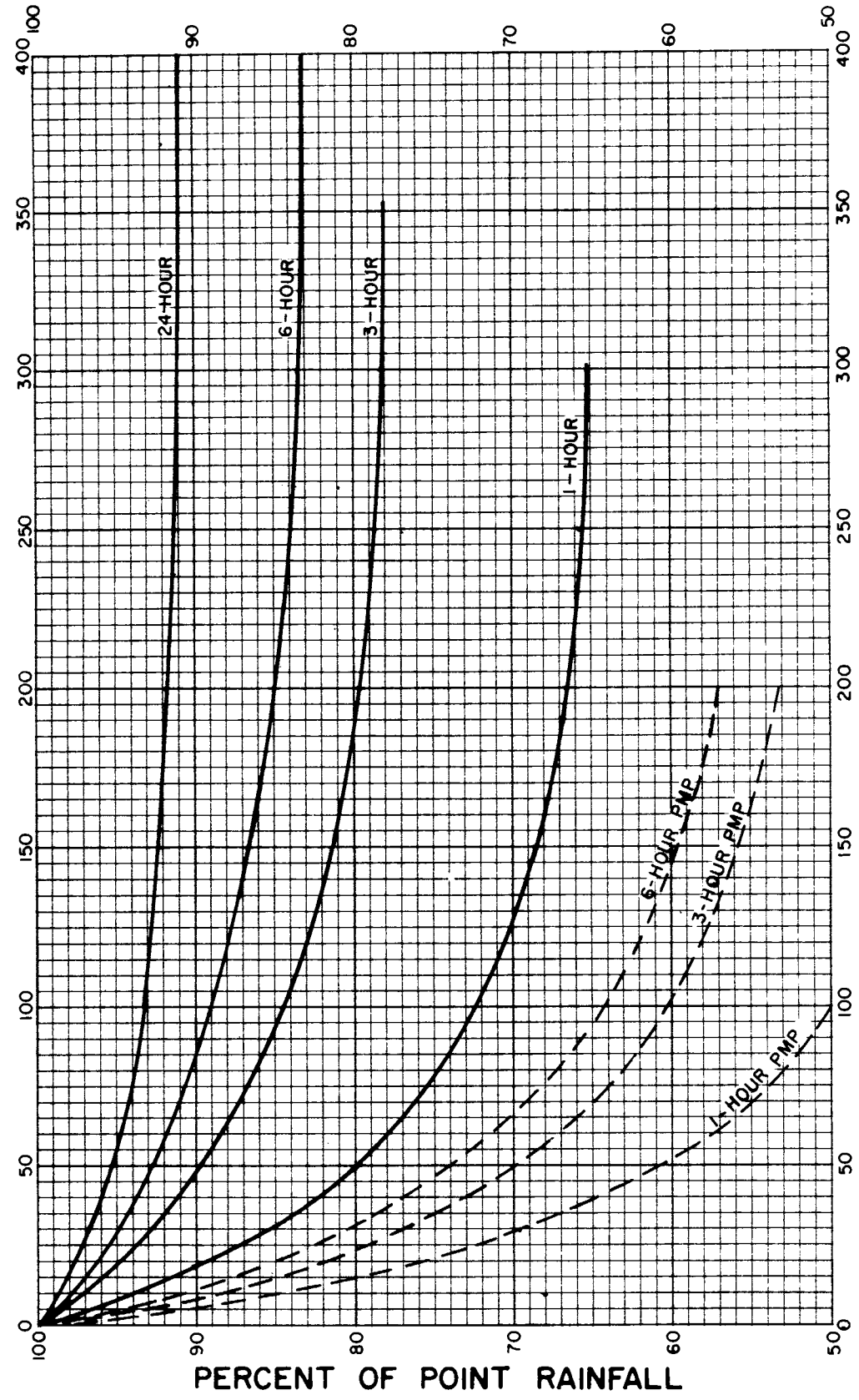
Isohyetals from NOAA Atlas 2
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

100-YEAR — 24-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY	SHEET NO
DATE	PLATE E-5.6	DR NO
REVISED:		



Reference: Bibliography items No. 27 & 29.

RCFC & WCD

HYDROLOGY MANUAL

DEPTH–AREA–DURATION RELATIONSHIPS

PLATE E-5.8

INSTRUCTIONS FOR SHORT CUT SYNTHETIC HYDROGRAPH HYDROLOGY CALCULATIONS

1. Determine drainage area and lag time. Use Steps A-1 through A-3 on Plate E-1.1.

2. Determine that the area is suitable for development of a Short Cut hydrograph, i.e., the area is no more than 100 to 200-acres in size, and lag time is less than 7 to 8-minutes.

3. Select a suitable unit time equal to from 100 to 200-percent of lag. Normally, 5 to 10-minutes for 3 and 6-hour storms, and 15-minutes for 24-hour storms will be adequate.

4. Compute effective rainfall rates using steps B-1 through B-6 on Plate E-1.1.

5. Compute flood hydrograph ordinates for each unit time period by multiplying the effective rainfall rate (inches per hour) times the drainage area in acres. The resultant values are discharge in cfs.

6. The three hour storm peak discharge should normally compare well with rational peaks. If adjustments are necessary, use a shorter unit time period to raise the peak, and a longer unit time period to lower them.

RCFC & WCD

HYDROLOGY MANUAL

TERMINOLOGY

L = LENGTH OF LONGEST WATERCOURSE.

L_{ca} = LENGTH ALONG LONGEST WATERCOURSE, MEASURED UPSTREAM TO POINT OPPOSITE CENTER OF AREA.

S = OVER-ALL SLOPE OF LONGEST WATERCOURSE BETWEEN HEADWATER AND COLLECTION POINT.

LAG = ELAPSED TIME FROM BEGINNING OF UNIT PRECIPITATION TO INSTANT THAT SUMMATION HYDROGRAPH REACHES 50 % OF ULTIMATE DISCHARGE.

$\bar{n}$ = VISUALLY ESTIMATED MEAN OF THE n (MANNING'S FORMULA) VALUES OF ALL THE CHANNELS WITHIN AN AREA.

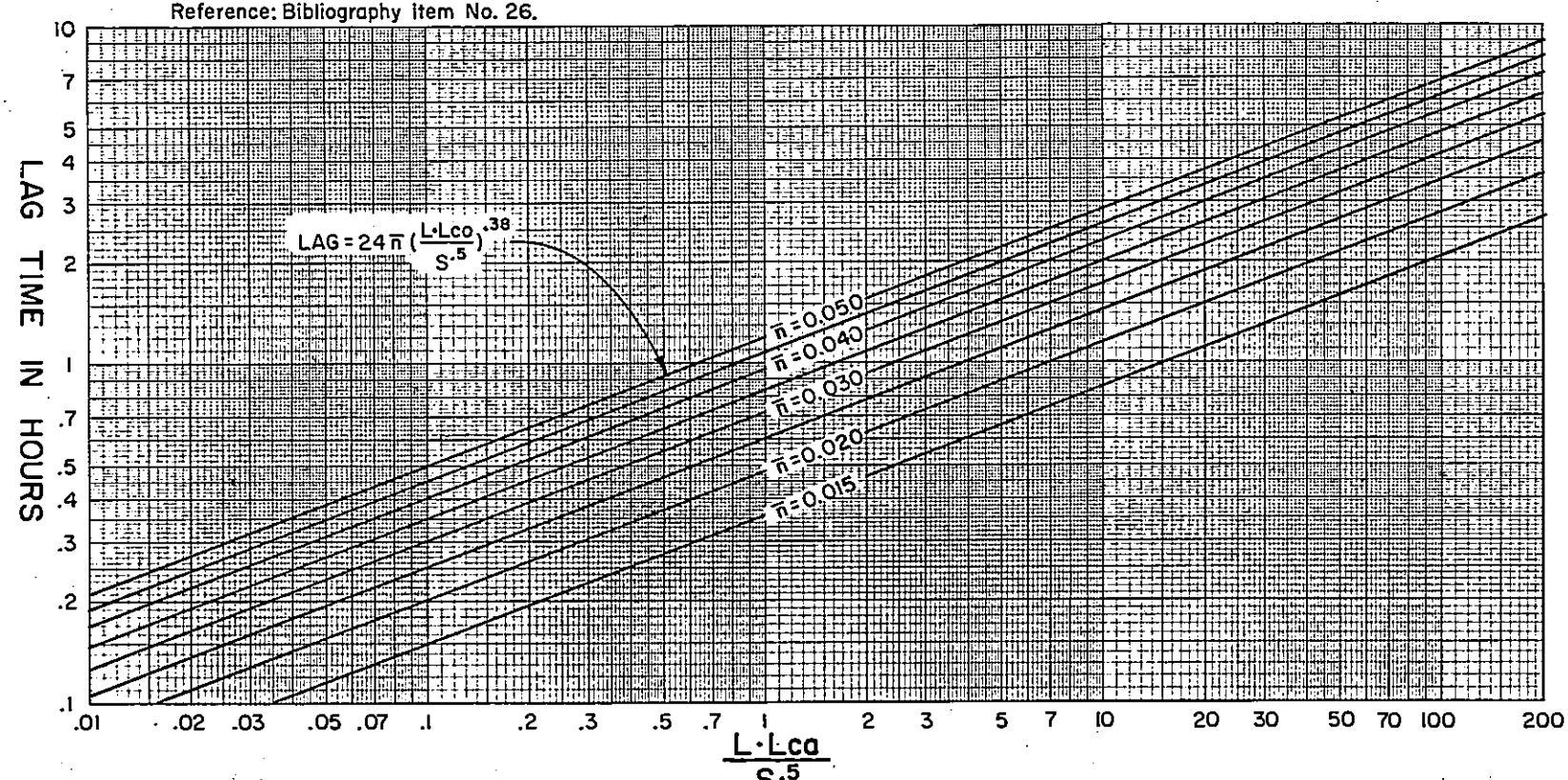
GUIDE FOR ESTIMATING BASIN FACTOR ($\bar{n}$)

$\bar{n}$=0.050: DRAINAGE AREA IS QUITE RUGGED, WITH SHARP RIDGES AND NARROW, STEEP CANYONS THROUGH WHICH WATERCOURSES MEANDER AROUND SHARP BENDS, OVER LARGE BOULDERS, AND CONSIDERABLE DEBRIS OBSTRUCTION. THE GROUND COVER, EXCLUDING SMALL AREAS OF ROCK OUTCROPS, INCLUDES MANY TREES AND CONSIDERABLE UNDERBRUSH. NO DRAINAGE IMPROVEMENTS EXIST IN THE AREA.

$\bar{n}$=0.030: DRAINAGE AREA IS GENERALLY ROLLING, WITH ROUNDED RIDGES AND MODERATE SIDE SLOPES. WATERCOURSES MEANDER IN FAIRLY STRAIGHT, UNIMPROVED CHANNELS WITH SOME BOULDERS AND LODGED DEBRIS. GROUND COVER INCLUDES SCATTERED BRUSH AND GRASSES. NO DRAINAGE IMPROVEMENTS EXIST IN THE AREA.

$\bar{n}$=0.015: DRAINAGE AREA HAS FAIRLY UNIFORM, GENTLE SLOPES WITH MOST WATERCOURSES EITHER IMPROVED OR ALONG PAVED STREETS. GROUND COVER CONSISTS OF SOME GRASSES WITH APPRECIABLE AREAS DEVELOPED TO THE EXTENT THAT A LARGE PERCENTAGE OF THE AREA IS IMPERVIOUS.

Reference: Bibliography item No. 26.

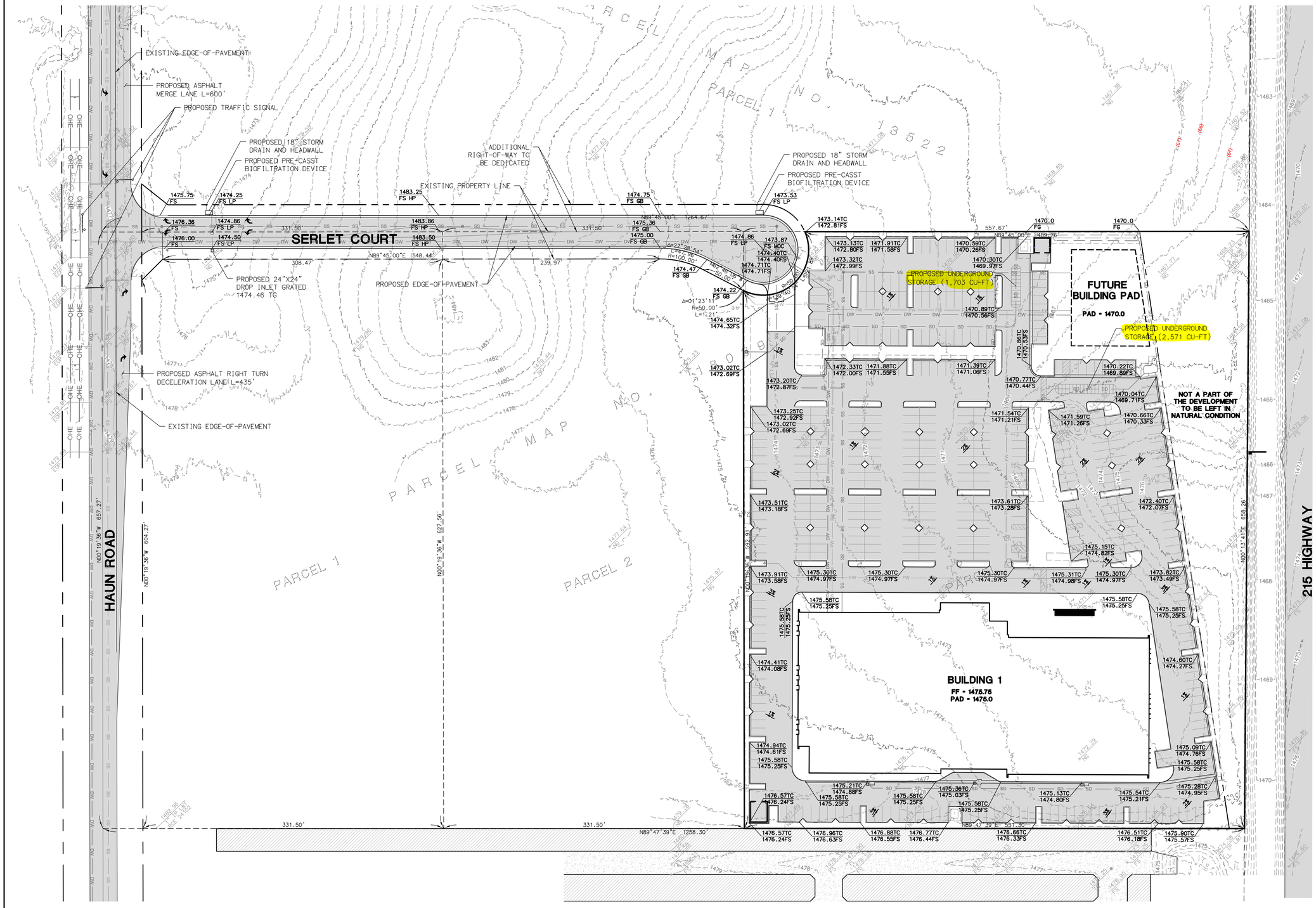


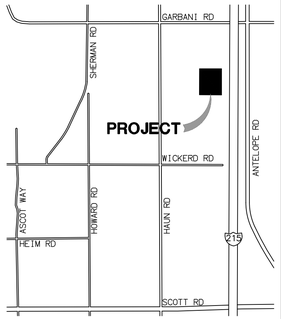
LAG RELATIONSHIPS FOR SOUTHERN CALIFORNIA

PLATE E-3

PRELIMINARY GRADING AND DRAINAGE PLAN

FITWELL HEALTH CAMPUS MENIFEE
PRELIMINARY GRADING AND DRAINAGE PLAN





VICINITY MAP
NTS

LEGEND:

- EX PALM TREE
- EX TREE
- EX SEWER MANHOLE
- EX STREETLIGHT
- EX FIRE HYDRANT
- EX UTILITY BOX
- EX STORM DRAIN MANHOLE
- EX CATCH BASIN
- EX POWER POLE
- EX TRAFFIC LIGHT
- EX UNDERGROUND UTILITY VAULT
- EX IRRIGATION METER
- EX ELECTRICAL METER
- EX WATER VALVE COVER
- EX WATER METER
- EX MANHOLE
- EX STREET SIGN
- EX BOLLARD
- EX FREEWAY SIGN
- EX TRANSFORMER
- EX FIRE WATER STRUCTURE
- EX GAS STRUCTURE
- EX GAS VALVE
- EX PROPERTY BOUNDARY
- EX STREET CENTERLINE
- EX RIGHT-OF-WAY
- EX PROPERTY LINE
- EX MAJOR CONTOUR
- EX MINOR CONTOUR
- EX SEWER LINE
- EX DOMESTIC WATER LINE
- EX FIRE WATER LINE
- EX RECYCLED WATER LINE
- EX STORM DRAIN LINE
- EX OVERHEAD ELECTRIC
- EX UNDERGROUND ELECTRIC
- EX GAS LINE
- EX IRON FENCE
- EX CHAIN LINK FENCE
- EX WOOD FENCE
- EX BLOCK WALL
- EX PLANTER WALL
- EX RETAINING WALL
- EX CURB AND GUTTER
- EX SLOPE
- EX CONCRETE
- EX STRUCTURE FOOTPRINT
- EX ASPHALT
- EX POOL
- EX TENNIS COURT
- EX STRIPING
- PR CURB
- PR EDGE OF PAVEMENT
- PR BUILDING FOOTPRINT
- PROPOSED ASPHALT

SCALE 1"=50'

50 25 0 50 100 150
SCALE: 1"=50'

BENCHMARK:

DESCRIBED BY RIVERSIDE COUNTY CALIFORNIA 1968
7.5 MI N FROM MURRIETA. 0.2 MILES SOUTH ON WASHINGTON AVE. FROM THE POST OFFICE IN MURRIETA, 2.4 MILES EAST ON LOS ALAMOS RD., 4.8 MILES NORTH ON HWY. 395, 0.1 MILE WEST ON SCOTT RD., 78 FT. SOUTH-EAST OF POWER POLE 312098-S, 60 FT. SOUTH OF SCOTT RD., 4 FT. NORTH-WEST OF THE NORTH-EAST CORNER OF A PUMP HOUSE, 2 FT. WEST OF A MARKER POST. SET A BRASS DISK IN THE TOP OF A CONCRETE POST.

ELEV: 1520.00'

BASIS OF BEARINGS:

CENTERLINE OF HAUN ROAD N00°19'36"W PER PARCEL MAP NO. 18039 RECORDED IN THE COUNTY OF RIVERSIDE, BOOK 83 PAGES 75 AND 76.

SCALE VERIFICATION
BAR IS ONE INCH ON ORIGINAL DRAWING

IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

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SEAL-ENGINEER

REGISTERED PROFESSIONAL ENGINEER
R. STEVEN AUSTIN
No. 68795
CIVIL
STATE OF CALIFORNIA

FITWELL HEALTH CAMPUS MENIFEE
PRELIMINARY GRADING AND DRAINAGE PLAN
APN: 360-350-014
MENIFEE, CA

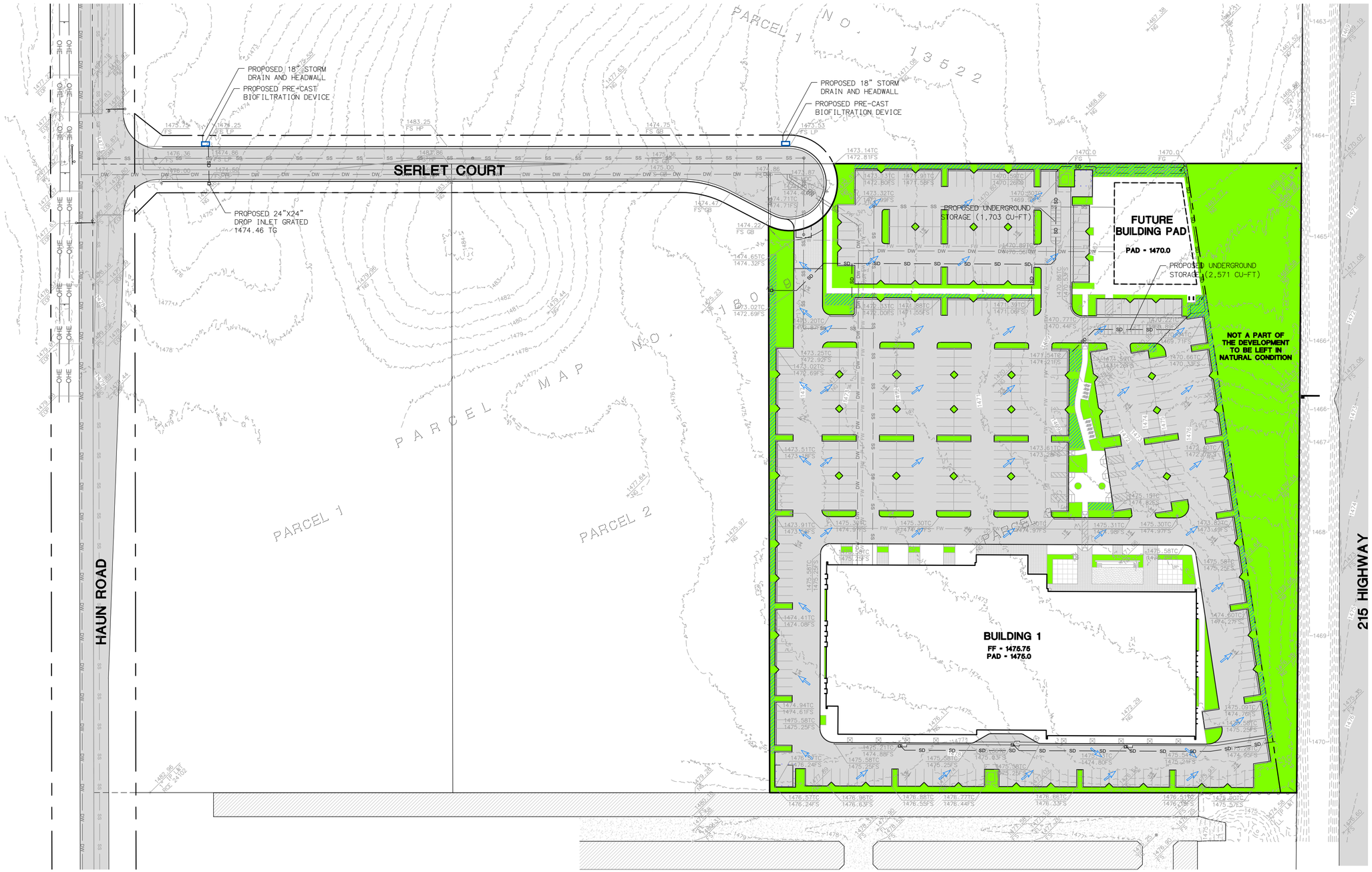
DRAWN BY: JRW
DESIGNED BY: JRW
CHECKED BY: RSA
APPROVED BY: RSA
DATE: 7/16/2025
REVISIONS:

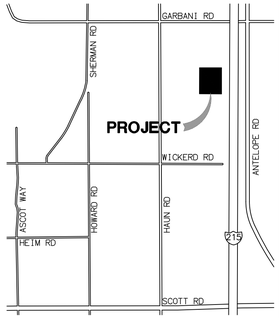
PROJECT NUMBER: 1010602

SHEET NO.
C-4
4 OF 6

WQMP SITE PLAN

FITWELL HEALTH CAMPUS MENIFEE
PRELIMINARY WQMP SITE PLAN





VICINITY MAP
NTS

LEGEND:

- EX PALM TREE
- EX TREE
- EX SEWER MANHOLE
- EX STREETLIGHT
- EX FIRE HYDRANT
- EX UTILITY BOX
- EX STORM DRAIN MANHOLE
- EX CATCH BASIN
- EX POWER POLE
- EX TRAFFIC LIGHT
- EX UNDERGROUND UTILITY VAULT
- EX IRRIGATION METER
- EX ELECTRICAL METER
- EX WATER VALVE COVER
- EX WATER METER
- EX MANHOLE
- EX STREET SIGN
- EX BOLLARD
- EX FREEWAY SIGN
- EX TRANSFORMER
- EX FIRE WATER STRUCTURE
- EX GAS STRUCTURE
- EX GAS VALVE
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- EX FIRE WATER LINE
- EX RECYCLED WATER LINE
- EX STORM DRAIN LINE
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- EX UNDERGROUND ELECTRIC
- EX GAS LINE
- EX IRON FENCE
- EX CHAIN LINK FENCE
- EX WOOD FENCE
- EX BLOCK WALL
- EX PLANTER WALL
- EX RETAINING WALL
- EX CURB AND GUTTER
- EX SLOPE
- EX CONCRETE
- EX STRUCTURE FOOTPRINT
- EX ASPHALT
- EX POOL
- EX TENNIS COURT
- EX STRIPING
- PR CURB
- PR EDGE OF PAVEMENT
- PR BUILDING FOOTPRINT
- PROPOSED ASPHALT

GENERAL WQMP NOTES

1. BMP INFILTRATION TEST COMPLETED BY LOR GEOTECHNICAL GROUP, INC. USING THE PORCHET METHOD. RESULTS WERE 0.03 IN/HR PER APRIL 4, 2023 REPORT. PER RESULTS, INFILTRATION BMPS ARE NOT FEASIBLE.
2. BMP ANALYSIS OF HARVEST AND REUSE COMPLETED AND SHOWS THAT HARVEST AND REUSE IS NOT FEASIBLE BECAUSE AREA OF IRRIGATED LANDSCAPE IS TOO SMALL FOR THE VOLUME OF POTENTIAL WATER TO BE CAPTURED AND USED.
3. BMP TO BE USED FOR PROJECT IS BIOFILTRATION. SITE HAS BEEN DESIGNED TO DRAIN TO LANDSCAPE AREAS WITH BIOFILTRATION SWALES.

WQMP LEGEND:

- PROPOSED PERVIOUS AREAS
- SURFACE FLOW DIRECTION
- BIOFILTRATION SWALE
- BIOFILTRATION DEVICE (PRE-FAB)

PERVIOUS/IMPERVIOUS AREA TABLE

PROPOSED PERVIOUS AREAS	78,614 SF
PROPOSED IMPERVIOUS AREAS	281,809 SF
TOTAL AREA	360,423 SF

WQMP BMP AREA

PROPOSED BIOFILTRATION SWALE AREA	8,917 SF
PROPOSED BIOFILTRATION SWALE VOLUME	13,376 CF

IMPERVIOUS AREAS

BUILDING IMPERVIOUS AREAS	64,097 SF
FUTURE BUILDING IMPERVIOUS AREAS	8,308 SF
ASPHALT IMPERVIOUS AREAS	177,289 SF
CONCRETE IMPERVIOUS AREAS	32,115 SF
TOTAL IMPERVIOUS AREAS	281,809 SF

PERVIOUS AREAS

BIOFILTRATION AREAS	8,917 SF
PLANTERS	69,697 SF
TOTAL PERVIOUS AREAS	78,614 SF

SCALE VERIFICATION
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET ADJUST SCALES ACCORDINGLY

SCALE 1"=50'

50 25 0 50 100 150
SCALE: 1"=50'

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FITWELL HEALTH CAMPUS MENIFEE
PRELIMINARY WQMP SITE PLAN
APN: 360-350-014
MENIFEE, CA

DRAWN BY: JRW
DESIGNED BY: JRW
CHECKED BY: RSA
APPROVED BY: RSA
DATE: 7/16/2025
REVISIONS:

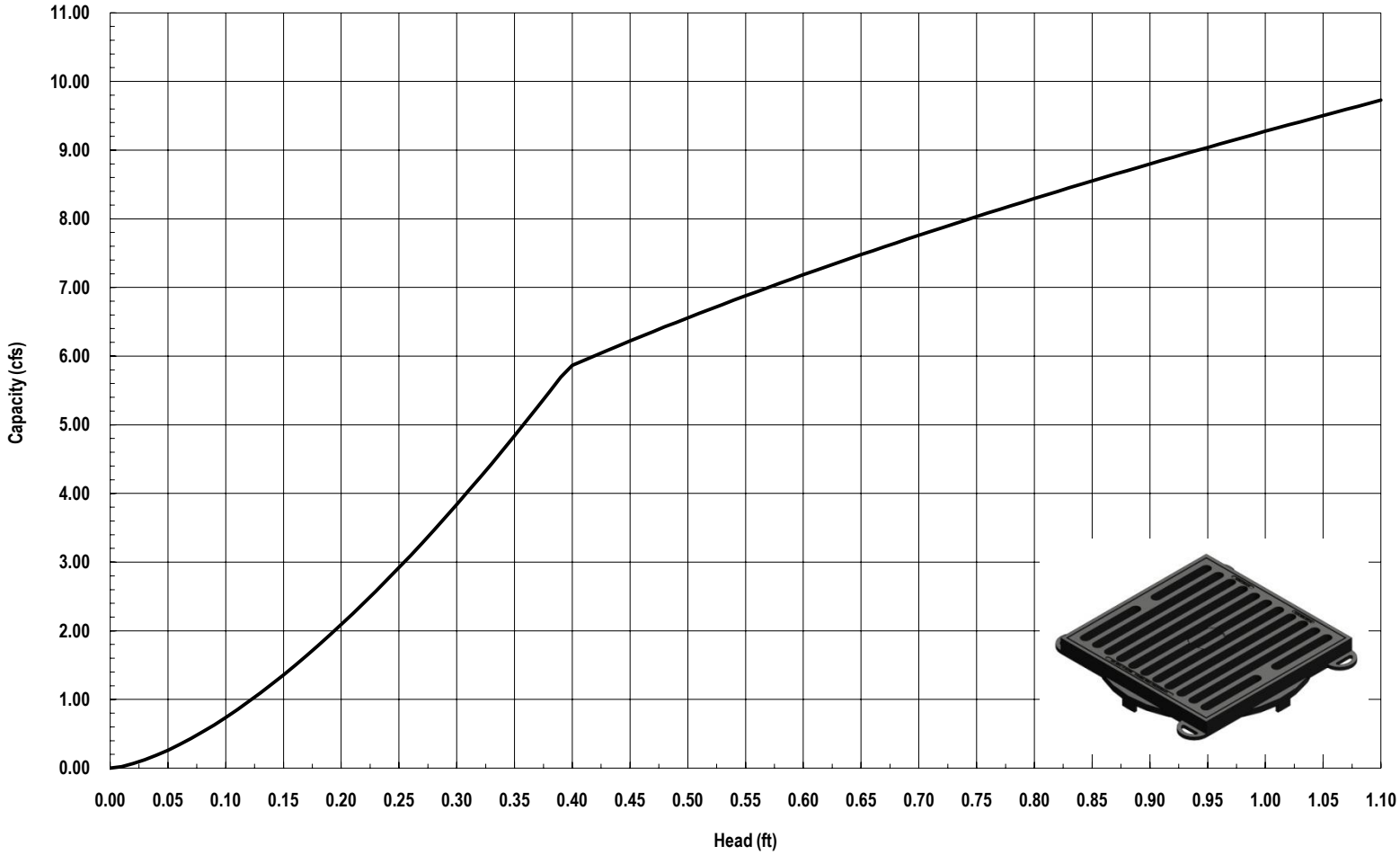
PROJECT NUMBER: 1010602

SHEET NO.
C-5
5 OF 6

HYDRAULIC CALCULATIONS

Nyloplast 2' x 2' Road & Highway Grate Inlet Capacity Chart

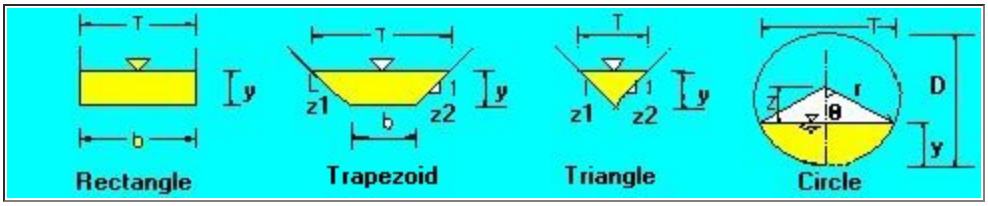
Preliminary Sizing for 24"x24" drop inlets



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490
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The open channel flow calculator 12" PIPE

Select Channel Type: Circle



Depth from Q

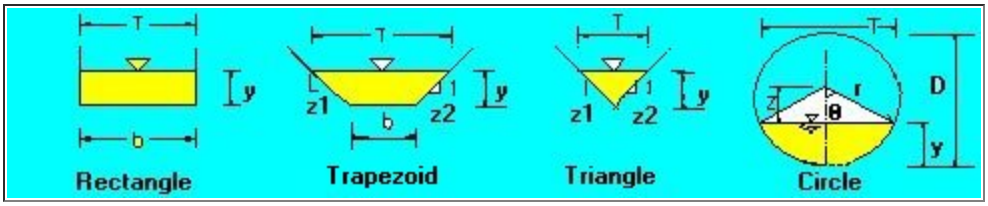
Select unit system: Feet(ft)

Channel slope: .005 ft/ft	Water depth(y): 0.82 ft	Radius (r) .5 ft
Flow velocity 3.169 ft/s	LeftSlope (z1): to 1 (H:V)	RightSlope (z2): to 1 (H:V)
Flow discharge 2.19 ft^3/s	Input n value .015 or select n: clean,uncoated castiron:0.014	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 2.27 ft	Flow area 0.69 ft^2	Top width(T) 0.76 ft
Specific energy 0.98 ft	Froude number 0.59	Flow status: Subcritical flow
Critical depth 0.64 ft	Critical slope 0.0093 ft/ft	Velocity head 0.16 ft

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The open channel flow calculator 18" PIPE

Select Channel Type: Circle



Depth from Q

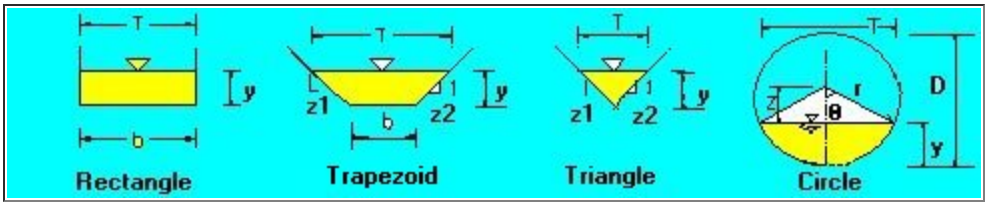
Select unit system: Feet(ft)

Channel slope: .005 ft/ft	Water depth(y): 1.4 ft	Radius (r) .75 ft
Flow velocity 4.039 ft/s	LeftSlope (z_1): to 1 (H:V)	RightSlope (z_2): to 1 (H:V)
Flow discharge 6.92 ft^3/s	Input n value .015 or select n: clean,uncoated castiron:0.014	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 3.91 ft	Flow area 1.71 ft^2	Top width(T) 0.76 ft
Specific energy 1.65 ft	Froude number 0.47	Flow status: Subcritical flow
Critical depth 1.02 ft	Critical slope 0.0089 ft/ft	Velocity head 0.25 ft

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The open channel flow calculator 24" PIPE

Select Channel Type: Circle



Depth from Q

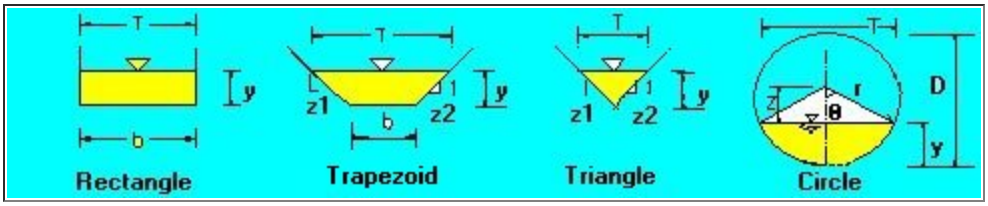
Select unit system: Feet(ft)

Channel slope: .005 ft/ft	Water depth(y): 1.34 ft	Radius (r) 1 ft
Flow velocity 4.889 ft/s	LeftSlope (z_1): to 1 (H:V)	RightSlope (z_2): to 1 (H:V)
Flow discharge 10.9 ft^3/s	Input n value .015 or select n: clean,uncoated castiron:0.014	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 3.83 ft	Flow area 2.23 ft^2	Top width(T) 1.88 ft
Specific energy 1.71 ft	Froude number 0.79	Flow status: Subcritical flow
Critical depth 1.19 ft	Critical slope 0.0071 ft/ft	Velocity head 0.37 ft

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The open channel flow calculator 30" PIPE

Select Channel Type: Circle



Depth from Q

Select unit system: Feet(ft)

Channel slope: .005 ft/ft	Water depth(y): 2.31 ft	Radius (r) 1.25 ft
Flow velocity 5.695 ft/s	LeftSlope (z_1): to 1 (H:V)	RightSlope (z_2): to 1 (H:V)
Flow discharge 27.0 ft^3/s	Input n value .015 or select n: clean,uncoated castiron:0.014	
Calculate!	Status: Calculation finished	Reset
Wetted perimeter 6.47 ft	Flow area 4.74 ft^2	Top width(T) 1.32 ft
Specific energy 2.82 ft	Froude number 0.53	Flow status: Subcritical flow
Critical depth 1.77 ft	Critical slope 0.0079 ft/ft	Velocity head 0.5 ft

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