

Appendix G-1

(Site 1 – North Nance)

Preliminary Hydrology Calculations for Perris
Trailer Yard Nance Street and Webster Avenue

Thienes Engineering, Inc.

November 15, 2022



Thienes Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

PERRIS TRAILER YARD
NANCE STREET AND WEBSTER AVENUE
PERRIS, CALIFORNIA

PREPARED FOR

LAKE CREEK INDUSTRIAL
1302 BRITTANY CROSS ROAD
SANTA ANA, CA 92705

JULY 22, 2022
REVISED NOVEMBER 15, 2022

JOB NO. 4108

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CALIFORNIA 90638
PHONE: (714) 521-4811
FAX: (714) 521-4173

**PRELIMINARY HYDROLOGY
CALCULATIONS**

FOR

PERRIS TRAILER YARD

PREPARED UNDER
THE SUPERVISION OF

REINHARD STENZEL
R.C.E. 56155
EXP. 12/31/2022

DATE:

INTRODUCTION

A: PROJECT LOCATION

The project site is located on the northwest corner of Nance Street and N. Webster Avenue in the city of Perris, California. Please see following page for vicinity map.

B: STUDY PURPOSE

The purpose of this study is to determine the existing condition and proposed condition 100-year peak flow rates from the project site.

C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Kristie Ferronato



SITE



DISCUSSION

Project Description

The project site encompasses approximately 5.18 acres. Proposed improvements include one small building and a trailer parking area. Landscaped areas will front Nance Street and N. Webster Avenue and will also be located throughout the site.

Master Plan Storm Drain

Per the drainage study for the Perris Valley MDP Lateral B-5 dated October 2016 by Albert A. Webb Associates (WEBB) the project site is part of a 20-acre parcel of land tabled to Lateral B-5. The project site will discharge to the existing 5'W X 5'H RCB via an onsite storm drain connection.

See Appendix "A" for referenced material.

FEMA Flood Zone

The project site is within flood Zone D, "areas in which flood hazards are undetermined, but possible" per FEMA FIRM Map 06065C1430H, effective August 18, 2014.

See Appendix "A" for FEMA FIRM map.

Existing Conditions

The site is currently an undeveloped lot with sparse vegetation. The site (Nodes 100-101 on Existing Condition Hydrology Map) generally sheet flows northeasterly to N. Webster Avenue. Flows are conveyed northerly in the street and discharge into an existing catch basin in N. Webster Avenue. The total 100-year peak flow rate from the project site is approximately 6.2 cfs.

Aerial topography suggests that the northerly adjacent site sheet flows northeasterly parallel to the project site and discharges into N. Webster Street. The topography also suggests a small ridge along the northerly property line that appears to be intended to prevent runoff from entering the project site.

See Appendix "B" for existing condition hydrology calculations and Appendix "D" for the existing condition hydrology map.

Proposed Conditions

The site will continue to generally drain northeasterly in the proposed condition.

The westerly parking lot, landscaped area and patio area (Nodes 100-101 on Proposed Condition Hydrology Map) drains to a catch basin located in the parking lot. A proposed onsite storm drain system will convey water easterly around the proposed building and northeasterly through the trailer parking area. The trailer parking area (Nodes 110-111) will drain northeasterly to catch basins located in the parking area. Flows will confluence with runoff from the west (Node 112) and continue easterly toward N. Webster Avenue. Flows will ultimately discharge into the existing RCB in N. Webster Avenue. The 100-year peak flow rate to the existing storm drain system will be approximately 12.1 cfs.

The driveway and landscaped area fronting Nance Street and the landscaped area fronting N. Webster Avenue sheet flow to each respective street. Flows will be conveyed northerly in N. Webster Avenue and discharge into the existing curb opening catch basin. The 100-year peak flow rate to the existing curb-opening catch basin is approximately 1.8 cfs.

The total 100-year peak flow rate from the project site is approximately 13.9 cfs.

See Appendix “A” for referenced material, Appendix “B” for proposed condition hydrology calculations, and Appendix “D” for the proposed condition hydrology map.

Detention

Per WEBB’s hydrology report, the allowable discharge to Lateral B-5 from the entire 20-acre parcel of land is approximately 33.93 cfs. The allowable discharge from the project site will be prorated based off the percentage of project site area that reaches the existing storm drain via the proposed onsite connection. The landscaped areas and driveway fronting Nance Street and N. Webster Street (approximately 0.82 acres) will not reach the Lat B-5 until further downstream in the system. Therefore, only 4.36 acres (5.18 acres-0.82 acres) will be included in the proration calculation ($4.36 \text{ acres} / 20.0 \text{ acres} = .218$). The allowable discharge from the project site to the existing storm drain will be limited to approximately 7.4 cfs ($.218 \times 33.93 \text{ cfs}$).

The table below summarizes the values from the four northerly hydrograph routings. From the table, the maximum discharge from the trailer parking area will be approximately 7.8 cfs. The storage volume required to detain the remaining flows is approximately 0.09 acre-ft at a depth of .71 ft.

Event	Discharge (cfs)	Volume (acre-ft)	Depth (ft)
1-hr	7.8	0.090	0.71
3-hr	7.2	0.033	0.47
6-hr	7.0	0.013	0.38
24-hr	2.7	0.004	0.14

The total discharge to Lateral B-5 will be approximately 7.8 cfs. This is comparable to the allowable discharge from the site.

See Appendix “C” for detention analysis.

Methodology

Hydrology calculations were computed using the Advanced Engineering Software’s (AES) Rational Method Hydrology program for Riverside County. Hydrograph and detention calculations were performed using the CIVILD program for Riverside County. The site has a soil type of “B” per the Riverside County Hydrology Manual.

See Appendix “A” for referenced materials.

APPENDIX

DESCRIPTION

A

REFERENCE MATERIAL

B

HYDROLOGY CALCULATIONS

C

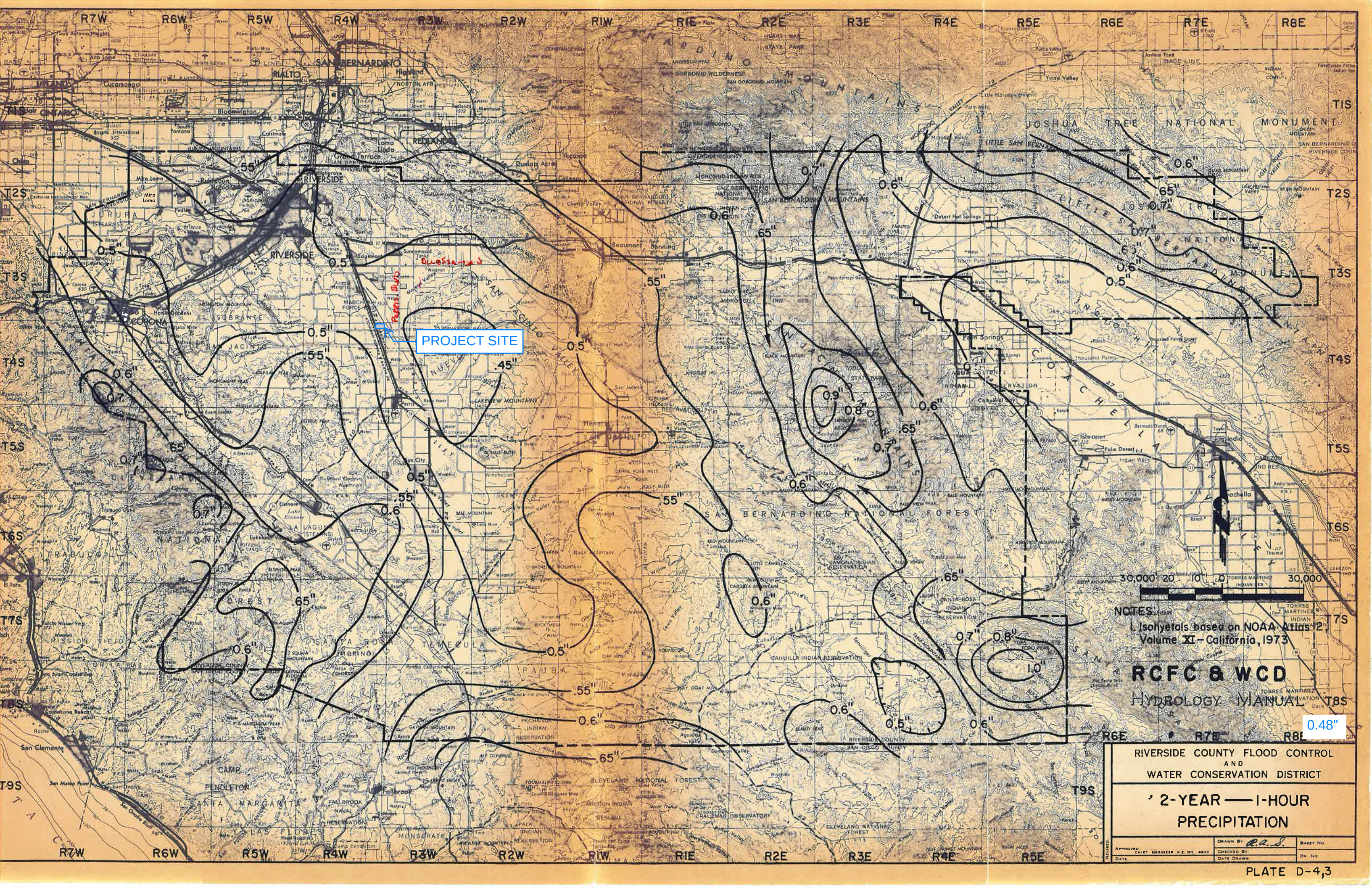
DETENTION CALCULATIONS

D

HYDROLOGY MAPS

APPENDIX A

REFERENCE MATERIAL



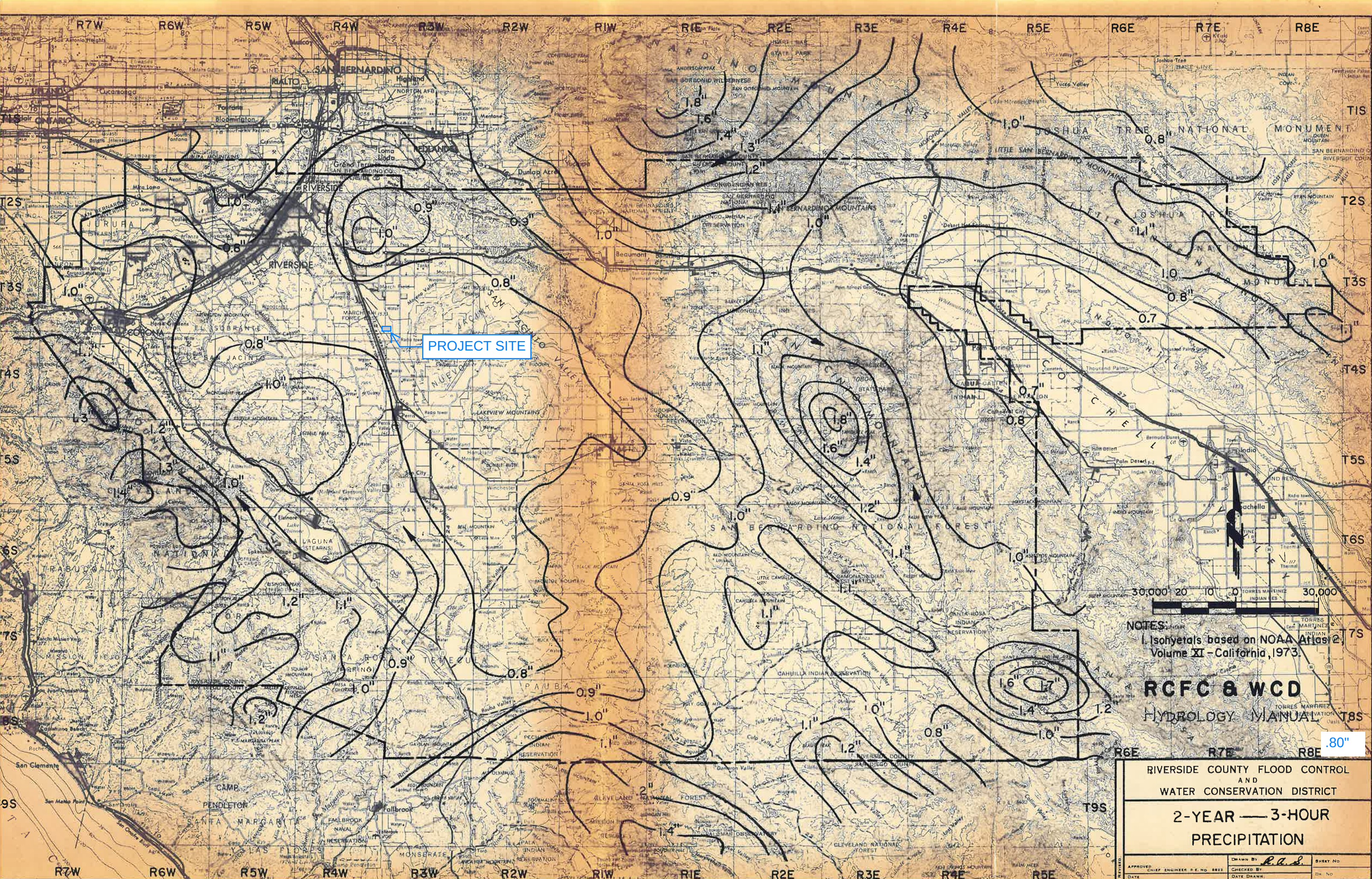
PROJECT SITE

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

RCFC & WCD
HYDROLOGY MANUAL

0.48"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
' 2-YEAR — 1-HOUR PRECIPITATION		
APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY P.L.S.	SHEET NO.
DATE	CHECKED BY	DATE DRAWN

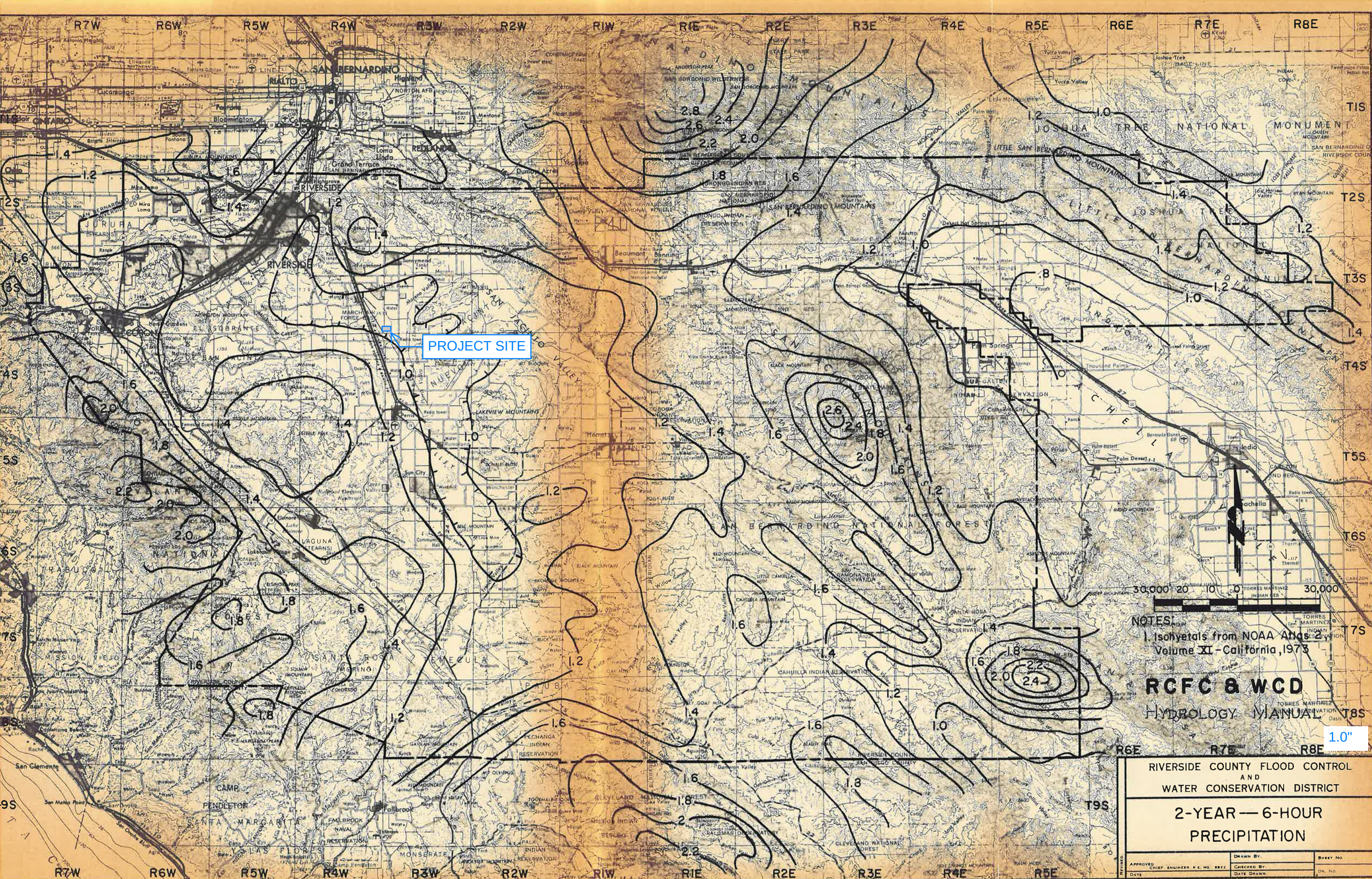


PROJECT SITE

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

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
2-YEAR — 3-HOUR PRECIPITATION		
APPROVED DATE	CHECKED BY DATE	DRAWN BY DATE
		<i>R.A.S.</i>
SHEET No.		Dr. No.



PROJECT SITE

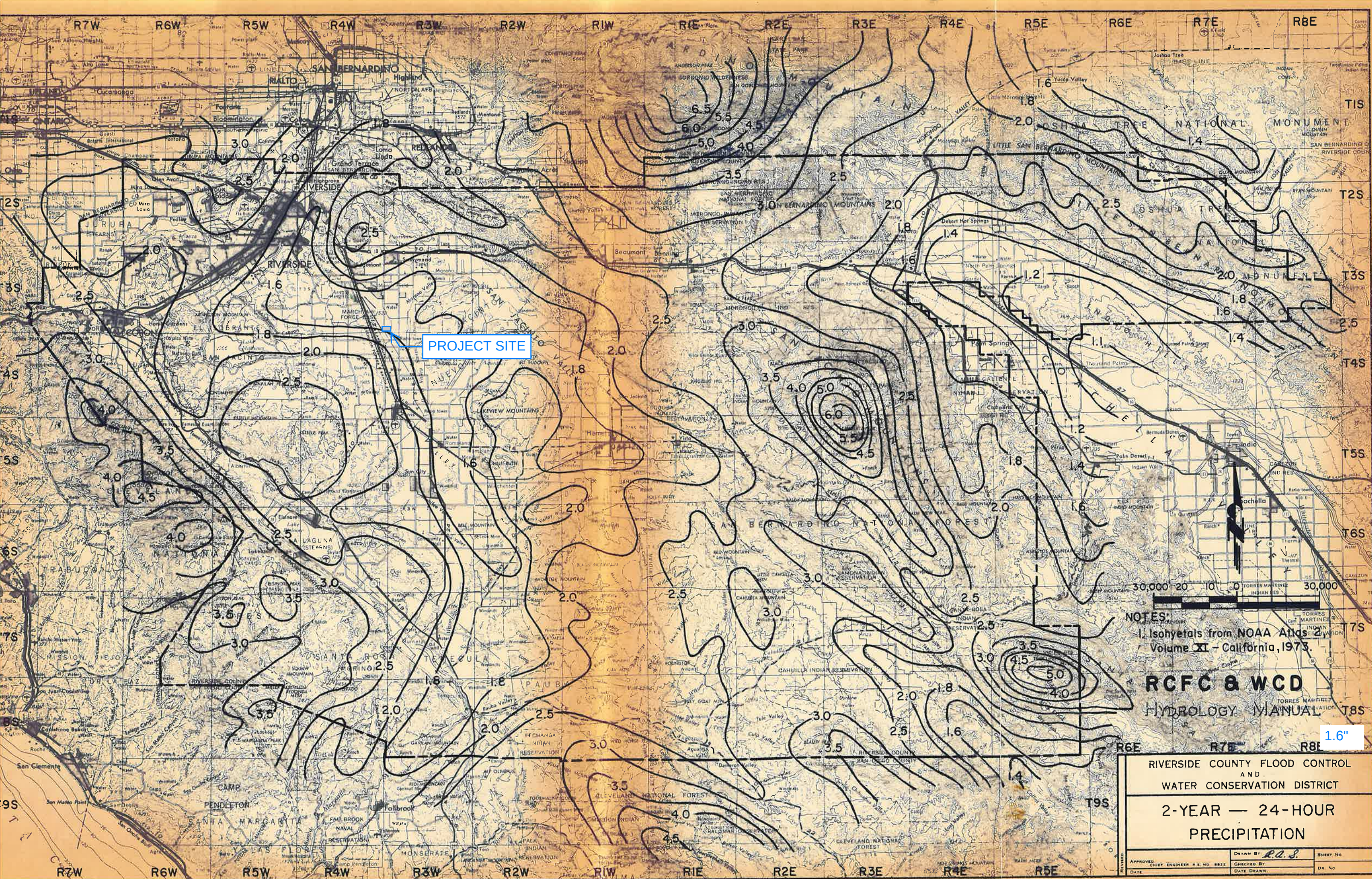
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Volume XI - California, 1973

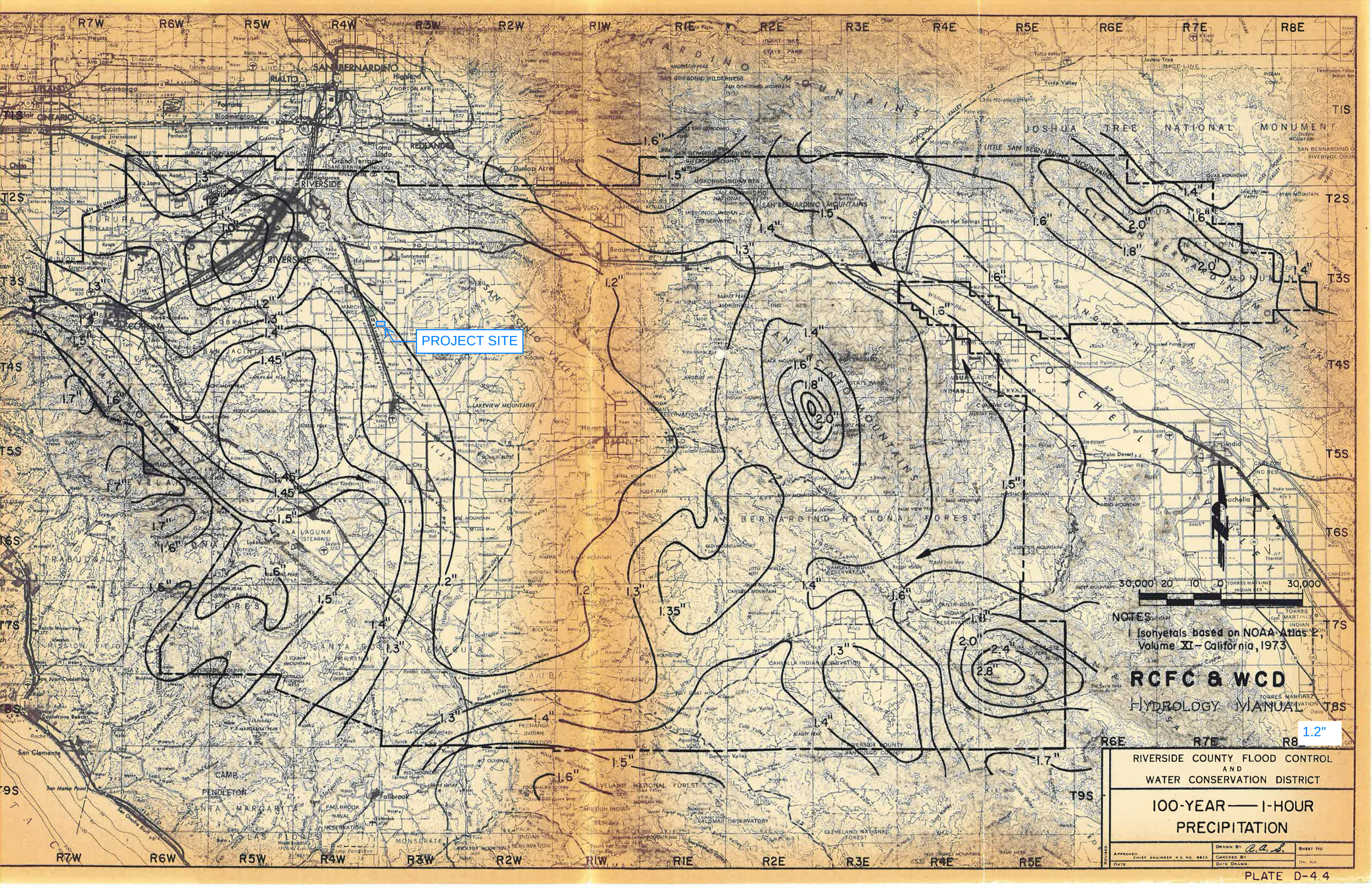
RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

**2-YEAR — 6-HOUR
PRECIPITATION**

APPROVED	CHIEF ENGINEER R.C. NO. 8822	DRAWN BY	CHECKED BY	SHEET NO.
DATE		DATE	DATE	DR. NO.





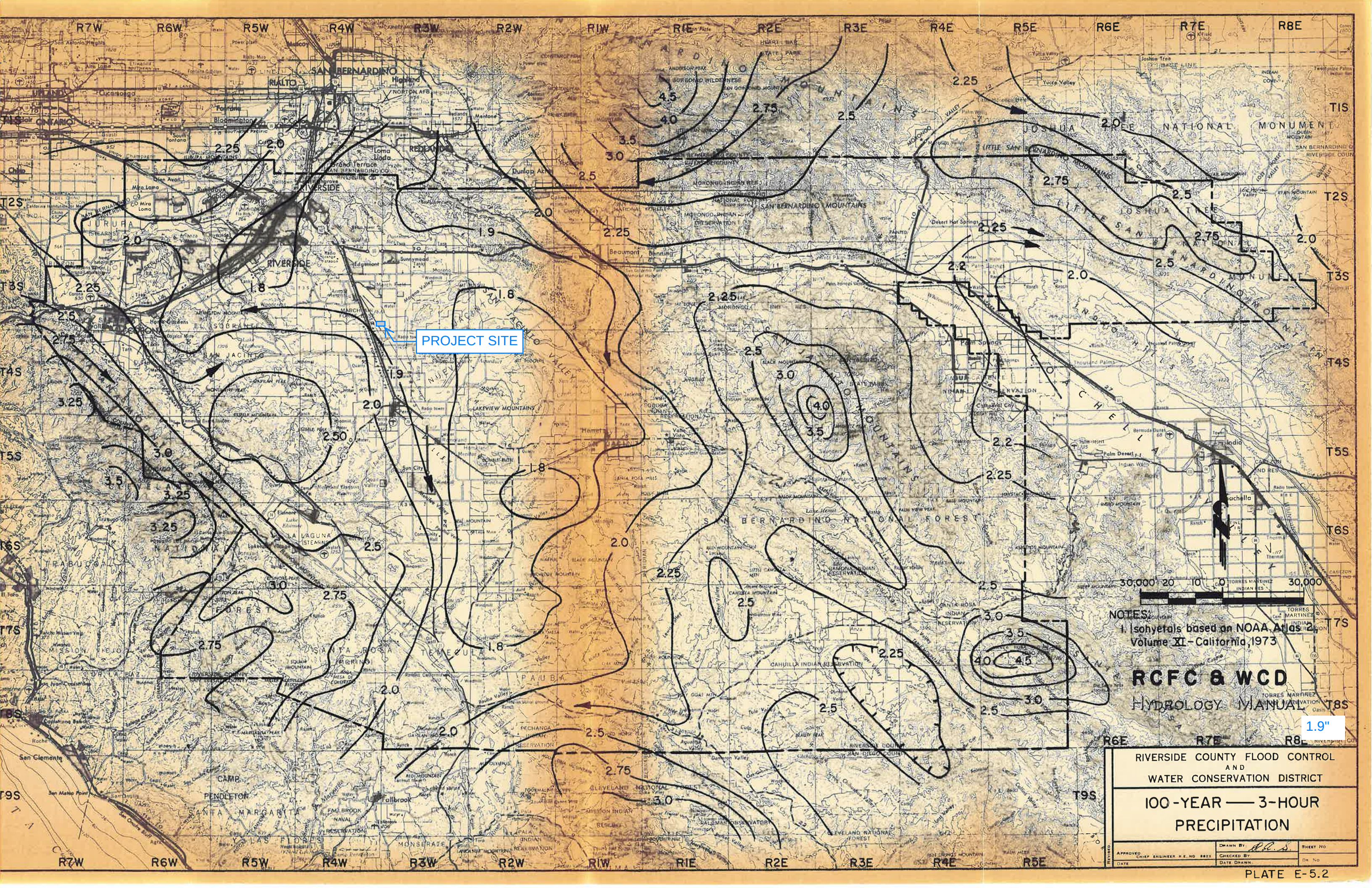
PROJECT SITE

NOTES
1 Isohyets based on NOAA Atlas 2,
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

1.2"

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT		
100-YEAR — 1-HOUR PRECIPITATION		
APPROVED DATE	CHIEF ENGINEER R.E. NO. 8822 CHECKED BY DATE	DRAWN BY <i>R.A.S.</i> DATE SHEET NO. OF NO.



PROJECT SITE

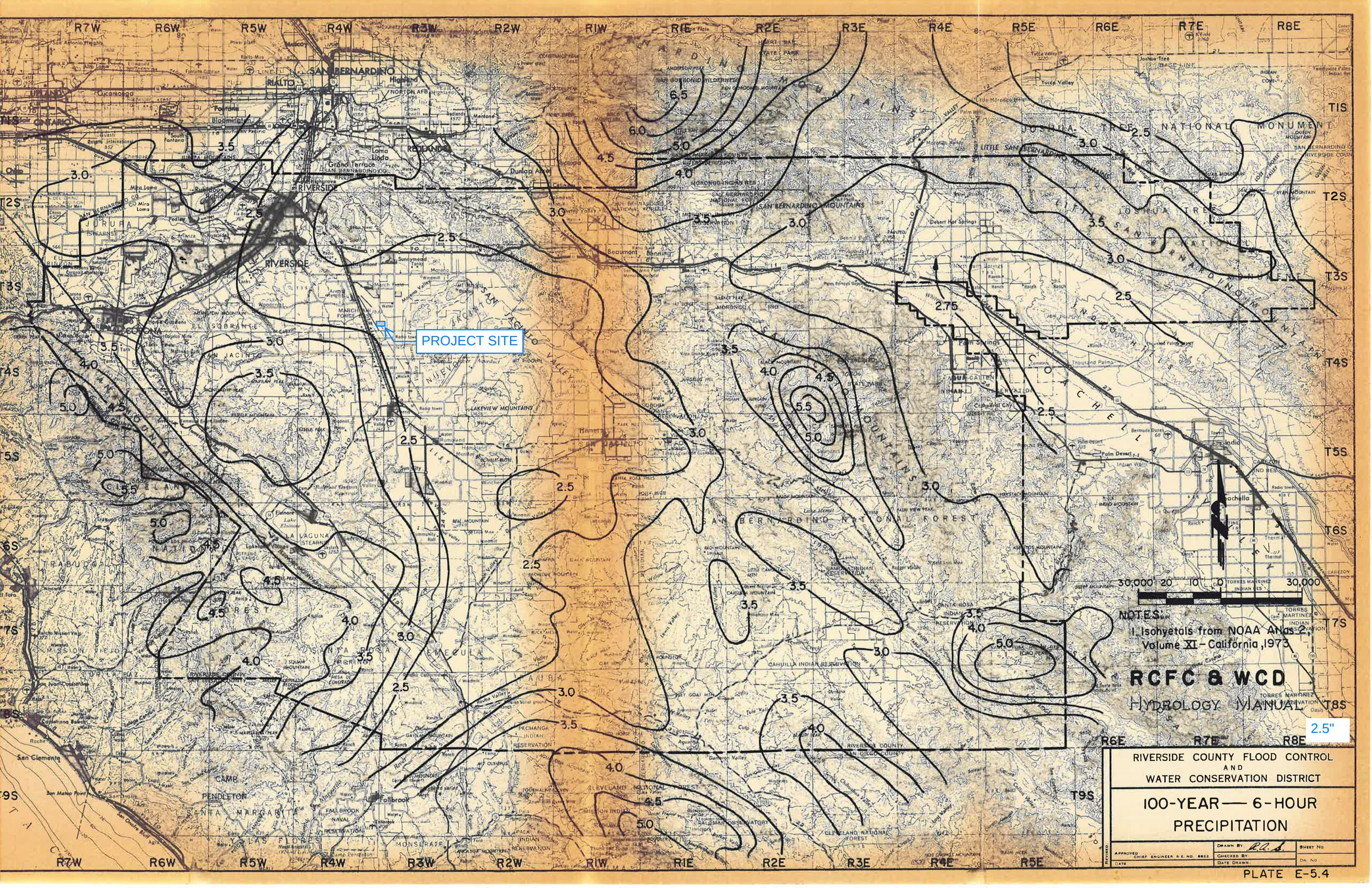
NOTES:
1. Isohyets based on NOAA Atlas 2
Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

1.9"

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
**100-YEAR — 3-HOUR
PRECIPITATION**

APPROVED CHIEF ENGINEER R.E. NO. 8823 DATE	DRAWN BY <i>R.C.S.</i> CHECKED BY DATE DRAWN	SHEET NO. DR. NO.
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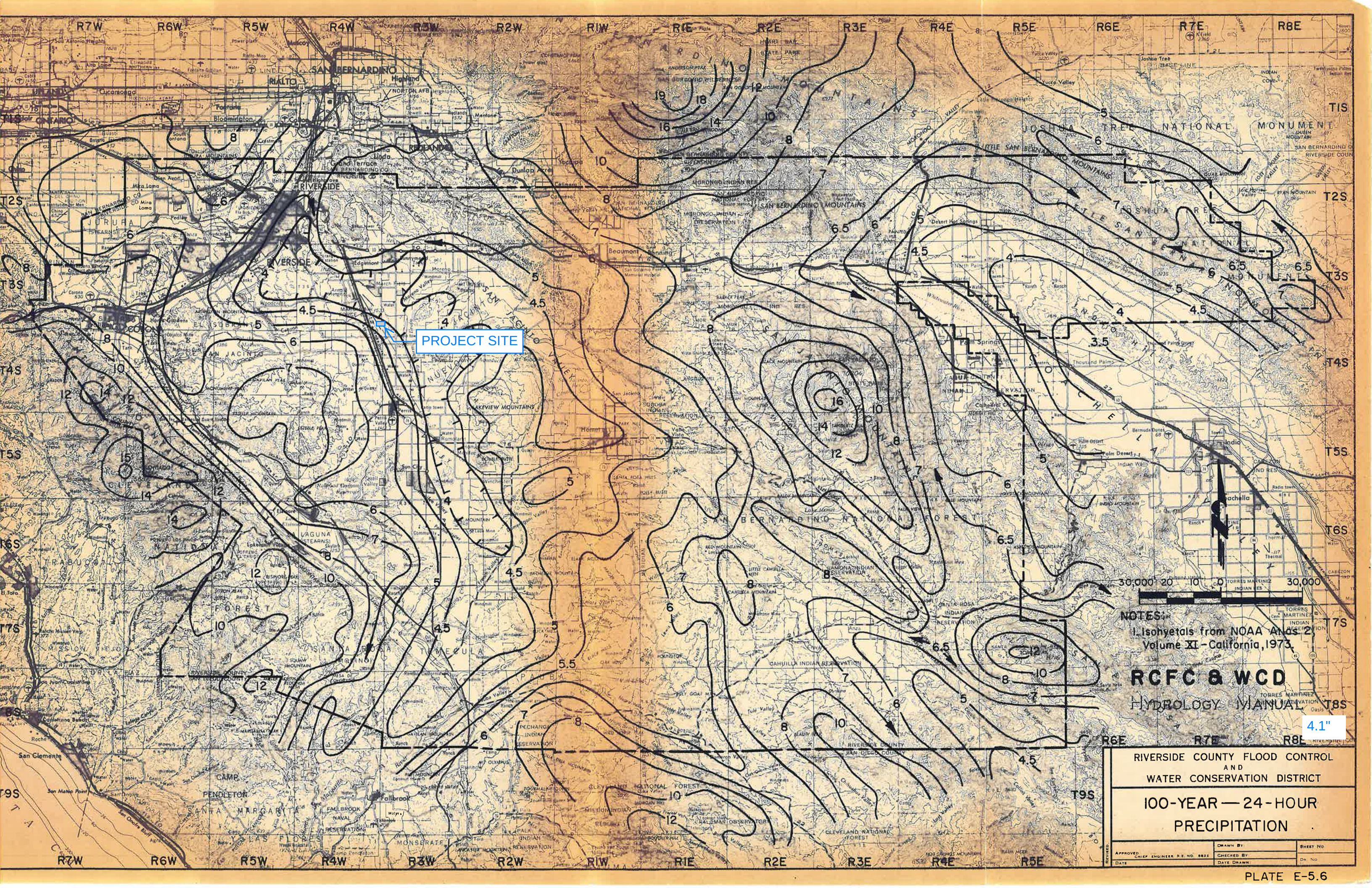


PROJECT SITE

NOTES:
1. Isohyets from NOAA Atlas 2,
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
**100-YEAR — 6-HOUR
PRECIPITATION**

APPROVED	CHECKED BY	DRAWN BY	SHEET NO.
DATE	DATE	DATE	DATE

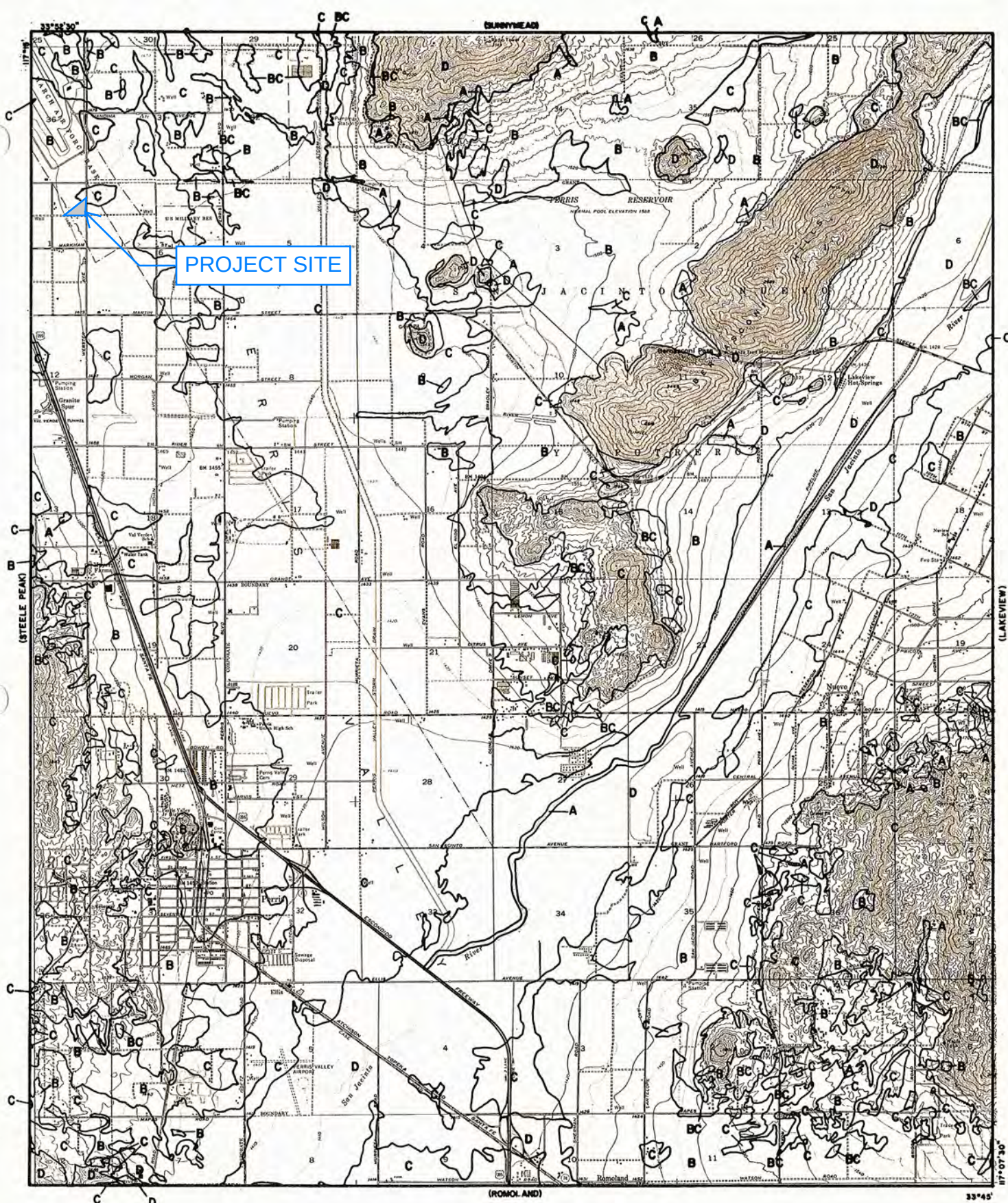


PROJECT SITE

NOTES:
1 Isohyets 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**

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DATE		DATE DRAWN		Of No.



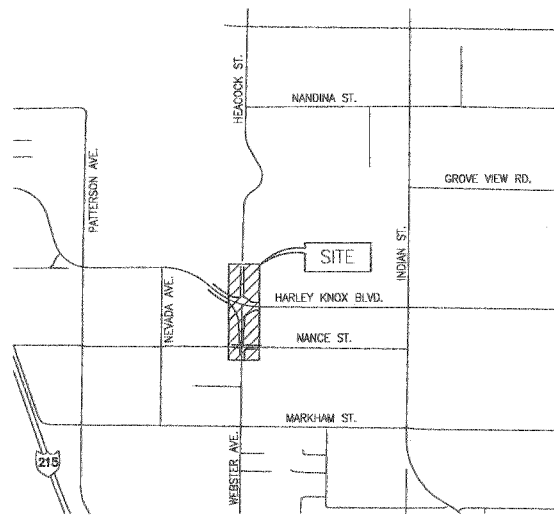
SOIL TYPE B

LEGEND — SOILS GROUP BOUNDARY A SOILS GROUP DESIGNATION RCFC&WCD HYDROLOGY MANUAL	HYDROLOGIC SOILS GROUP MAP FOR PERRIS
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RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GENERAL NOTES

1. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S M.O.U. STANDARD SPECIFICATIONS DATED JUNE 24, 2008, AND RCFC&WCD STANDARD MANUAL. FOR THE LATEST EDITIONS OF THE STANDARD MANUAL, PLEASE REFER TO THE "PUBLICATIONS AND RECORDS" PAGE FOUND ON THE DISTRICT'S WEBSITE.
2. CONTACT THE ENCROACHMENT PERMIT ENGINEER AT 951.955-1286 IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
3. CONTACT CONTRACT ADMINISTRATION 951.955.1288 IF CONSTRUCTION INSPECTION WILL BE PERFORMED BY RIVERSIDE COUNTY FLOOD CONTROL. THE DISTRICT MUST BE NOTIFIED TWENTY DAYS (20) PRIOR TO CONSTRUCTION.
4. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION UNLESS OTHERWISE NOTED.
5. STATIONING FOR LATERALS AND CONNECTOR PIPE REFER TO THE CENTERLINE INTERSECTION STATIONS.
6. FORTY-EIGHT HOURS BEFORE EXCAVATION, CALL UNDERGROUND SERVICE ALERT 1-800-227-2800.
7. ALL ELEVATIONS SHOWN ARE IN FEET AND DECIMALS THEREOF BASED ON THE NATIONAL GEODETIC VERTICAL DATUM (NGVD 88).
8. ALL COORDINATES ARE SHOWN IN FEET AND DECIMALS THEREOF BASED ON THE NORTH AMERICAN DATUM (NAD 83), CALIFORNIA COORDINATE SYSTEM (CCS), ZONE 6 AND EPOCH 2010.00
9. ALL CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
10. ELEVATIONS OF UTILITIES ARE APPROXIMATE UNLESS OTHERWISE NOTED.
11. UNLESS OTHERWISE SPECIFIED, MINIMUM STREET RECONSTRUCTION SHALL BE 4" TYPE "B" HOT MIX ASPHALT OVER 6" CLASS 2 AGGREGATE BASE OR AS SPECIFIED BY THE ENGINEER.
12. OPENINGS RESULTING FROM THE CUTTING OR PARTIAL REMOVAL OF EXISTING CULVERTS, PIPES OR SIMILAR STRUCTURES TO BE ABANDONED SHALL BE SEALED WITH 6" OF CLASS "B" CONCRETE.
13. PIPE CONNECTED TO THE MAINLINE PIPE SHALL CONFORM TO JUNCTION STRUCTURE NO. 4 (JS 229) UNLESS OTHERWISE NOTED.
14. PIPE BEDDING SHALL CONFORM TO RCFC&WCD STD. DWG. NO. MB15 EXCEPT FOR COVER <2 FEET. FOR COVER <2 FEET, CONCRETE SLURRY (2000 PSI - 2 SACK) SHALL BE USED. THE ENTIRE TRENCH SHALL BE SLURRY EXTENDING 4 INCHES MINIMUM AND 12 INCHES MAXIMUM ABOVE THE TOP OF THE PIPE.
15. "V" IS THE DEPTH OF CATCH BASINS MEASURED FROM THE TOP OF CURB TO INVERT OF CONNECTOR PIPE.
16. CATCH BASINS SHALL BE LOCATED SO THAT LOCAL DEPRESSION SHALL BEGIN AT EXISTING CURB RETURN JOINT, UNLESS OTHERWISE SPECIFIED.
17. ALL CURBS, CUTTERS, SIDEWALKS, DRIVEWAYS AND OTHER EXISTING IMPROVEMENTS TO BE RECONSTRUCTED IN KIND AND AT THE SAME ELEVATION AND LOCATION AS THE EXISTING IMPROVEMENTS UNLESS OTHERWISE NOTED.
18. STANDARD DRAWINGS CALLED FOR ON THE PLAN AND PROFILE SHALL CONFORM TO DISTRICT STANDARD DRAWINGS UNLESS NOTED OTHERWISE.
19. THE CONTRACTOR IS REQUIRED TO CALL ALL UTILITY AGENCIES REGARDING TEMPORARY SHORING AND SUPPORT REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
20. DURING ROUGH GRADING OPERATIONS AND PRIOR TO CONSTRUCTION OF PERMANENT DRAINAGE STRUCTURES, TEMPORARY DRAINAGE CONTROL SHOULD BE PROVIDED TO PREVENT FLOODING WATER AND DAMAGE TO ADJACENT PROPERTIES.
21. APPROVAL OF THESE PLANS BY THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT DOES NOT RELIEVE THE DEVELOPER'S ENGINEER OF RESPONSIBILITY FOR THE ENGINEERING DESIGN. IF FIELD CHANGES ARE REQUIRED, IT WILL BE THE RESPONSIBILITY OF THE DESIGN ENGINEER TO MAKE THE NECESSARY CORRECTIONS.
22. THE CONTRACTOR OR DEVELOPER SHALL SECURE ALL REQUIRED ENCROACHMENT AND/OR STATE AND FEDERAL REGULATORY PERMITS PRIOR TO THE COMMENCEMENT OF ANY WORK.
23. THE CONCRETE COATINGS ON THE INSIDE OF ALL REINFORCED CONCRETE PIPES AND BOX CULVERT MUST BE INCREASED TO PROVIDE A MINIMUM OF 1-1/2 INCHES OVER THE REINFORCING AND INCREASED TO A MINIMUM OF 3-1/2 INCHES OVER REINFORCING FOR BOX CULVERT, WHEN DESIGN VELOCITIES EXCEED 20 FEET PER SECOND. THE CONCRETE DESIGN STRENGTH IN THESE REACHES SHALL BE F'C=5,000 PSI FOR VELOCITIES EXCEEDING 20 FEET PER SECOND AND F'C=6,000 PSI FOR VELOCITIES EXCEEDING 30 FEET PER SECOND.
24. CONSTRUCTION JOINT FOR CALTRANS STANDARD REINFORCED CONCRETE BOX SHALL BE ACCORDING TO RCFC&WCD STANDARD DRAWING NO. BX 401.
25. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS FOR ALL JUNCTION STRUCTURES, MANHOLES, TRANSITION STRUCTURES AND CONNECTIONS TO EXISTING FACILITIES. THESE SUBMITTALS SHALL BE WET SIGNED AND STAMPED BY A REGISTERED ENGINEER FOR APPROVAL PRIOR TO THE PRECONSTRUCTION MEETING.



VICINITY MAP

R.C.F.C. & W.C.D. STANDARD DRAWINGS

- JS 227 JUNCTION STRUCTURE NO. 2
- JS 228 JUNCTION STRUCTURE NO. 3
- JS 229 JUNCTION STRUCTURE NO. 4
- JS 231 JUNCTION STRUCTURE NO. 6
- MH 253 MANHOLE NO. 3
- W 816 CONCRETE BULKHEAD
- TS 301 TRANSITION STRUCTURE NO. 1
- TS 302 TRANSITION STRUCTURE NO. 2

CALTRANS STANDARD DRAWINGS

- DBO CAST-IN-PLACE REINFORCED CONCRETE SINGLE BOX CULVERT
- DB8B PIPE CULVERT HEADWALLS AND WARPED WINGWALLS
- B11-47 CABLE RAILING

STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION

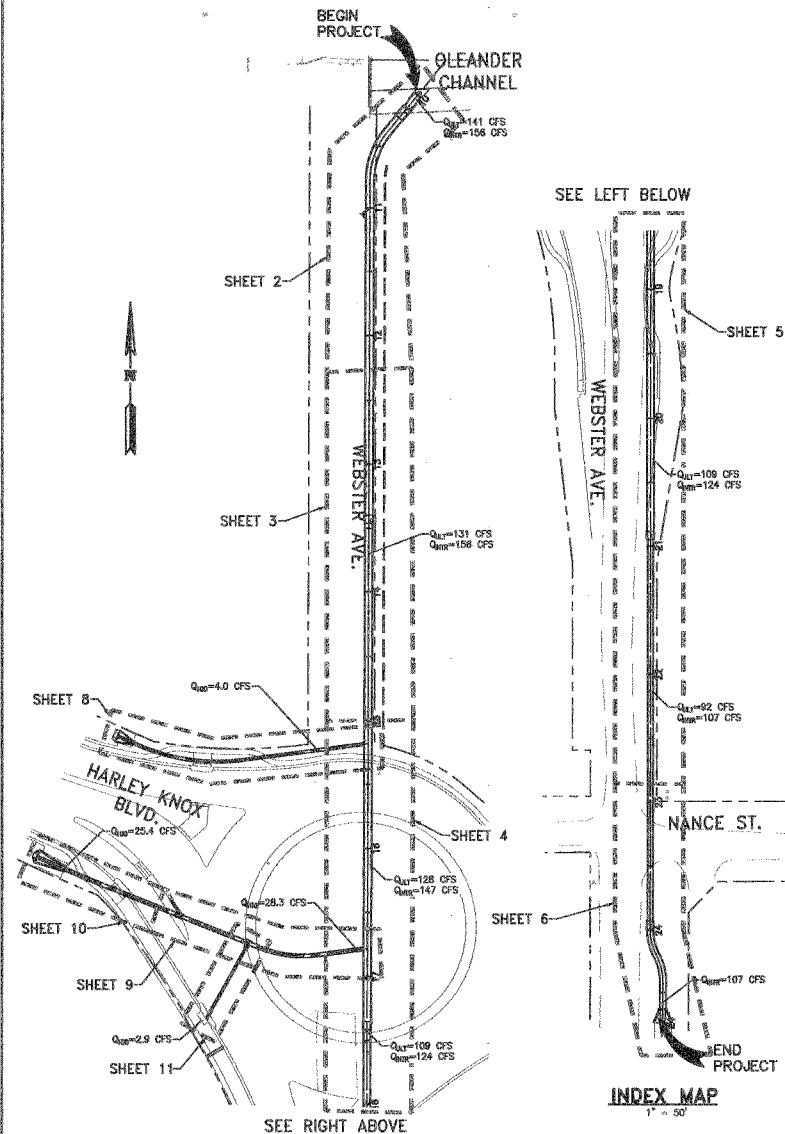
- 360-2 SLOPED PROTECTION BARRIER
- 390-1 PRECAST REINFORCED CONCRETE BOX

SHEET INDEX

- TITLE SHEET
- PLAN & PROFILE
- DETAILS
- LATERAL PLAN & PROFILE

- SHEET NO.
- 1
- 2-6
- 7
- 8-11

INDEX MAP



Don't Dig...Until You Call:
U.S.A. Toll Free:
1-800-227-2800
for the location
of buried
utility lines.
Don't dig until
you call.

ALBERT A. WEBB
ENGINEERING CONSULTANTS
3759 MCCLARY STREET,
RIVERSIDE, CA 92509
TEL (951) 808-1030
FAX (951) 786-1206



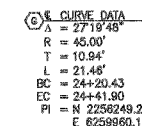
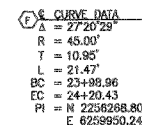
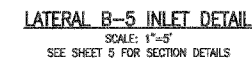
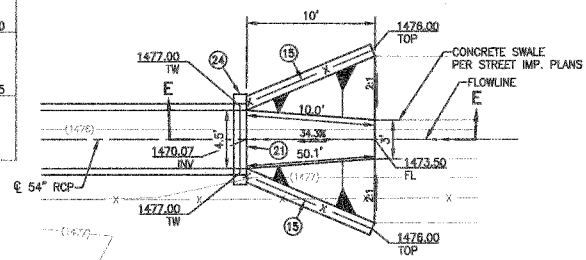
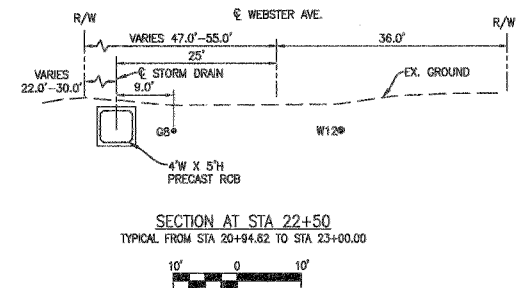
CITY OF PERRIS
APPROVED BY:
DATE: 3-15-17

BENCH MARK:
STATION IS ABOUT 4-1/2 MILES W OF LAKEVIEW, ABOUT ONE
MILE W OF THE 1955 THROUGH THE BERNARDSON MOUNTAINS
ABOUT 200 FEET SW OF THE INTERSECTION OF BRADLEY ROAD
AND WALNUT AVENUE, 70 FEET S OF CENTER LINE OF
WALNUT AVENUE, IN A LARGE ISOLATED AND MARKED WITH A
TEE. MARK IS A METROPOLITAN WATER DISTRICT OF SOUTHERN
CA STANDARD BENCHMARK STAMPED 40 Y 1937.

REVISIONS	DATE	DESCRIPTION

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY:
PLANNING ENGINEER
DATE: 3/15/2017

PM 36726
PERRIS VALLEY MDP
LATERAL B-5
STAGE 1
TITLE SHEET
PROJECT NO. 4-0-00481
DRAWING NO. 4-1109
SHEET NO. 1 OF 11



CONSTRUCTION NOTES:

- ③ CONSTRUCT PRECAST RCB PER SPWPC STD. DWG. 390-1 (FOR SHALLOW COVER FROM 0' TO 2')
- ⑤ CONSTRUCT TRANSITION STRUCTURE NO. 1 PER R.C.F.C. & W.C.D. STD. DWG. TSX01. REINFORCEMENT AND CONCRETE THICKNESS SHALL BE THAT OF A 6'Wx5'H RCB PER CALTRANS STD DB0
- ⑦ CONSTRUCT MANHOLE NO. 3 PER R.C.F.C. & W.C.D. STD. DWG. NO. MH253
- ⑬ CONSTRUCT CABLE RAILING PER CALTRANS STD. DWG. NO. B11-47
- ⑳ CONSTRUCT 54" RCP D-LOAD PER PLAN
- ㉑ CONSTRUCT TRASH RACK (INCLINED) PER SPWPC STD 390-2
- ㉒ CONSTRUCT PIPE CULVERT HEADWALL AND WARPED WINGWALLS PER CALTRANS STD. DWG. NO. D86B AND DETAILS HEREON
- ㉔ INSTALL GRAVEL BAG BERM PER EROSION CONTROL DETAIL CASQA SE-7 AND CALTRANS STANDARD SPECIFICATIONS 2015. SEE DETAIL ON SHEET 6



Drainage Study

IPT Perris Industrial Project
Perris Valley MDP Lateral B-5

PM 36726

City of Perris, CA

Prepared For:

Industrial Property Trust
4675 MacArthur Court, Suite 625
Newport Beach, CA 92660

RECEIVED

NOV 07 2016

RIVERSIDE COUNTY FLOOD CONTROL
AND WATER CONSERVATION DISTRICT
DEVELOPMENT REVIEW/PLAN CHECK

Prepared By:

Albert A. Webb Associates
3788 McCray St
Riverside, CA 92506

F
Save

Date: January 2016
Revised: October 2016

keep

+++++
Process from Point/Station 14.000 to Point/Station 15.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.870
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.900
Decimal fraction soil group C = 0.100
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 57.30
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 19.33 min.
Rainfall intensity = 1.951(In/Hr) for a 100.0 year storm
Subarea runoff = 33.934(CFS) for 20.000(Ac.)
Total runoff = 108.662(CFS) Total area = 60.000(Ac.)

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1472.630(Ft.)
Downstream point/station elevation = 1472.340(Ft.)
Pipe length = 95.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 108.662(CFS)
Nearest computed pipe diameter = 54.00(In.)
Calculated individual pipe flow = 108.662(CFS)
Normal flow depth in pipe = 44.25(In.)
Flow top width inside pipe = 41.54(In.)
Critical Depth = 36.79(In.)
Pipe flow velocity = 7.79(Ft/s)
Travel time through pipe = 0.20 min.
Time of concentration (TC) = 19.53 min.

+++++
Process from Point/Station 15.000 to Point/Station 16.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 19.53 min.
Rainfall intensity = 1.941(In/Hr) for a 100.0 year storm
Subarea runoff = 22.589(CFS) for 13.400(Ac.)
Total runoff = 131.251(CFS) Total area = 73.400(Ac.)

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

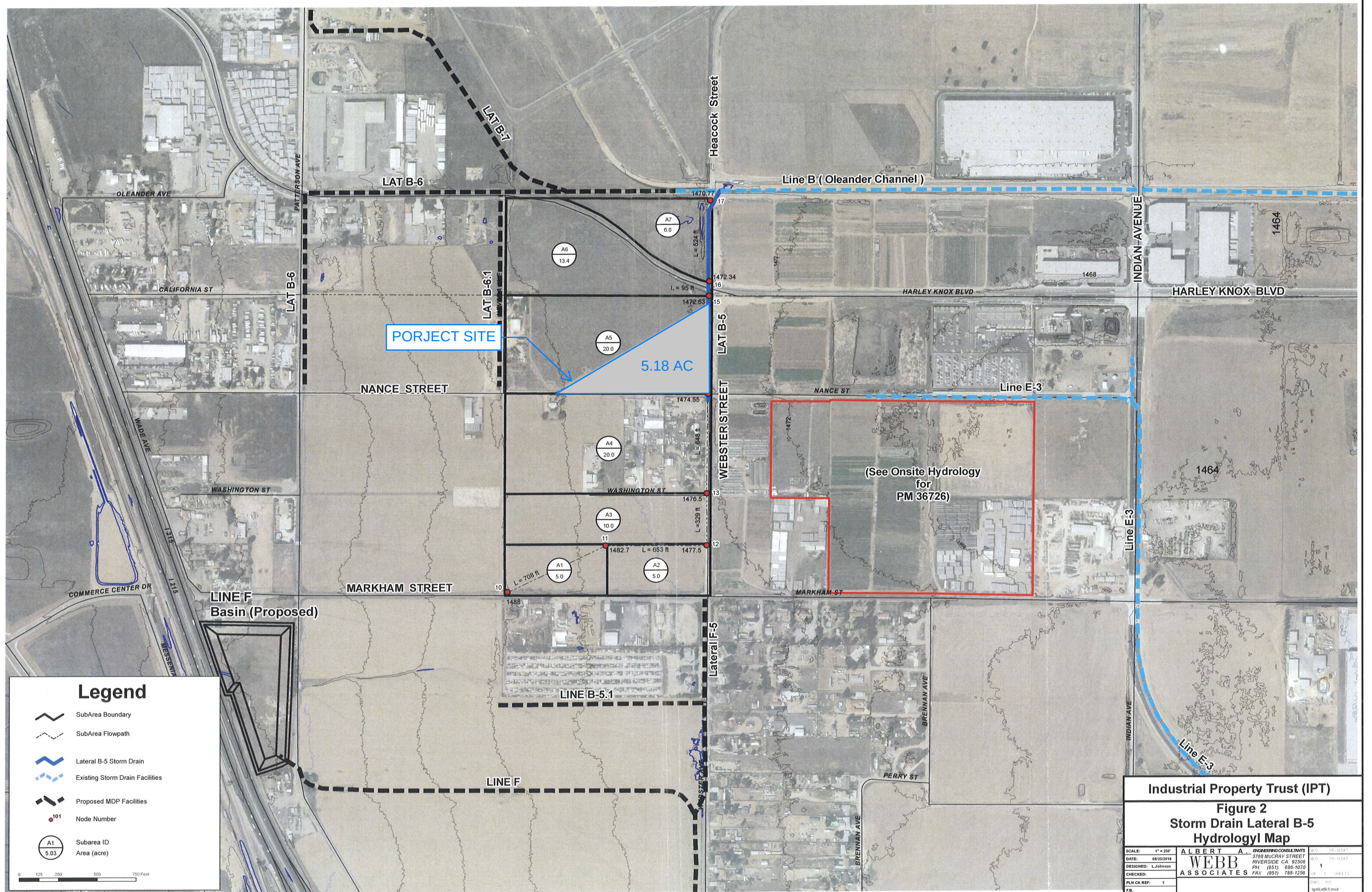
Upstream point/station elevation = 1472.340(Ft.)
Downstream point/station elevation = 1470.770(Ft.)
Pipe length = 524.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 131.251(CFS)
Nearest computed pipe diameter = 57.00(In.)
Calculated individual pipe flow = 131.251(CFS)
Normal flow depth in pipe = 50.25(In.)
Flow top width inside pipe = 36.83(In.)
Critical Depth = 39.94(In.)
Pipe flow velocity = 7.93(Ft/s)
Travel time through pipe = 1.10 min.
Time of concentration (TC) = 20.63 min.

+++++
Process from Point/Station 16.000 to Point/Station 17.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.868
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 56.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 20.63 min.
Rainfall intensity = 1.890(In/Hr) for a 100.0 year storm
Subarea runoff = 9.840(CFS) for 6.000(Ac.)
Total runoff = 141.090(CFS) Total area = 79.400(Ac.)
End of computations, total study area = 79.40 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number = 56.3

Path: G:\2015\150347\GIS\LatB5.mxd



APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION

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 1435

Analysis prepared by:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRIADA, CA 90638
714-521-4811

***** DESCRIPTION OF STUDY *****
* TEI JOB NUMBER 4108 *
* EXISTING CONDITIONS *
* 100-YEAR STORM EVENT *

FILE NAME: W:\4108\X100.DAT
TIME/DATE OF STUDY: 09:08 06/22/2022

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.480
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.200
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.200
SLOPE OF INTENSITY DURATION CURVE = 0.5000
RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
FOR ALL 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 0.0313 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 100.00 TO NODE 101.00 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) = 919.00
UPSTREAM ELEVATION(FEET) = 1480.76
DOWNSTREAM ELEVATION(FEET) = 1472.84
ELEVATION DIFFERENCE(FEET) = 7.92
 $TC = 0.533 * [(919.00**3)/(7.92)]**.2 = 21.118$
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 2.023
UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .5929
SOIL CLASSIFICATION IS "B"
SUBAREA RUNOFF(CFS) = 6.21
TOTAL AREA(ACRES) = 5.18 TOTAL RUNOFF(CFS) = 6.21

=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 5.2 TC(MIN.) = 21.12
PEAK FLOW RATE(CFS) = 6.21

=====

END OF RATIONAL METHOD ANALYSIS

PROPOSED CONDITION

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 1435

Analysis prepared by:

THIENES ENGINEERING, INC.
14349 FIRESTONE BLVD
LA MIRIADA, CA 90638
714-521-4811

***** DESCRIPTION OF STUDY *****
* TEI JOB NUMBER 4108 *
* PROPOSED CONDITIONS *
* 100-YEAR STORM EVENT *

FILE NAME: W:\4108\P100.DAT
TIME/DATE OF STUDY: 13:52 06/22/2022

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

USER SPECIFIED STORM EVENT(YEAR) = 100.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 12.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
2-YEAR, 1-HOUR PRECIPITATION(INCH) = 0.480
100-YEAR, 1-HOUR PRECIPITATION(INCH) = 1.200
COMPUTED RAINFALL INTENSITY DATA:
STORM EVENT = 100.00 1-HOUR INTENSITY(INCH/HOUR) = 1.200
SLOPE OF INTENSITY DURATION CURVE = 0.5000
RCFC&WCD HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
NOTE: CONSIDER ALL CONFLUENCE STREAM COMBINATIONS
FOR ALL 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 0.0313 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 100.00 TO NODE 101.00 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) = 150.00
UPSTREAM ELEVATION(FEET) = 1479.33
DOWNSTREAM ELEVATION(FEET) = 1477.72
ELEVATION DIFFERENCE(FEET) = 1.61
TC = 0.303*[(150.00**3)/(1.61)]**.2 = 5.570
100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.938
COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8811
SOIL CLASSIFICATION IS "B"
SUBAREA RUNOFF(CFS) = 1.74
TOTAL AREA(ACRES) = 0.50 TOTAL RUNOFF(CFS) = 1.74

FLOW PROCESS FROM NODE 101.00 TO NODE 112.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1473.72 DOWNSTREAM(FEET) = 1468.69
FLOW LENGTH(FEET) = 676.00 MANNING'S N = 0.012

DEPTH OF FLOW IN 12.0 INCH PIPE IS 6.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.21
 ESTIMATED PIPE DIAMETER(INCH) = 12.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.74
 PIPE TRAVEL TIME(MIN.) = 2.68 Tc(MIN.) = 8.25
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 112.00 = 826.00 FEET.

 FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
 TIME OF CONCENTRATION(MIN.) = 8.25
 RAINFALL INTENSITY(INCH/HR) = 3.24
 TOTAL STREAM AREA(ACRES) = 0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.74

 FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 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) = 510.00
 UPSTREAM ELEVATION(FEET) = 1478.96
 DOWNSTREAM ELEVATION(FEET) = 1473.34
 ELEVATION DIFFERENCE(FEET) = 5.62
 $TC = 0.303 * [(510.00 ** 3) / (5.62)] ** .2 = 9.040$
 100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.091
 COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8772
 SOIL CLASSIFICATION IS "B"
 SUBAREA RUNOFF(CFS) = 10.47
 TOTAL AREA(ACRES) = 3.86 TOTAL RUNOFF(CFS) = 10.47

 FLOW PROCESS FROM NODE 111.00 TO NODE 112.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1469.34 DOWNSTREAM(FEET) = 1468.69
 FLOW LENGTH(FEET) = 104.00 MANNING'S N = 0.012
 DEPTH OF FLOW IN 21.0 INCH PIPE IS 14.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 6.10
 ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 10.47
 PIPE TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 9.32
 LONGEST FLOWPATH FROM NODE 110.00 TO NODE 112.00 = 614.00 FEET.

 FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 9.32
 RAINFALL INTENSITY(INCH/HR) = 3.04
 TOTAL STREAM AREA(ACRES) = 3.86
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 10.47

** CONFLUENCE DATA **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)	AREA (ACRE)
1	1.74	8.25	3.237	0.50
2	10.47	9.32	3.044	3.86

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	RUNOFF (CFS)	Tc (MIN.)	INTENSITY (INCH/HOUR)
1	10.99	8.25	3.237

2 12.10 9.32 3.044

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 12.10 Tc(MIN.) = 9.32

TOTAL AREA(ACRES) = 4.4

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 112.00 = 826.00 FEET.

FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 1468.69 DOWNSTREAM(FEET) = 1463.33

FLOW LENGTH(FEET) = 108.00 MANNING'S N = 0.012

DEPTH OF FLOW IN 15.0 INCH PIPE IS 10.1 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 13.74

ESTIMATED PIPE DIAMETER(INCH) = 15.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 12.10

PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 9.46

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 113.00 = 934.00 FEET.

FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.023

COMMERCIAL DEVELOPMENT RUNOFF COEFFICIENT = .8768

SOIL CLASSIFICATION IS "B"

SUBAREA AREA(ACRES) = 0.18 SUBAREA RUNOFF(CFS) = 0.48

TOTAL AREA(ACRES) = 4.5 TOTAL RUNOFF(CFS) = 12.58

TC(MIN.) = 9.46

FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

100 YEAR RAINFALL INTENSITY(INCH/HOUR) = 3.023

UNDEVELOPED WATERSHED RUNOFF COEFFICIENT = .6684

SOIL CLASSIFICATION IS "B"

SUBAREA AREA(ACRES) = 0.64 SUBAREA RUNOFF(CFS) = 1.29

TOTAL AREA(ACRES) = 5.2 TOTAL RUNOFF(CFS) = 13.87

TC(MIN.) = 9.46

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 5.2 TC(MIN.) = 9.46

PEAK FLOW RATE(CFS) = 13.87

*** PEAK FLOW RATE TABLE ***

Q(CFS) Tc(MIN.)

1 12.90 8.38

2 13.87 9.46

=====

END OF RATIONAL METHOD ANALYSIS

▲

APPENDIX C

DETENTION CALCULATIONS

166TH STREET INDUSTRIAL BUILDING
PONDING IN EASTERLY TRUCK YARD

Elevation	Depth (feet)	Area (sq. ft.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)	
1473.34	0.00	0				
			3	6	0.00	
1473.40	0.06	112				
			48	54	0.00	
1473.50	0.16	847				
			156	210	0.00	
1473.60	0.26	2265				
			332	541	0.01	6.90
1473.70	0.36	4368				
			576	1,117	0.03	7.20
1473.80	0.46	7155				
			888	2,005	0.05	7.40
1473.90	0.56	10597				
			1237	3,242	0.07	7.60
1474.00	0.66	14147				
			1720	4,962	0.11	7.90
1474.10	0.76	20260				
			2197	7,160	0.16	8.1
1474.20	0.86	23680				
			2585	9,744	0.22	8.3
1474.30	0.96	28014				

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 06/22/22

TEI JOB NUMBER 4108
PROPOSED CONDITION HYDROGRAPH
100-YEAR 1 HOUR

Program License Serial Number 6400

***** HYDROGRAPH INFORMATION *****

From study/file name: 4108PR1001100.rte
*****HYDROGRAPH DATA*****
Number of intervals = 14
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 16.879 (CFS)
Total volume = 0.493 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

++++++
Process from Point/Station 100.000 to Point/Station 101.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 14
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:
Basin Depth Storage Outflow (S-O*dt/2) (S+O*dt/2)
(Ft.) (Ac.Ft) (CFS) (Ac.Ft) (Ac.Ft)

0.000 0.000 0.000 0.000 0.000
0.360 0.010 6.900 -0.014 0.034
0.460 0.030 7.200 0.005 0.055
0.560 0.050 7.400 0.025 0.075
0.660 0.070 7.600 0.044 0.096
0.760 0.110 7.900 0.083 0.137
0.860 0.160 8.100 0.132 0.188
0.960 0.220 8.300 0.191 0.249

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	Depth (Ft.)
0.083	1.81	1.28	0.002	0.07
0.167	2.81	2.73	0.004	0.14
0.250	3.26	3.16	0.005	0.16
0.333	3.44	3.43	0.005	0.18
0.417	3.84	3.73	0.005	0.19
0.500	4.37	4.26	0.006	0.22
0.583	5.00	4.86	0.007	0.25

0.667	5.81	5.63	0.008			OI					0.29
0.750	7.90	6.93	0.012			OI					0.37
0.833	16.88	7.38	0.048			0				I	0.55
0.917	10.51	7.75	0.090			0		I			0.71
1.000	4.51	7.74	0.089		I	0					0.71
1.083	1.31	7.46	0.056		I	0					0.59
1.167	0.11	6.93	0.012	I		0					0.37
1.250	0.00	0.00	0.000	0							0.00

```

*****HYDROGRAPH DATA*****
      Number of intervals =      15
      Time interval =      5.0 (Min.)
      Maximum/Peak flow rate =      7.753 (CFS)
      Total volume =      0.505 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
      Peak (CFS)      0.000      0.000      0.000      0.000      0.000
      Vol (Ac.Ft)      0.000      0.000      0.000      0.000      0.000
*****

```

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
Study date: 06/22/22

TEI JOB NUMBER 4108
PROPOSED CONDITION HYDROGRAPH
100-YEAR 3 HOUR

Program License Serial Number 6400

***** HYDROGRAPH INFORMATION *****

From study/file name: 4108PR1003100.rte
*****HYDROGRAPH DATA*****
Number of intervals = 38
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 9.051 (CFS)
Total volume = 0.760 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
Process from Point/Station 100.000 to Point/Station 101.000
**** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 38
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:
Basin Depth Storage Outflow (S-O*dt/2) (S+O*dt/2)
(Ft.) (Ac.Ft) (CFS) (Ac.Ft) (Ac.Ft)

0.000 0.000 0.000 0.000 0.000
0.360 0.010 6.900 -0.014 0.034
0.460 0.030 7.200 0.005 0.055
0.560 0.050 7.400 0.025 0.075
0.660 0.070 7.600 0.044 0.096
0.760 0.110 7.900 0.083 0.137
0.860 0.160 8.100 0.132 0.188
0.960 0.220 8.300 0.191 0.249

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	2.3	4.53	6.79	9.05	Depth (Ft.)
0.083	0.88	0.62	0.001	OI					0.03
0.167	1.35	1.32	0.002	O					0.07
0.250	1.26	1.30	0.002	O					0.07
0.333	1.46	1.38	0.002	OI					0.07
0.417	1.59	1.58	0.002	O					0.08
0.500	1.81	1.75	0.003	O					0.09
0.583	1.71	1.77	0.003	O					0.09

0.667	1.82	1.77	0.003	0					0.09
0.750	1.92	1.91	0.003	0					0.10
0.833	1.73	1.78	0.003	0					0.09
0.917	1.69	1.67	0.002	0					0.09
1.000	1.85	1.81	0.003	0					0.09
1.083	2.19	2.11	0.003	0					0.11
1.167	2.34	2.33	0.003	0					0.12
1.250	2.36	2.36	0.003	0					0.12
1.333	2.22	2.26	0.003	0					0.12
1.417	2.56	2.45	0.004	0I					0.13
1.500	2.85	2.81	0.004	0I					0.15
1.583	2.69	2.75	0.004	0					0.14
1.667	2.80	2.74	0.004	0					0.14
1.750	3.35	3.21	0.005	0					0.17
1.833	3.45	3.48	0.005	0					0.18
1.917	3.25	3.29	0.005	0					0.17
2.000	3.23	3.22	0.005	0					0.17
2.083	3.34	3.32	0.005	0					0.17
2.167	4.22	3.97	0.006	0					0.21
2.250	5.26	5.05	0.007	0I					0.26
2.333	4.49	4.80	0.007	IO					0.25
2.417	6.42	5.72	0.008	0 I					0.30
2.500	8.04	6.97	0.014	0 I					0.38
2.583	9.05	7.12	0.025	0 I					0.43
2.667	7.69	7.23	0.033	0 I					0.47
2.750	3.91	7.10	0.024	I 0					0.43
2.833	2.16	4.08	0.006	I 0					0.21
2.917	1.94	1.22	0.002	0 I					0.06
3.000	1.11	1.65	0.002	I 0					0.09
3.083	0.28	0.31	0.000	IO					0.02
3.167	0.02	0.09	0.000	0					0.00
3.250	0.00	0.00	0.000	0					0.00

```

*****HYDROGRAPH DATA*****
      Number of intervals = 39
      Time interval = 5.0 (Min.)
      Maximum/Peak flow rate = 7.230 (CFS)
      Total volume = 0.760 (Ac.Ft)
      Status of hydrographs being held in storage
      Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
      Peak (CFS) 0.000 0.000 0.000 0.000 0.000
      Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
*****

```

FLOOD HYDROGRAPH ROUTING PROGRAM
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
 Study date: 06/22/22

TEI JOB NUMBER 4108
 PROPOSED CONDITION HYDROGRAPH
 100-YEAR 6 HOUR

Program License Serial Number 6400

***** HYDROGRAPH INFORMATION *****

From study/file name: 4108PR1006100.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 74
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 7.931 (CFS)
 Total volume = 0.989 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
 Process from Point/Station 100.000 to Point/Station 101.000
 **** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

 Total number of inflow hydrograph intervals = 74
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
 Initial basin storage = 0.00 (Ac.Ft)
 Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth Storage Outflow (S-O*dt/2) (S+O*dt/2)
 (Ft.) (Ac.Ft) (CFS) (Ac.Ft) (Ac.Ft)

 0.000 0.000 0.000 0.000 0.000
 0.360 0.010 6.900 -0.014 0.034
 0.460 0.030 7.200 0.005 0.055
 0.560 0.050 7.400 0.025 0.075
 0.660 0.070 7.600 0.044 0.096
 0.760 0.110 7.900 0.083 0.137
 0.860 0.160 8.100 0.132 0.188
 0.960 0.220 8.300 0.191 0.249

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	2.0	3.97	5.95	7.93	Depth (Ft.)
0.083	0.45	0.32	0.000	0					0.02
0.167	0.77	0.73	0.001	0I					0.04
0.250	0.84	0.84	0.001	0					0.04
0.333	0.85	0.85	0.001	0					0.04
0.417	0.85	0.85	0.001	0					0.04
0.500	0.94	0.91	0.001	0					0.05
0.583	0.98	0.98	0.001	0					0.05

0.667	0.99	0.99	0.001	0					0.05
0.750	0.99	0.99	0.001	0					0.05
0.833	0.99	0.99	0.001	0					0.05
0.917	0.99	0.99	0.001	0					0.05
1.000	1.08	1.05	0.002	0					0.05
1.083	1.12	1.12	0.002	0					0.06
1.167	1.13	1.13	0.002	0					0.06
1.250	1.13	1.13	0.002	0					0.06
1.333	1.13	1.13	0.002	0					0.06
1.417	1.13	1.13	0.002	0					0.06
1.500	1.13	1.13	0.002	0					0.06
1.583	1.13	1.13	0.002	0					0.06
1.667	1.13	1.13	0.002	0					0.06
1.750	1.13	1.13	0.002	0					0.06
1.833	1.13	1.13	0.002	0					0.06
1.917	1.13	1.13	0.002	0					0.06
2.000	1.22	1.19	0.002	0					0.06
2.083	1.17	1.20	0.002	0					0.06
2.167	1.22	1.20	0.002	0					0.06
2.250	1.26	1.26	0.002	0					0.07
2.333	1.27	1.27	0.002	0					0.07
2.417	1.27	1.27	0.002	0					0.07
2.500	1.27	1.27	0.002	0					0.07
2.583	1.27	1.27	0.002	0					0.07
2.667	1.27	1.27	0.002	0					0.07
2.750	1.36	1.33	0.002	0					0.07
2.833	1.41	1.40	0.002	0					0.07
2.917	1.41	1.41	0.002	0					0.07
3.000	1.41	1.41	0.002	0					0.07
3.083	1.41	1.41	0.002	0					0.07
3.167	1.50	1.47	0.002	OI					0.08
3.250	1.55	1.54	0.002	0					0.08
3.333	1.55	1.55	0.002	0					0.08
3.417	1.64	1.61	0.002	0					0.08
3.500	1.78	1.75	0.003	0					0.09
3.583	1.92	1.89	0.003	0					0.10
3.667	1.97	1.97	0.003	0					0.10
3.750	2.06	2.04	0.003	0					0.11
3.833	2.11	2.11	0.003	0					0.11
3.917	2.20	2.18	0.003	0					0.11
4.000	2.25	2.25	0.003	0					0.12
4.083	2.35	2.32	0.003	0					0.12
4.167	2.48	2.45	0.004	OI					0.13
4.250	2.62	2.59	0.004	0					0.14
4.333	2.77	2.74	0.004	0					0.14
4.417	2.93	2.89	0.004	0					0.15
4.500	2.98	2.98	0.004	0					0.16
4.583	3.09	3.06	0.004	0					0.16
4.667	3.24	3.21	0.005	OI					0.17
4.750	3.40	3.36	0.005	0					0.18
4.833	3.45	3.45	0.005	0					0.18
4.917	3.56	3.53	0.005	0					0.18
5.000	3.71	3.68	0.005	0					0.19
5.083	4.26	4.11	0.006	OI					0.21
5.167	5.03	4.86	0.007	OI					0.25
5.250	5.61	5.50	0.008	0					0.29
5.333	6.09	5.99	0.009	0					0.31
5.417	6.76	6.60	0.010	OI					0.34
5.500	7.93	6.95	0.013	0					0.38
5.583	4.75	6.79	0.010	I					0.35
5.667	1.98	1.97	0.003	0					0.10
5.750	1.05	1.33	0.002	IO					0.07
5.833	0.77	0.74	0.001	OI					0.04
5.917	0.53	0.61	0.001	0					0.03
6.000	0.34	0.36	0.001	0					0.02
6.083	0.11	0.17	0.000	0					0.01
6.167	0.01	0.01	0.000	0					0.00
6.250	0.00	0.00	0.000	0					0.00

*****HYDROGRAPH DATA*****

Number of intervals = 75
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 6.952 (CFS)
 Total volume = 0.989 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

FLOOD HYDROGRAPH ROUTING PROGRAM
 Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2014
 Study date: 06/22/22

TEI JOB NUMBER 4108
 PROPOSED CONDITION HYDROGRAPH
 100-YEAR 24 HOUR

Program License Serial Number 6400

***** HYDROGRAPH INFORMATION *****

From study/file name: 4108PR10024100.rte
 *****HYDROGRAPH DATA*****
 Number of intervals = 290
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 2.652 (CFS)
 Total volume = 1.594 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

+++++
 Process from Point/Station 100.000 to Point/Station 101.000
 **** RETARDING BASIN ROUTING ****

User entry of depth-outflow-storage data

 Total number of inflow hydrograph intervals = 290
 Hydrograph time unit = 5.000 (Min.)
 Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
 Initial basin storage = 0.00 (Ac.Ft)
 Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:
 Basin Depth Storage Outflow (S-O*dt/2) (S+O*dt/2)
 (Ft.) (Ac.Ft) (CFS) (Ac.Ft) (Ac.Ft)

 0.000 0.000 0.000 0.000 0.000
 0.360 0.010 6.900 -0.014 0.034
 0.460 0.030 7.200 0.005 0.055
 0.560 0.050 7.400 0.025 0.075
 0.660 0.070 7.600 0.044 0.096
 0.760 0.110 7.900 0.083 0.137
 0.860 0.160 8.100 0.132 0.188
 0.960 0.220 8.300 0.191 0.249

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	0	0.7	1.33	1.99	2.65	Depth (Ft.)
0.083	0.10	0.07	0.000	0I					0.00
0.167	0.15	0.15	0.000	0					0.01
0.250	0.15	0.15	0.000	0					0.01
0.333	0.20	0.19	0.000	0					0.01
0.417	0.23	0.23	0.000	0					0.01
0.500	0.23	0.23	0.000	0					0.01
0.583	0.23	0.23	0.000	0					0.01

0.667	0.23	0.23	0.000	0					0.01
0.750	0.23	0.23	0.000	0					0.01
0.833	0.28	0.27	0.000	0					0.01
0.917	0.31	0.30	0.000	0					0.02
1.000	0.31	0.31	0.000	0					0.02
1.083	0.26	0.27	0.000	0					0.01
1.167	0.23	0.24	0.000	0					0.01
1.250	0.23	0.23	0.000	0					0.01
1.333	0.23	0.23	0.000	0					0.01
1.417	0.23	0.23	0.000	0					0.01
1.500	0.23	0.23	0.000	0					0.01
1.583	0.23	0.23	0.000	0					0.01
1.667	0.23	0.23	0.000	0					0.01
1.750	0.23	0.23	0.000	0					0.01
1.833	0.28	0.27	0.000	0					0.01
1.917	0.31	0.30	0.000	0					0.02
2.000	0.31	0.31	0.000	0					0.02
2.083	0.31	0.31	0.000	0					0.02
2.167	0.31	0.31	0.000	0					0.02
2.250	0.31	0.31	0.000	0					0.02
2.333	0.31	0.31	0.000	0					0.02
2.417	0.31	0.31	0.000	0					0.02
2.500	0.31	0.31	0.000	0					0.02
2.583	0.36	0.34	0.000	0					0.02
2.667	0.38	0.38	0.001	0					0.02
2.750	0.39	0.39	0.001	0					0.02
2.833	0.39	0.39	0.001	0					0.02
2.917	0.39	0.39	0.001	0					0.02
3.000	0.39	0.39	0.001	0					0.02
3.083	0.39	0.39	0.001	0					0.02
3.167	0.39	0.39	0.001	0					0.02
3.250	0.39	0.39	0.001	0					0.02
3.333	0.39	0.39	0.001	0					0.02
3.417	0.39	0.39	0.001	0					0.02
3.500	0.39	0.39	0.001	0					0.02
3.583	0.39	0.39	0.001	0					0.02
3.667	0.39	0.39	0.001	0					0.02
3.750	0.39	0.39	0.001	0					0.02
3.833	0.43	0.42	0.001	0					0.02
3.917	0.46	0.46	0.001	0					0.02
4.000	0.46	0.46	0.001	0					0.02
4.083	0.46	0.46	0.001	0					0.02
4.167	0.46	0.46	0.001	0					0.02
4.250	0.46	0.46	0.001	0					0.02
4.333	0.51	0.50	0.001	0I					0.03
4.417	0.54	0.54	0.001	0					0.03
4.500	0.54	0.54	0.001	0					0.03
4.583	0.54	0.54	0.001	0					0.03
4.667	0.54	0.54	0.001	0					0.03
4.750	0.54	0.54	0.001	0					0.03
4.833	0.59	0.57	0.001	0I					0.03
4.917	0.61	0.61	0.001	0					0.03
5.000	0.62	0.62	0.001	0					0.03
5.083	0.52	0.55	0.001	0					0.03
5.167	0.47	0.47	0.001	0					0.02
5.250	0.46	0.46	0.001	0					0.02
5.333	0.51	0.50	0.001	0I					0.03
5.417	0.54	0.54	0.001	0					0.03
5.500	0.54	0.54	0.001	0					0.03
5.583	0.59	0.57	0.001	0I					0.03
5.667	0.61	0.61	0.001	0					0.03
5.750	0.62	0.62	0.001	0					0.03
5.833	0.62	0.62	0.001	0					0.03
5.917	0.62	0.62	0.001	0					0.03
6.000	0.62	0.62	0.001	0					0.03
6.083	0.67	0.65	0.001	0I					0.03
6.167	0.69	0.69	0.001	0					0.04
6.250	0.69	0.69	0.001	0					0.04
6.333	0.69	0.69	0.001	0					0.04
6.417	0.69	0.69	0.001	0					0.04
6.500	0.69	0.69	0.001	0					0.04
6.583	0.74	0.73	0.001	0					0.04
6.667	0.77	0.77	0.001	0					0.04
6.750	0.77	0.77	0.001	0					0.04
6.833	0.77	0.77	0.001	0					0.04
6.917	0.77	0.77	0.001	0					0.04
7.000	0.77	0.77	0.001	0					0.04
7.083	0.77	0.77	0.001	0					0.04
7.167	0.77	0.77	0.001	0					0.04

7.250	0.77	0.77	0.001		0				0.04
7.333	0.82	0.81	0.001		0				0.04
7.417	0.85	0.84	0.001		0				0.04
7.500	0.85	0.85	0.001		0				0.04
7.583	0.90	0.88	0.001		0				0.05
7.667	0.92	0.92	0.001		0				0.05
7.750	0.93	0.93	0.001		0				0.05
7.833	0.97	0.96	0.001		0				0.05
7.917	1.00	1.00	0.001		0				0.05
8.000	1.00	1.00	0.001		0				0.05
8.083	1.10	1.07	0.002		OI				0.06
8.167	1.15	1.15	0.002		0				0.06
8.250	1.16	1.16	0.002		0				0.06
8.333	1.16	1.16	0.002		0				0.06
8.417	1.16	1.16	0.002		0				0.06
8.500	1.16	1.16	0.002		0				0.06
8.583	1.21	1.19	0.002		0				0.06
8.667	1.23	1.23	0.002		0				0.06
8.750	1.23	1.23	0.002		0				0.06
8.833	1.28	1.27	0.002		0				0.07
8.917	1.31	1.31	0.002		0				0.07
9.000	1.31	1.31	0.002		0				0.07
9.083	1.41	1.38	0.002		0				0.07
9.167	1.46	1.46	0.002		0				0.08
9.250	1.46	1.46	0.002		0				0.08
9.333	1.51	1.50	0.002		0				0.08
9.417	1.54	1.54	0.002		0				0.08
9.500	1.54	1.54	0.002		0				0.08
9.583	1.59	1.58	0.002		0				0.08
9.667	1.62	1.61	0.002		0				0.08
9.750	1.62	1.62	0.002		0				0.08
9.833	1.67	1.65	0.002		OI				0.09
9.917	1.69	1.69	0.002		0				0.09
10.000	1.70	1.70	0.002		0				0.09
10.083	1.35	1.45	0.002		IO				0.08
10.167	1.17	1.19	0.002		0				0.06
10.250	1.16	1.16	0.002		0				0.06
10.333	1.16	1.16	0.002		0				0.06
10.417	1.16	1.16	0.002		0				0.06
10.500	1.16	1.16	0.002		0				0.06
10.583	1.40	1.33	0.002		0				0.07
10.667	1.53	1.52	0.002		0				0.08
10.750	1.54	1.54	0.002		0				0.08
10.833	1.54	1.54	0.002		0				0.08
10.917	1.54	1.54	0.002		0				0.08
11.000	1.54	1.54	0.002		0				0.08
11.083	1.49	1.51	0.002		0				0.08
11.167	1.47	1.47	0.002		0				0.08
11.250	1.46	1.46	0.002		0				0.08
11.333	1.46	1.46	0.002		0				0.08
11.417	1.46	1.46	0.002		0				0.08
11.500	1.46	1.46	0.002		0				0.08
11.583	1.37	1.40	0.002		0				0.07
11.667	1.32	1.32	0.002		0				0.07
11.750	1.31	1.31	0.002		0				0.07
11.833	1.36	1.34	0.002		0				0.07
11.917	1.39	1.38	0.002		0				0.07
12.000	1.39	1.39	0.002		0				0.07
12.083	1.73	1.63	0.002		OI				0.08
12.167	1.91	1.90	0.003		OI				0.10
12.250	1.93	1.93	0.003		0				0.10
12.333	1.98	1.96	0.003		0				0.10
12.417	2.00	2.00	0.003		0				0.10
12.500	2.00	2.00	0.003		0				0.10
12.583	2.10	2.07	0.003		0				0.11
12.667	2.15	2.15	0.003		0				0.11
12.750	2.16	2.16	0.003		0				0.11
12.833	2.21	2.19	0.003		0				0.11
12.917	2.23	2.23	0.003		0				0.12
13.000	2.24	2.24	0.003		0				0.12
13.083	2.50	2.42	0.004				OI		0.13
13.167	2.63	2.62	0.004				0		0.14
13.250	2.65	2.65	0.004				0		0.14
13.333	2.65	2.65	0.004				0		0.14
13.417	2.65	2.65	0.004				0		0.14
13.500	2.65	2.65	0.004				OI		0.14
13.583	2.09	2.26	0.003			I 0			0.12
13.667	1.80	1.82	0.003			0			0.10
13.750	1.77	1.77	0.003			0			0.09

13.833	1.77	1.77	0.003			0		0.09
13.917	1.77	1.77	0.003			0		0.09
14.000	1.77	1.77	0.003			0		0.09
14.083	1.97	1.91	0.003			0		0.10
14.167	2.07	2.06	0.003			0		0.11
14.250	2.08	2.08	0.003			0		0.11
14.333	2.03	2.05	0.003			0		0.11
14.417	2.01	2.01	0.003			0		0.10
14.500	2.00	2.00	0.003			0		0.10
14.583	2.00	2.00	0.003			0		0.10
14.667	2.00	2.00	0.003			0		0.10
14.750	2.00	2.00	0.003			0		0.10
14.833	1.96	1.97	0.003			0		0.10
14.917	1.93	1.93	0.003			0		0.10
15.000	1.93	1.93	0.003			0		0.10
15.083	1.88	1.89	0.003			0		0.10
15.167	1.85	1.85	0.003			0		0.10
15.250	1.85	1.85	0.003			0		0.10
15.333	1.80	1.82	0.003			0		0.09
15.417	1.78	1.78	0.003			0		0.09
15.500	1.77	1.77	0.003			0		0.09
15.583	1.58	1.64	0.002			0		0.09
15.667	1.48	1.48	0.002			0		0.08
15.750	1.46	1.47	0.002			0		0.08
15.833	1.46	1.46	0.002			0		0.08
15.917	1.46	1.46	0.002			0		0.08
16.000	1.46	1.46	0.002			0		0.08
16.083	0.73	0.95	0.001	I	0			0.05
16.167	0.35	0.37	0.001	0				0.02
16.250	0.31	0.31	0.000	0				0.02
16.333	0.31	0.31	0.000	0				0.02
16.417	0.31	0.31	0.000	0				0.02
16.500	0.31	0.31	0.000	0				0.02
16.583	0.26	0.27	0.000	0				0.01
16.667	0.23	0.24	0.000	0				0.01
16.750	0.23	0.23	0.000	0				0.01
16.833	0.23	0.23	0.000	0				0.01
16.917	0.23	0.23	0.000	0				0.01
17.000	0.23	0.23	0.000	0				0.01
17.083	0.33	0.30	0.000	0				0.02
17.167	0.38	0.38	0.001	0				0.02
17.250	0.39	0.39	0.001	0				0.02
17.333	0.39	0.39	0.001	0				0.02
17.417	0.39	0.39	0.001	0				0.02
17.500	0.39	0.39	0.001	0				0.02
17.583	0.39	0.39	0.001	0				0.02
17.667	0.39	0.39	0.001	0				0.02
17.750	0.39	0.39	0.001	0				0.02
17.833	0.34	0.35	0.001	0				0.02
17.917	0.31	0.31	0.000	0				0.02
18.000	0.31	0.31	0.000	0				0.02
18.083	0.31	0.31	0.000	0				0.02
18.167	0.31	0.31	0.000	0				0.02
18.250	0.31	0.31	0.000	0				0.02
18.333	0.31	0.31	0.000	0				0.02
18.417	0.31	0.31	0.000	0				0.02
18.500	0.31	0.31	0.000	0				0.02
18.583	0.26	0.27	0.000	0				0.01
18.667	0.23	0.24	0.000	0				0.01
18.750	0.23	0.23	0.000	0				0.01
18.833	0.18	0.20	0.000	0				0.01
18.917	0.16	0.16	0.000	0				0.01
19.000	0.15	0.15	0.000	0				0.01
19.083	0.20	0.19	0.000	0				0.01
19.167	0.23	0.23	0.000	0				0.01
19.250	0.23	0.23	0.000	0				0.01
19.333	0.28	0.27	0.000	0				0.01
19.417	0.31	0.30	0.000	0				0.02
19.500	0.31	0.31	0.000	0				0.02
19.583	0.26	0.27	0.000	0				0.01
19.667	0.23	0.24	0.000	0				0.01
19.750	0.23	0.23	0.000	0				0.01
19.833	0.18	0.20	0.000	0				0.01
19.917	0.16	0.16	0.000	0				0.01
20.000	0.15	0.15	0.000	0				0.01
20.083	0.20	0.19	0.000	0				0.01
20.167	0.23	0.23	0.000	0				0.01
20.250	0.23	0.23	0.000	0				0.01
20.333	0.23	0.23	0.000	0				0.01

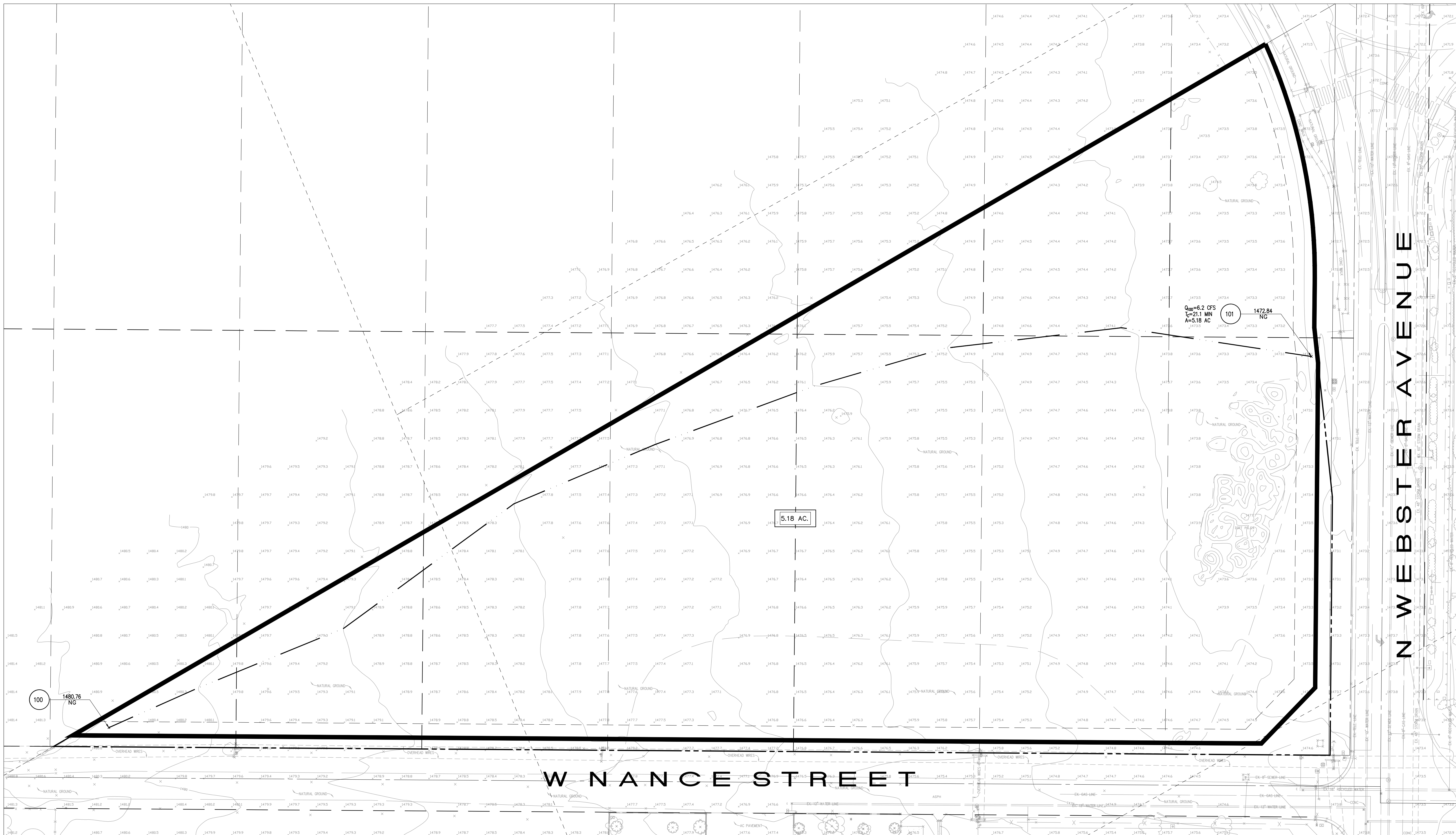
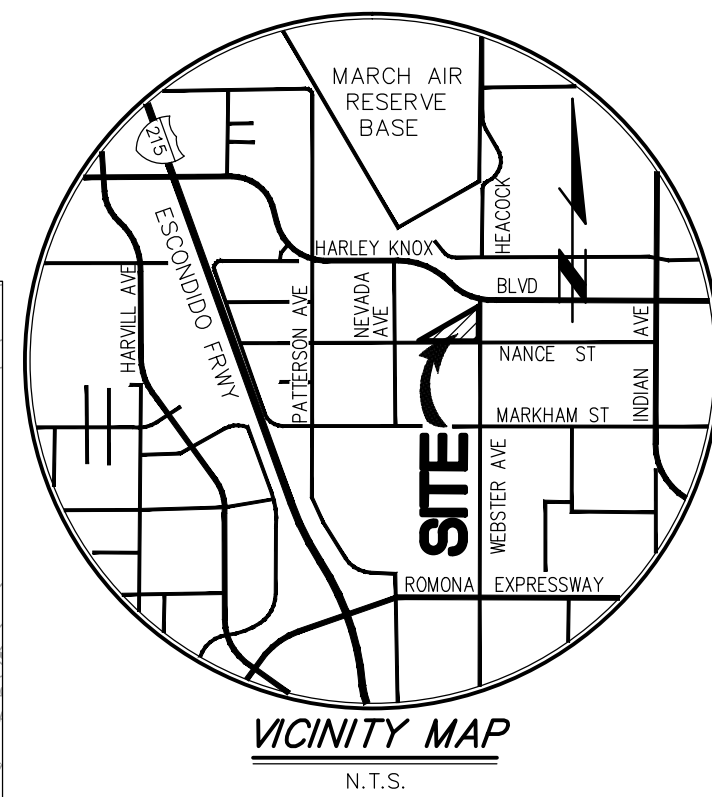
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20.500	0.23	0.23	0.000	0					0.01
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20.667	0.23	0.23	0.000	0					0.01
20.750	0.23	0.23	0.000	0					0.01
20.833	0.18	0.20	0.000	0					0.01
20.917	0.16	0.16	0.000	0					0.01
21.000	0.15	0.15	0.000	0					0.01
21.083	0.20	0.19	0.000	0					0.01
21.167	0.23	0.23	0.000	0					0.01
21.250	0.23	0.23	0.000	0					0.01
21.333	0.18	0.20	0.000	0					0.01
21.417	0.16	0.16	0.000	0					0.01
21.500	0.15	0.15	0.000	0					0.01
21.583	0.20	0.19	0.000	0					0.01
21.667	0.23	0.23	0.000	0					0.01
21.750	0.23	0.23	0.000	0					0.01
21.833	0.18	0.20	0.000	0					0.01
21.917	0.16	0.16	0.000	0					0.01
22.000	0.15	0.15	0.000	0					0.01
22.083	0.20	0.19	0.000	0					0.01
22.167	0.23	0.23	0.000	0					0.01
22.250	0.23	0.23	0.000	0					0.01
22.333	0.18	0.20	0.000	0					0.01
22.417	0.16	0.16	0.000	0					0.01
22.500	0.15	0.15	0.000	0					0.01
22.583	0.15	0.15	0.000	0					0.01
22.667	0.15	0.15	0.000	0					0.01
22.750	0.15	0.15	0.000	0					0.01
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23.000	0.15	0.15	0.000	0					0.01
23.083	0.15	0.15	0.000	0					0.01
23.167	0.15	0.15	0.000	0					0.01
23.250	0.15	0.15	0.000	0					0.01
23.333	0.15	0.15	0.000	0					0.01
23.417	0.15	0.15	0.000	0					0.01
23.500	0.15	0.15	0.000	0					0.01
23.583	0.15	0.15	0.000	0					0.01
23.667	0.15	0.15	0.000	0					0.01
23.750	0.15	0.15	0.000	0					0.01
23.833	0.15	0.15	0.000	0					0.01
23.917	0.15	0.15	0.000	0					0.01
24.000	0.15	0.15	0.000	0					0.01
24.083	0.06	0.09	0.000	10					0.00
24.167	0.01	0.01	0.000	0					0.00
24.250	0.00	0.00	0.000	0					0.00

*****HYDROGRAPH DATA*****

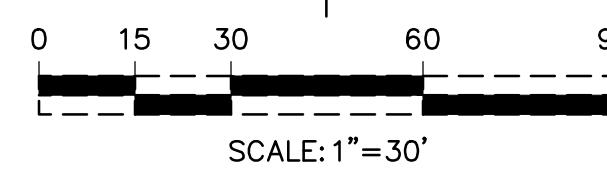
Number of intervals = 291
 Time interval = 5.0 (Min.)
 Maximum/Peak flow rate = 2.652 (CFS)
 Total volume = 1.594 (Ac.Ft)
 Status of hydrographs being held in storage
 Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
 Peak (CFS) 0.000 0.000 0.000 0.000 0.000
 Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000

APPENDIX D

HYDROLOGY MAPS



LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	NODE NUMBER
	FLOW DIRECTION

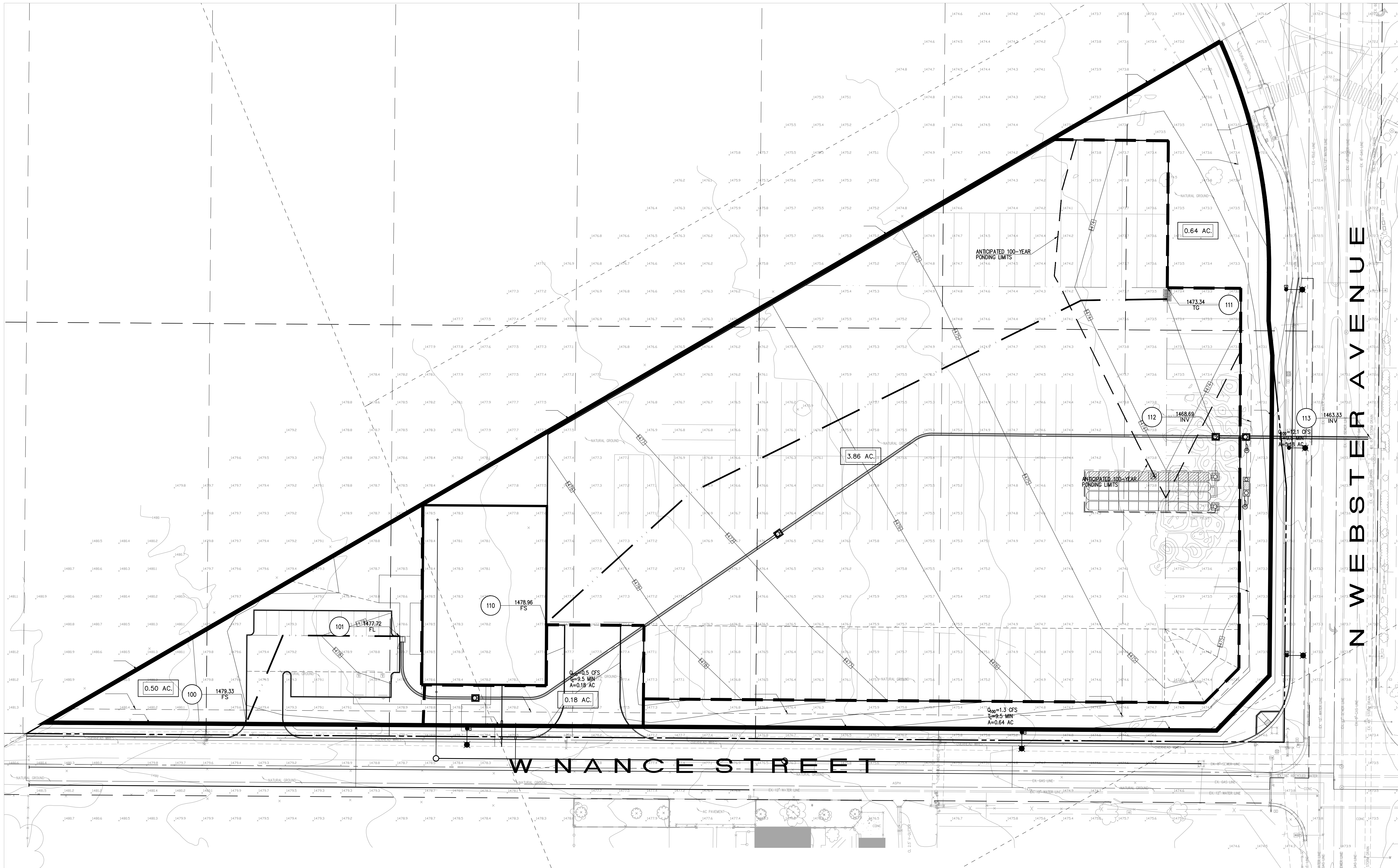
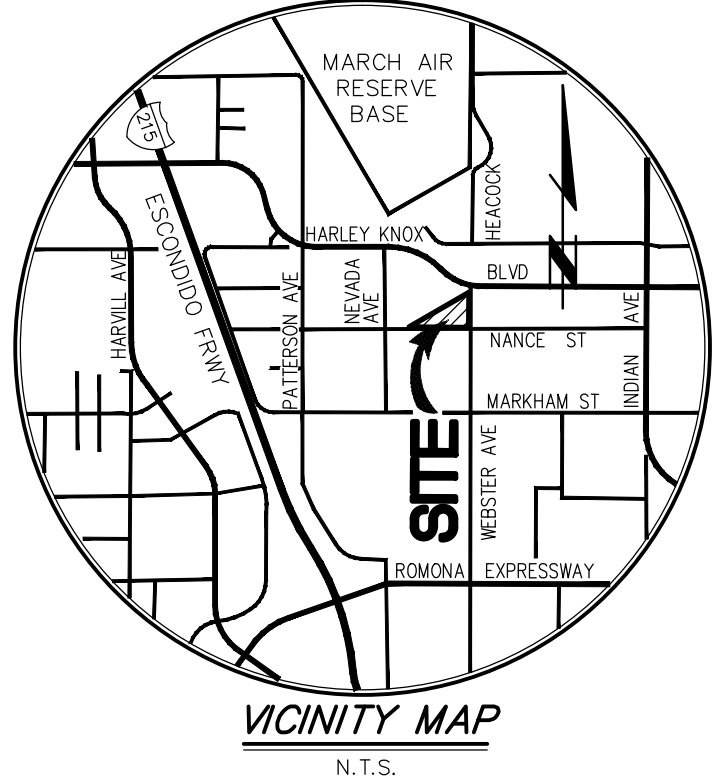


PREPARED FOR:
LAKE CREEK INDUSTRIAL, LLC
1302 BRITTANY CROSS RD.
SANTA ANA, CA. 92705
CONTACT: MIKE TONKONOCY

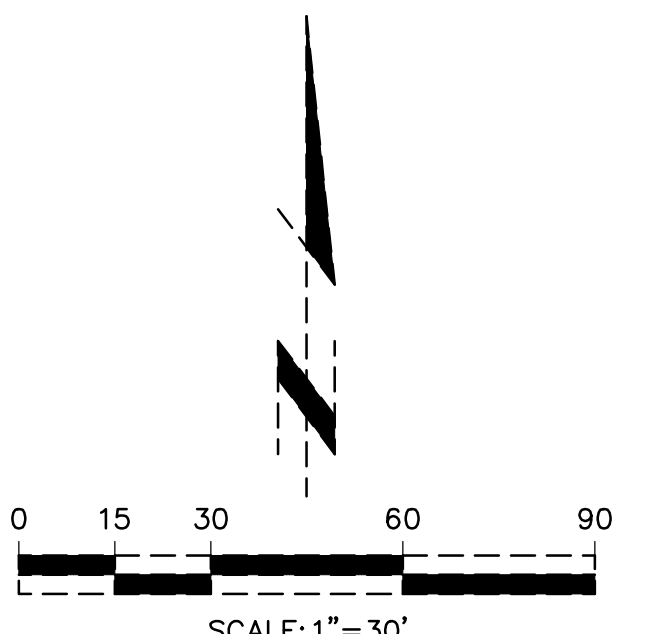
Thien Engineering, Inc.
CIVIL ENGINEERING • LAND SURVEYING
14349 FIRESTONE BOULEVARD
LA MIRADA, CALIFORNIA 90638
PH (714) 551-4011 FAX (714) 551-4173

CITY OF PERRIS PUBLIC WORKS DEPARTMENT	
EXISTING CONDITION HYDROLOGY MAP PERRIS TRAILER YARD NANCE ST. AND WEBSTER AVE.	
Designed by _____	Approved by _____ Date _____
Checked by _____	Public Works Director _____ R.C.E. XXXXX
Designed by _____	
Checked by _____	
Date _____	
Sheet 1 of 1	Sheets

UN: 4108



LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	NODE NUMBER
	FLOW DIRECTION
	PONDING LIMITS



CITY OF PERRIS PUBLIC WORKS DEPARTMENT	
PROPOSED CONDITION HYDROLOGY MAP	
PERRIS TRAILER YARD	
NANCE ST. AND WEBSTER AVE.	
Designed by _____	Approved by _____ Date _____
Checked by _____	Public Works Director _____ R.C.E. XXXXX
Designed by _____	
Checked by _____	
Date _____	
Sheet 1 of 1	Sheets

PREPARED FOR:
LAKE CREEK INDUSTRIAL, LLC
1302 BRITANNY CROSS RD.
SANTA ANA, CA. 92705
CONTACT: MIKE TONKONOCY



JUN 4108