

PRELIMINARY HYDROLOGY CALCULATIONS

FOR

PENTAIR
10951 LOS ANGELES AVENUE
MOORPARK, CALIFORNIA

PREPARED FOR

AMIR DEVELOPMENT CO.
ATTN: STEVEN JUHNKE
8730 WILSHIRE BLVD, SUITE 300
BEVERLY HILLS, CA 90211
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JANUARY 10, 2022
REVISED: MARCH 10, 2022
REVISED: MAY 24, 2022

JOB NO. 3885

PREPARED BY

THIENES ENGINEERING
14349 FIRESTONE BLVD.
LA MIRADA, CA 90638
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**PRELIMINARY HYDROLOGY
CALCULATIONS**

FOR

**PENTAIR
10951 LOS ANGELES AVENUE**

PREPARED BY RICKY HWA
UNDER THE SUPERVISION OF



05/24/2022

REINHARD STENZEL
R.C.E. 56155
EXP. 12/31/22

DATE:

INTRODUCTION

A: PROJECT LOCATION

The project site is located at 10951 Los Angeles Avenue, west of Tierra Rejada Road, east of Grimes Canyon Road in the City of Moorpark, California. Please see next page for vicinity map.

B: STUDY PURPOSE

The purpose of this study is to determine the existing and proposed condition 100-year peak flow rates from the project site, which drains to Gabbert Canyon Channel along the site's southerly boundary.

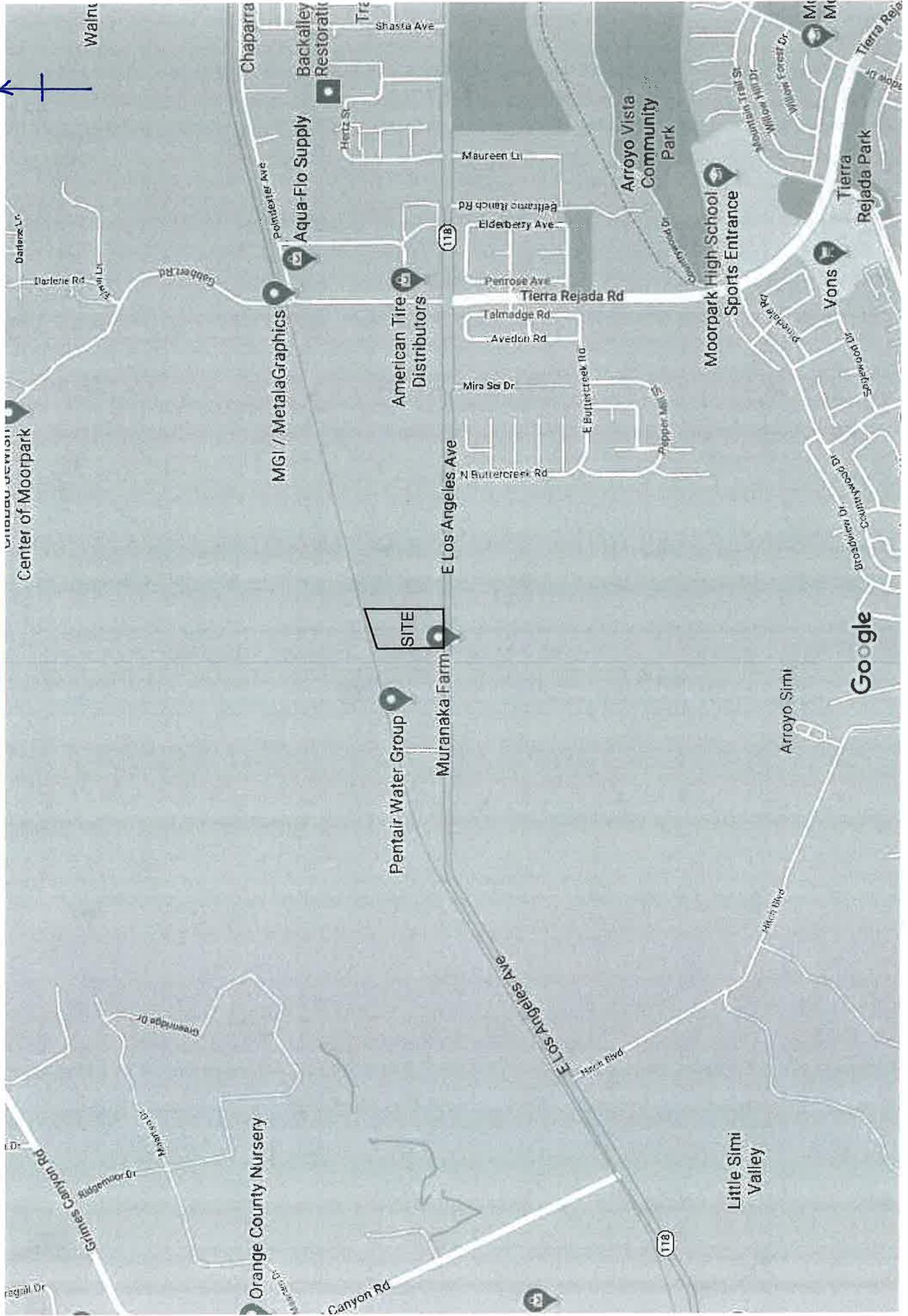
C: PROJECT STAFF:

Thienes Engineering staff involved in this study include:

Reinhard Stenzel
Ricky Hwa

Google Maps

VICINITY MAP



DISCUSSION

The project site encompasses approximately 5.65 acres. Proposed improvements consist of one commercial type building of 90,566 square feet. There will be a truck yard west of the building, vehicle parking on the north, east, and south sides, and landscape areas scattered throughout the site. The portion of the existing Gabbert Canyon Channel under the site's proposed entry driveway will be replaced with a reinforced concrete box culvert, while the remainder of the channel will remain unchanged.

Master Plan of Drainage

Per City of Moorpark Master Plan of Drainage, by Hawks & Associates dated April 1995, the project site is located between Node 518BC and Node 519B, tributary to the Gabbert Canyon Channel. Per as-built plans, the existing channel is deficient with a total capacity of 1,070 cfs at the project site frontage. This is in comparison to tributary flow rates of 3,245 cfs at Node 518 BC and 3,250 cfs at Node 519B per modified rational method hydrology data for the City's Master Plan of Drainage. The Gabbert & Walnut Canyon Channels Flood Control Deficiency Study, by PACE dated July 2005, indicated tributary flow rates of 2,944 cfs at Node 114AB upstream of the site and 2,945 cfs at Node 115A downstream of the site. Since the existing channel is deficient, proposed condition discharge from the site is restricted to 90 percent of existing condition runoff, per email from Ventura County Watershed Protection District.

Per Flood Insurance Rate Map Number 06111C0818E dated January 20, 2010, a majority of the project is located in "Zone X", or "areas determined to be outside the 0.2 percent annual chance floodplain". The south end of the site, adjacent to Gabbert Canyon Channel, is located in "Zone X Shaded", or areas of 0.2 percent annual chance flood; areas of 1 percent annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1 percent annual chance flood". The channel's flood elevation indicated on FIRM is interpolated to be 447.50 at the project site's westerly end frontage and 449.50 at the easterly end frontage. This is approximately equal to the top of channel elevation per as-built plan, or 447.20 at Station 41+98 (west end of site) and 449.30 at Station 45+47 (east end of site), adjusted up 2.5 feet to match 1988 datum.

Please see Appendix "A" for referenced County rainfall maps, as-built channel plan, drainage restriction email, and the City's Master Plan of Drainage.

Existing Condition

Under existing condition, the project site is an undeveloped dirt lot. It generally surface flows south-westerly to Gabbert Canyon Channel. The existing condition 100-year peak flow rate for the project site (Subarea 20A on existing condition hydrology map, 5.65

acres) is approximately 6.0 cfs. This results in an allowable proposed condition site discharge rate of 5.4 cfs, or 90 percent of 6.0 cfs.

An open dirt area immediately to the north of the project site (Subarea 21B, 0.40 acre) surface drains southerly to the site. The 100-year peak flow rate from this northerly offsite area is approximately 0.7 cfs.

A portion of the easterly neighboring dirt lot (Subarea 22C, 2.60 acres) surface drains south-westerly to the site. The 100-year peak flow rate from this easterly offsite area is approximately 2.9 cfs.

Finally, the existing northerly hillside slopes, north of the railroad tracks (Subareas 23D-25D, 26.30 acres), surface drain southerly and cross under the railroad via a 36-inch pipe, then discharge onto the project site. The 100-year peak flow rate from the northerly hillside area is approximately 19.3 cfs.

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

Proposed Condition

The proposed building, westerly truck yard and northerly parking lot (Subareas 1A-5A, 3.90 acres) drain to catch basins in the truck yard. Runoffs are then conveyed southerly via a proposed onsite storm drain that will connect to the existing Gabbert Canyon Channel. The proposed condition 100-year peak flow rate for these onsite areas is approximately 12.6 cfs.

The easterly and southerly parking lots (Subareas 6B-9B, 1.15 acres) drain southerly to a catch basin in the southerly parking lot. Runoffs from these parking lots are then conveyed westerly via a proposed lateral to the same proposed onsite storm drain system, then southerly to Gabbert Canyon Channel. The 100-year peak flow rate for these parking lots is approximately 2.6 cfs.

The south-westerly drive aisle, immediately north of the site's entry driveway (Subarea 10C, 0.25 acre) drain to a catch basin in the drive aisle. Runoffs from the drive aisle are then conveyed southerly via the same proposed onsite storm drain system to Gabbert Canyon Channel. The 100-year peak flow rate for the south-westerly drive aisle is approximately 0.8 cfs.

The site's southerly frontage landscape area (Subarea 11D, 0.30 acre) will surface drain southerly to Gabbert Canyon Channel under proposed condition. The 100-year peak flow rate for the frontage landscape area is approximately 0.6 cfs.

The total proposed condition 100-year peak flow rate from the project site tributary to Gabbert Canyon Channel is approximately 16.6 cfs over 5.60 acres. See detention section

below for proposed 100-year detention in truck yard, which will restrict overall site discharge to Gabbert Canyon Channel to less than 5.4 cfs, or 90 percent of existing condition site runoff.

The site's southerly entry driveway fronting Los Angeles Avenue (Subarea 12E, 0.05 acre) will surface drain southerly to Los Angeles Avenue under proposed condition.

Tributary offsite flows previously mentioned in the Existing Condition section will be conveyed via proposed storm drains through the project site to Gabbert Canyon Channel under proposed condition, utilizing the same proposed channel connection as the aforementioned onsite flows. Northerly offsite flows from Subarea 21B (Q100=0.7 cfs) and Subareas 23D-25D (Q100=19.3 cfs) will be intercepted by a proposed large grate inlet adjacent to the site's northerly property line (south of existing railroad right-of-way), then conveyed southerly via a proposed 30" storm drain traversing through the site to the proposed connection to Gabbert Canyon Channel. Easterly offsite flows from Subarea 20C (Q100=2.9 cfs) will be intercepted by a proposed C.M.P. riser adjacent to the site's easterly property line, then conveyed southerly via a proposed 18" storm drain traversing through the site to the same proposed connection to Gabbert Canyon Channel.

See Appendix "B" for proposed condition hydrology calculations and Appendix "D" for proposed condition hydrology map. Please note that the minimum tributary area input allowed by Ventura County's Modified Rational Method Hydrology Program (VCRat v2.6) is 5.00 acres. For a tributary area less than 5 acres, calculations were performed at 5 acres, then Q100 was prorated down to the smaller tributary area. Also, the shortest time of concentration input allowed by VCRat is 6 minutes, and the longest Tc allowed is 30 minutes. For a tributary area with a Tc less than 6 minutes or more than 30 minutes, the Tc was increased to 6 minutes or reduced to 30 minutes as necessary.

Detention

Per Ventura County Watershed Protection District requirements, proposed condition discharge from the project site to Gabbert Canyon Channel is limited to 90 percent of existing condition site runoff (6.0 cfs x 0.90 = 5.4 cfs).

Proposed condition runoffs tributary to the westerly truck yard (Subareas 1A-5A, 3.90 acres, Q100=12.6 cfs) will be temporarily detained above the truck yard surface at a depth of 1.14 feet, with a volume of 15,970 cubic feet, with 1.2 cfs discharging via the proposed onsite storm drain to Gabbert Canyon Channel. Proposed condition runoffs from the remainder of the project site – 2.6 cfs from Subareas 6B-9B, 0.8 cfs from Subarea 10C, 0.6 cfs from Subarea 11D – will be allowed to discharge undetained. With truck yard detention, the proposed condition 100-year discharge from the project site to Gabbert Canyon Channel will be approximately 5.2 cfs, less than the allowable 5.4 cfs.

With adequate storage volume provided in the truck yard, proposed site improvements will not negatively impact any downstream drainage facilities. The proposed onsite storm

drain system will be appropriately sized during the site's final design phase to restrict proposed condition discharge to the rate described above.

Please note that the proposed Stormtech SC-740 underground chambers within the truck yard are only for B.M.P. treatment purposes, not for 100-year storm detention. Stormtech chambers will be completely filled with the required B.M.P. treatment volume prior to the higher storm's arrival. Proposed storm detention will occur above ground, above the truck yard surface.

See Appendix "C" for detention calculations.

Methodology

Hydrology and detention calculations are computed using the Ventura County Watershed Protection District's Modified Rational Method Hydrology program (VCRat v2.6). Times of concentration are computed with the District's TC program (version 2.6.2009.7). The project site is in flood zone 3, rainfall zone J', with soil type 6 per the Ventura County Hydrology Manual. See Appendix "A" for pertinent reference materials.

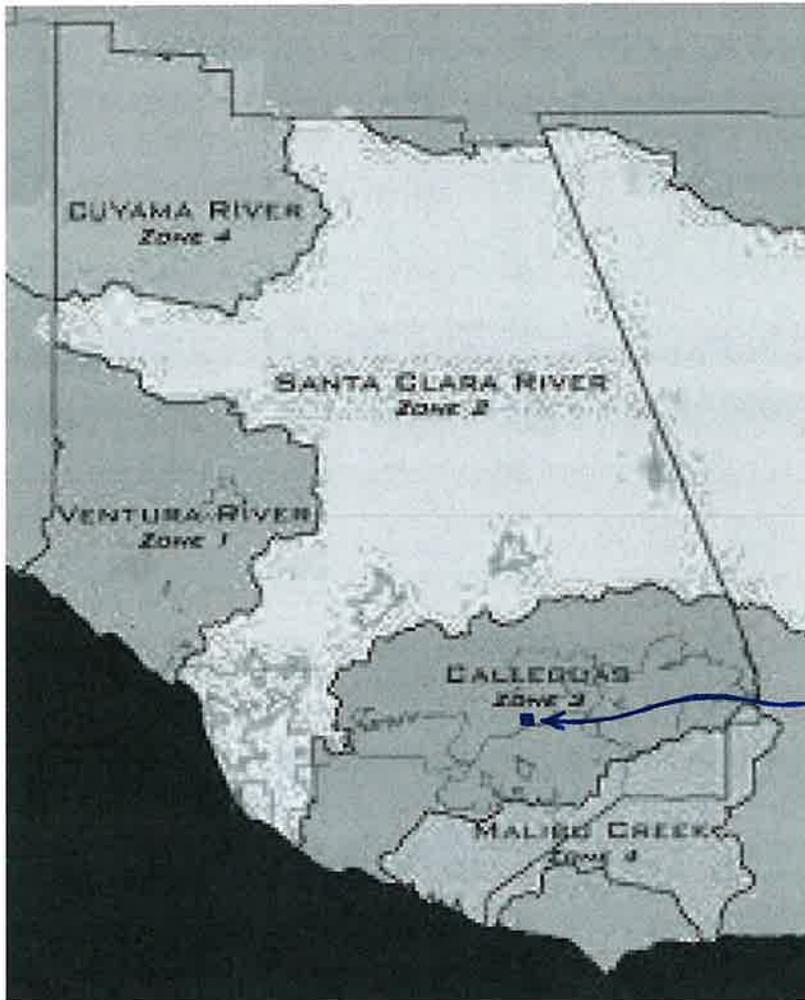
APPENDIX

DESCRIPTION

A	REFERENCE MATERIALS
B	HYDROLOGY CALCULATIONS
C	DETENTION ANALYSIS
D	HYDROLOGY MAP

APPENDIX A

REFERENCE MATERIALS



FLOOD ZONE 3

FLOOD ZONE MAP

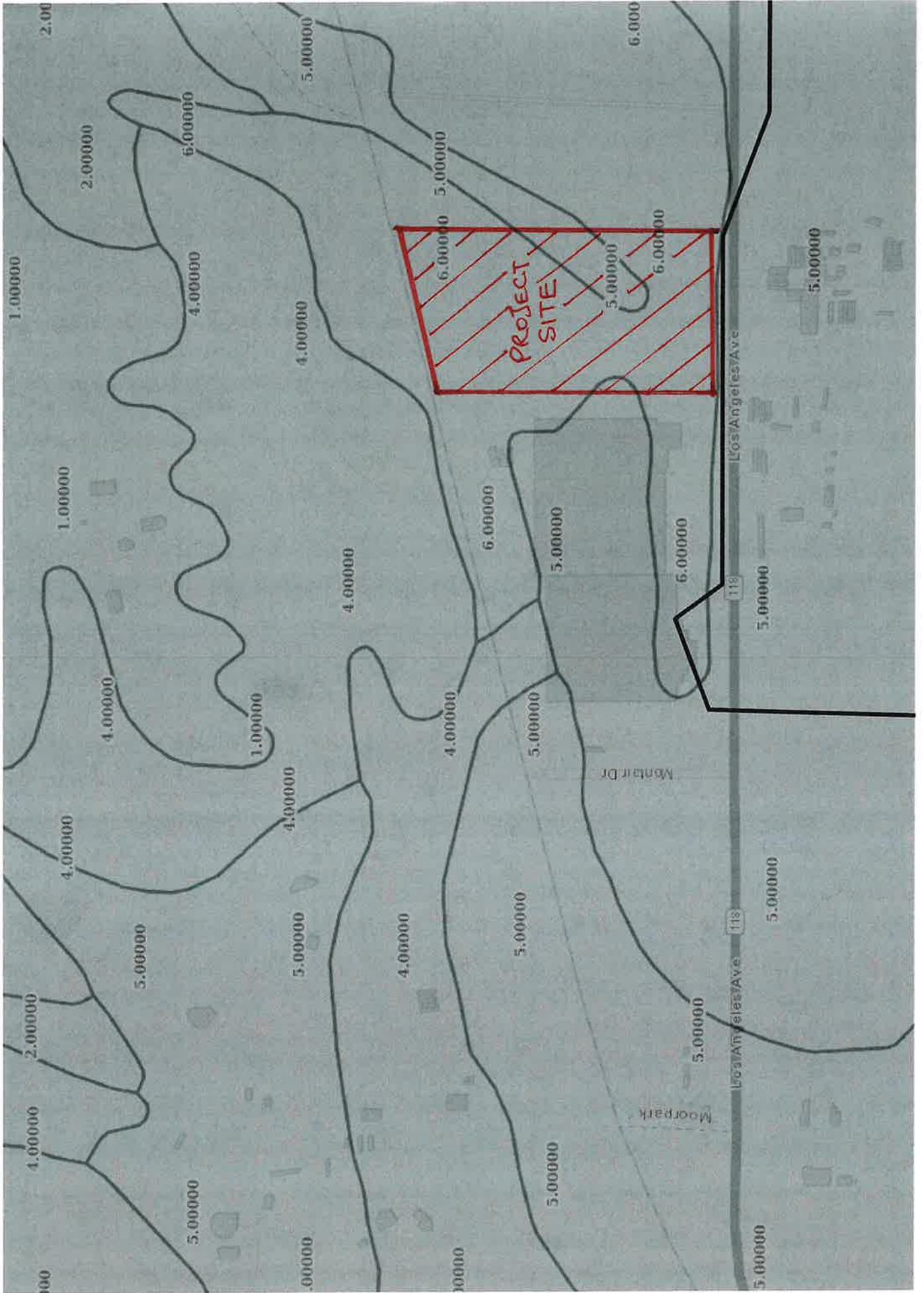
EXHIBIT 1A. LEGACY DESIGN STORM RAINFALL CONTOURS- 100-YR STORM



RAINFALL ZONE J'

RAINFALL ZONE MAP

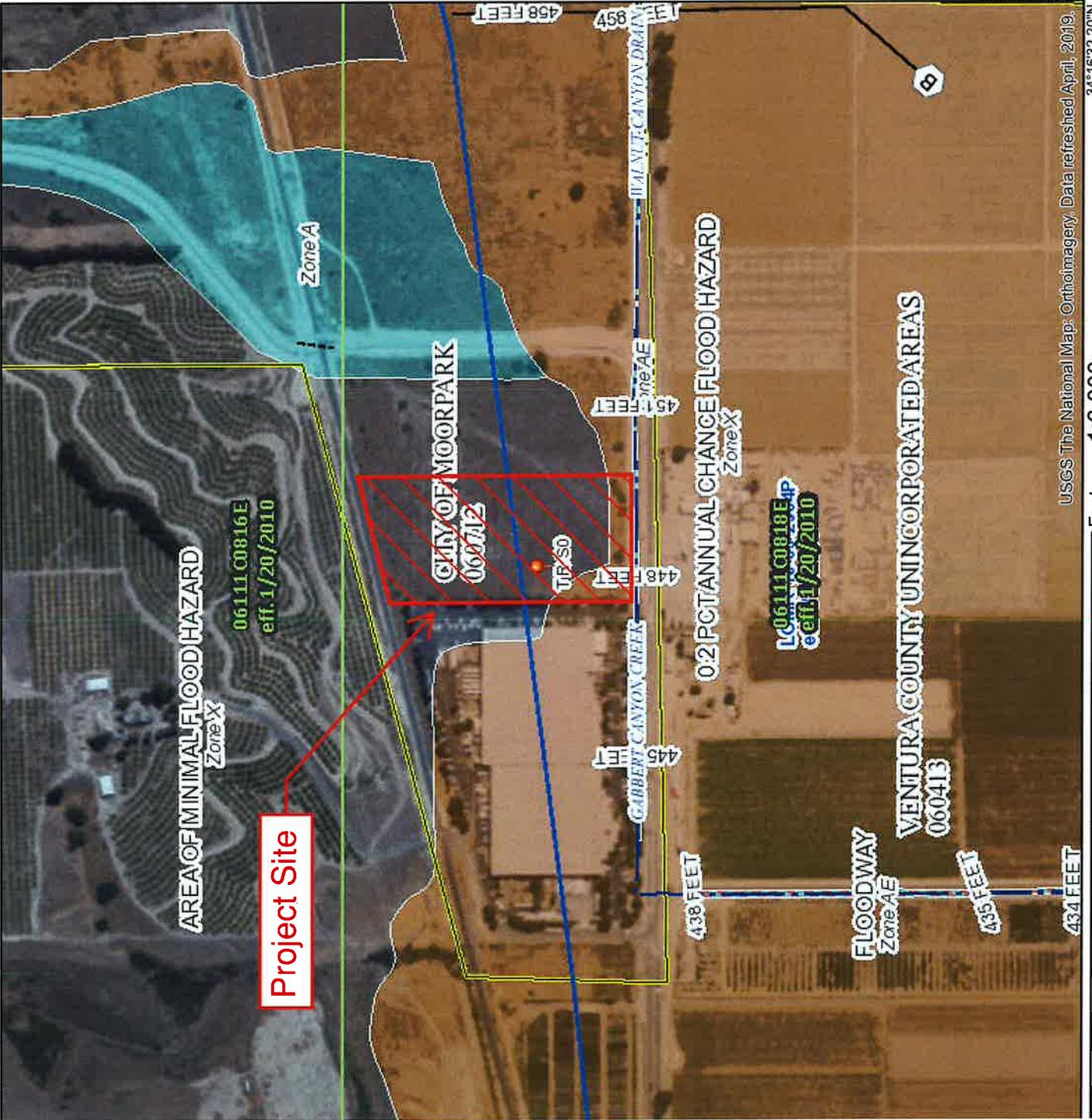
SOIL TYPE MAP



National Flood Hazard Layer FIRMette



34°17'1.92"N



USGS The National Map: Orthoimagery. Data refreshed April, 2019.

34°16'32.20"N

Legend

SEE THIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, A99	With BFE or Depth Zone AE, AO, AH, VE, AR	Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Area of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile	Future Conditions 1% Annual Chance Flood Hazard Zone X	Area with Reduced Flood Risk due to Levee. See Notes, Zone X
OTHER AREAS	Area of Minimal Flood Hazard Zone X	Effective LOMRs	Area of Undetermined Flood Hazard Zone X
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer	Levee, Dike, or Floodwall	
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation	Coastal Transect	Base Flood Elevation Line (BFE)
MAP PANELS	Limit of Study	Jurisdiction Boundary	Coastal Transect Baseline
	Profile Baseline	Hydrographic Feature	Digital Data Available
	No Digital Data Available	Unmapped	

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map compiles with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/4/2020 at 6:44:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NOTES TO USERS

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

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

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

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

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

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 11. The horizontal datum was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

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

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1994 or later.

This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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

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

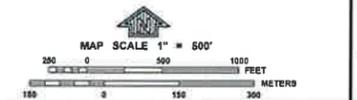
Contact the FEMA Map Service Center at 1-800-358-8616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://www.mca.fema.gov>.

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



LEGEND

- SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD**
- The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AD, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
 - ZONE AE** Base Flood Elevations determined.
 - ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
 - ZONE AD** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of abutment, flood velocities also determined.
 - ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently described. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
 - ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
 - ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
 - ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE**
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS**
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile, and areas protected by levees from 1% annual chance flood.
- OTHER AREAS**
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
 - ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS**
- OTHERWISE PROTECTED AREAS (OPAs)**
- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- 1% annual chance floodplain boundary
 - 0.2% annual chance floodplain boundary
 - Floodway boundary
 - Zone D boundary
 - Zone V boundary
 - CBRS and OPA boundary
 - Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
 - Base Flood Elevation line and value; elevation in feet*
 - Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988
- A — Cross section line
 - B — Transect line
 - Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
 - 1000-meter Universal Transverse Mercator grid values, zone 11
 - 600000 FT 5000-foot grid ticks: California State Plane coordinate system, zone V (FIPS20516 5403), Lambert Conformal Conic projection
 - DX5510 x Bench mark (see explanation in Notes to Users section of the FIRM panel)
 - M 1.5 River Mile
- MAP REPOSITORY**
Refer to listing of Map Repositories on Map Index
- EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP**
January 20, 2010
- EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL**
- For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-438-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0818E

FIRM
FLOOD INSURANCE RATE MAP

VENTURA COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 818 OF 1275
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MOORPARK, CITY OF	060712	0818	E
VENTURA COUNTY			

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

MAP NUMBER
0611C0818E

EFFECTIVE DATE
JANUARY 20, 2010

Federal Emergency Management Agency

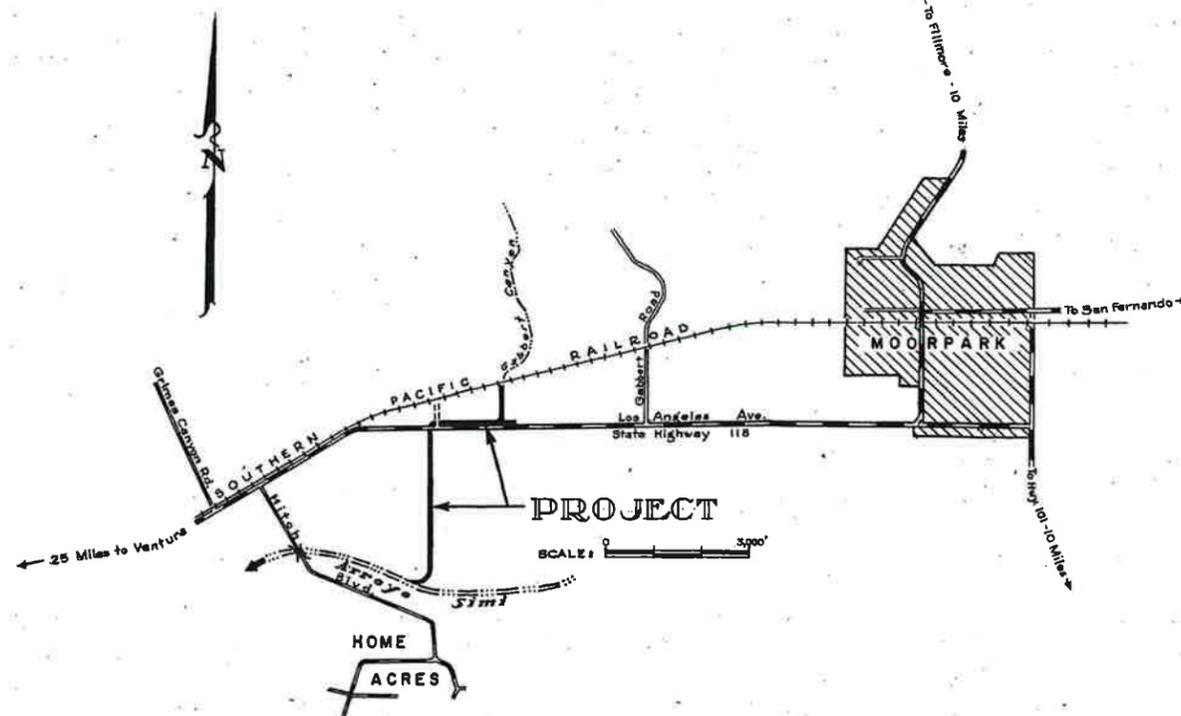
INDEX OF DRAWINGS	
SHEET NO.	TITLE
1	PROJECT LOCATION MAP
2	PLAN, PROFILE & SECTIONS - STA. 0+00 TO STA. 8+00
3	PLAN, PROFILE & SECTIONS - STA. 8+00 TO STA. 18+00
4	PLAN, PROFILE & SECTION - STA. 18+00 TO STA. 28+00
5	PLAN, PROFILE & SECTIONS - STA. 28+00 TO STA. 36+00
6	PLAN, PROFILE & SECTIONS - STA. 36+00 TO STA. 46+00
7	PLAN, PROFILE & SECTIONS - STA. 46+00 TO STA. 50+00
8	PLAN, PROFILE & SECTIONS - STA. 50+00 TO END OF PROJECT
9	TRANSITIONS 1 & 2 - STA. 2+89.42 & STA. 32+61.06
10	TRANSITIONS 4 & 5 - STA. 50+20 & STA. 56+11.21
11	JUNCTION STRUCTURE - STA. 46+66.61
12	INLET STRUCTURE TO WALNUT CHANNEL & CHANNEL SECTIONS
13	CHANNEL SECTIONS ADJACENT TO BOX-CULVERT - TRANSITION NO. 3
14	STILLING BASIN - STA. 2+35 - STRUCTURAL DETAILS.
15	STILLING BASIN - STEEL DETAILS
16	PIPE INLET STRUCTURES - LAYOUT & LOCATIONS
17	ACCESS ROAD BRIDGES - STRUCTURAL DETAILS
18	DETOUR & RESURFACING DETAILS - HIGHWAY 118
19	DOUBLE BOX CULVERT AT HIWAY CROSSING

FOR GENERAL NOTES AND STRUCTURAL NOTES SEE SHEET NO. 16.

HYDRAULIC ELEMENTS									
STATION	d _c ft.	d _n ft.	b.w. ft.	S.S.	n	S ft./ft.	V _n ft./sec.	Q c.f.s.	
GABBERT CANYON SECTION									
0+00 TO 2+35	4.30	5.10	16	2:1	0.030	0.005	8.01	1070	
3+14 TO 32+61	5.66	5.18	14	VERT.	0.014	0.0045	14.76	1070	
35+17 TO 46+66	5.66	4.67	14	VERT.	0.014	0.006	16.37	1070	
47+77 TO 50+20	6.00	4.15	8	VERT.	0.014	0.014	20.18	670	
50+70 TO 56+11	4.50	-2.73	8	1 1/2:1	0.015	0.0185	20.29	670	
WALNUT CANYON SECTION									
0+40 TO 3+43	4.22	3.75	12	VERT.	0.014	0.005	13.11	590	

NOTE: THESE ELEMENTS ARE CALCULATED AS FOR UNIFORM FLOW AT SLOPES INDICATED. FOR CALCULATED ACTUAL WATER SURFACE SEE PROFILES ON SHEETS NO. 2 THROUGH 8.

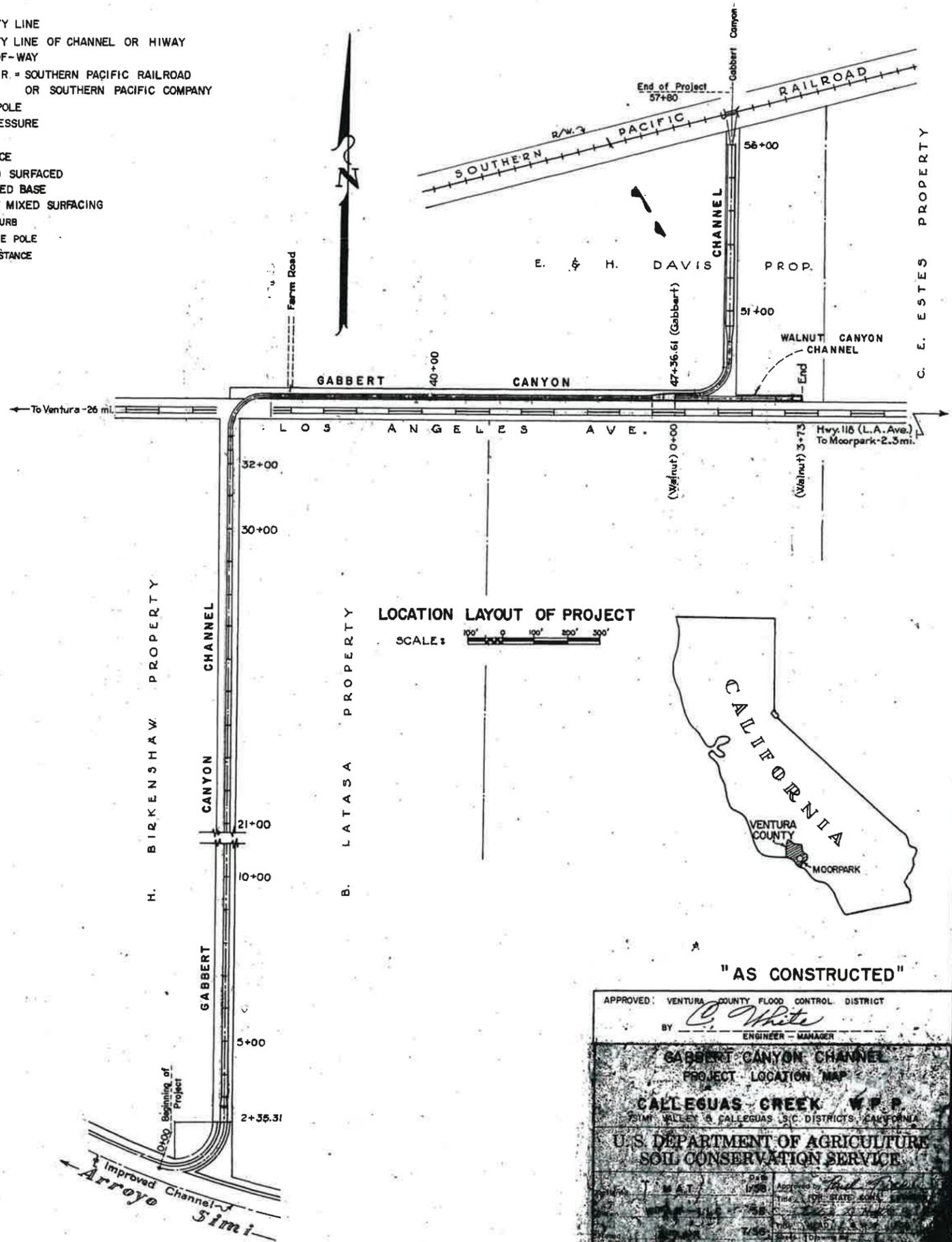
PROJECT SITE FROM 41+98 TO 45+47



LOCATION MAP

LEGEND

- P/L = PROPERTY LINE
- R/W = PROPERTY LINE OF CHANNEL OR HIWAY RIGHT-OF-WAY
- S.P. OR S.P.R.R. = SOUTHERN PACIFIC RAILROAD OR SOUTHERN PACIFIC COMPANY
- P.P. = POWER POLE
- H.P. = HIGH PRESSURE
- M = METER
- C.F. = CURB FACE
- F.S. = FINISHED SURFACED
- U.B. = UNTREATED BASE
- P.M.S. = PLANT MIXED SURFACING
- T.C. = TOP OF CURB
- T.P. = TELEPHONE POLE
- CL. = CLEAR DISTANCE



LOCATION LAYOUT OF PROJECT

SCALE: 1" = 100'



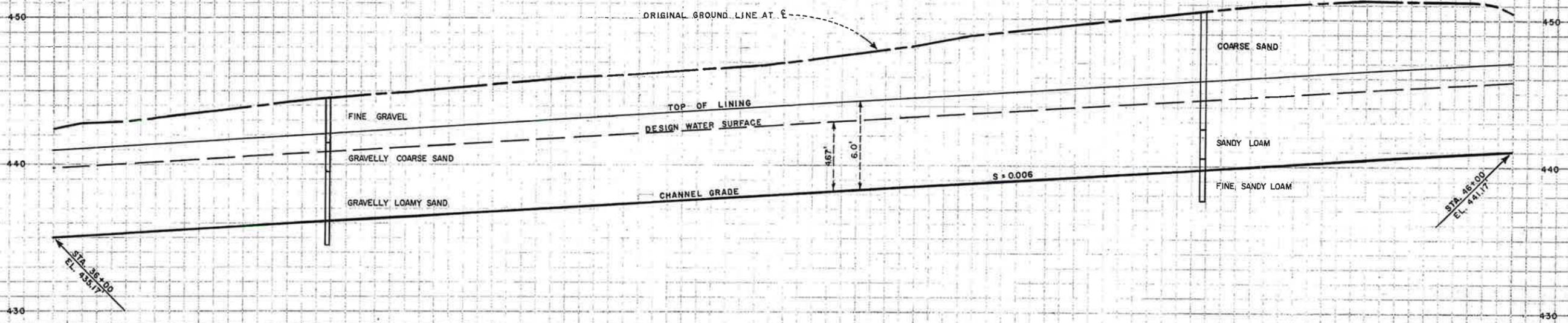
"AS CONSTRUCTED"

APPROVED: VENTURA COUNTY FLOOD CONTROL DISTRICT
 BY: *C. White*
 ENGINEER - MANAGER

GABBERT CANYON CHANNEL
 PROJECT LOCATION MAP

CALLEGUAS CREEK W.P.P.
 SIMI VALLEY & CALLEGUAS S.C. DISTRICTS, CALIFORNIA

U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE



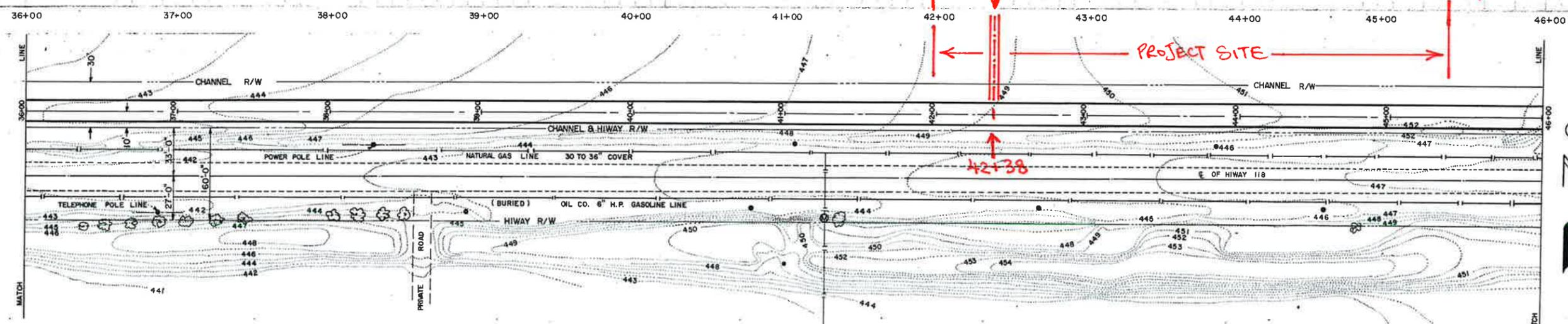
PROFILE

PROPOSED
36" RCP CONNECTION
AT 42+38

41+98

45+47

PROJECT SITE

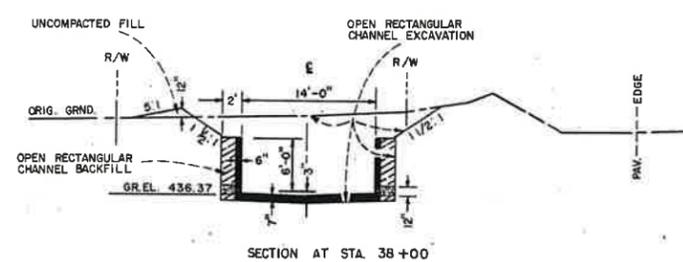


PLAN

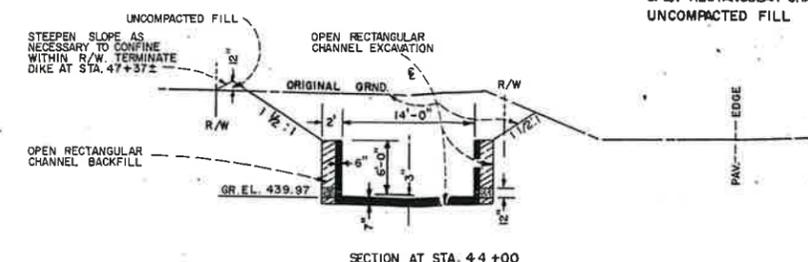
EARTHWORK QUANTITIES

OPEN RECTANGULAR CHANNEL EXCAVATION	7,342 CU. YDS.
OPEN RECTANGULAR CHANNEL BACKFILL	593 CU. YDS.
UNCOMPACTED FILL	113 CU. YDS.

"AS CONSTRUCTED"



SECTION AT STA. 38+00



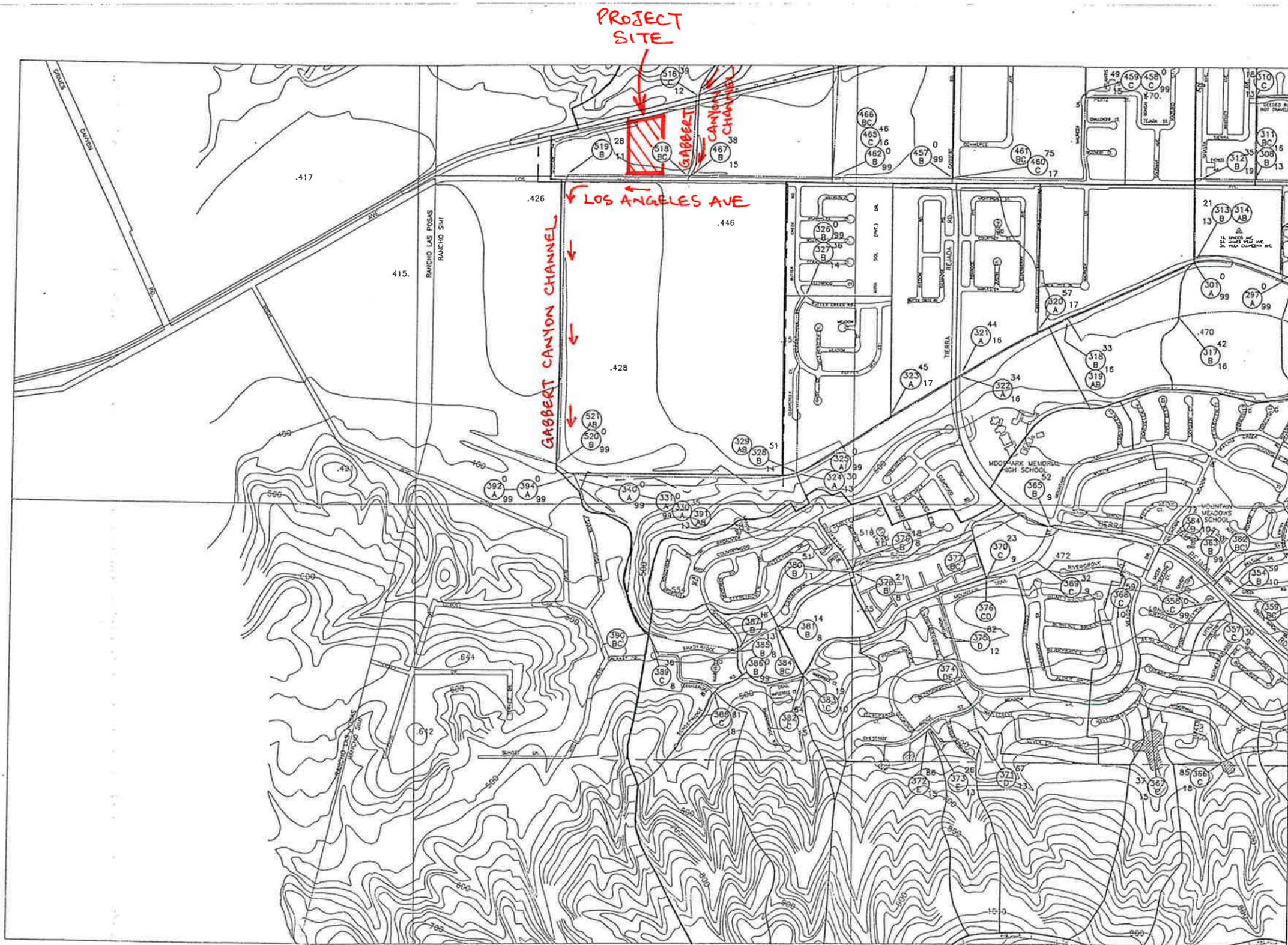
SECTION AT STA. 44+00

APPROVED: VENTURA COUNTY FLOOD CONTROL DISTRICT
BY *C. White*
ENGINEER - MANAGER

GABBERT CANYON-CHANNEL
PLAN, PROFILE & SECTIONS
STA. 36+00 TO STA. 46+00
CALLEGUAS CREEK W.P.P.
SIMI VALLEY & CALLEGUAS S.C. DISTRICTS, CALIFORNIA

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Designed	MAT	Date	3/58	Approved by	<i>Paul Fickner</i>
Drawn	LLC	Date	4/58	Title	STATE CONSERVATION ENGINEER
Traced	LLC	Date	6/58	Title	HEAD, E. & W. P. UNIT
Sheet	CFB 1171	No.	6	Drawing No.	7-E-15514



LEGEND

- DRAINAGE BASIN BOUNDARY
- SUBAREA BOUNDARY
- CITY BOUNDARY
- DRAINAGE FLOWPATH

H-1	H-2	H-3	H-4	H-5
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DRAINAGE SUBAREA IDENTIFICATION NUMBER (IDSN) WITH INDICATION OF AREA (IN ACRES) AND TIME OF CONCENTRATION (IN MINUTES-50 YEAR STORM). INDICATION OF DRAINAGE FLOWPATH JUNCTION OR HYDROGRAPH INPUT (KI).

0 500 1000
SCALE IN FEET

**HYDROLOGY MAP
CITY OF MOORPARK
MASTER PLAN OF DRAINAGE**

HAWKS & ASSOCIATES, VENTURA
APRIL 1995 PLATE H-4

1
VENTURA COUNTY FLOOD CONTROL DISTRICT
MODIFIED RATIONAL METHOD HYDROLOGY

CITY OF HOORPARK 95MPD Q50 HAWKS/MR		3/29/95		mpkfinal.i50		STORM DAY 4								
LOCATION	SUBAREA AREA	SUBAREA q	TOTAL AREA	TOTAL q	CONV TYPE	CONV LNPTH	CONV SLOPE	CONV SIZE	CONV Z	CONTROL q	SOIL NAME	TC	RAIN ZONE	PCT IMPV
7414 500C	86.	184.	86.	184.	2	1950.	0.02600	0.00	0.00	0.	20	15	K50	0.05
7414 501C	88.	181.	174.	335.	0	0.	0.00000	0.00	0.00	0.	20	16	K50	0.05
7414 502D	0.	0.	0.	199.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 503D	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 504D	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 505D	80.	154.	80.	154.	3	1000.	0.03200	0.00	0.00	0.	30	16	K50	0.05
7414 506D	62.	83.	142.	225.	4	1400.	0.02300	4.00	0.00	0.	60	16	K50	0.05
7414 507D	52.	72.	194.	286.	4	2000.	0.02400	4.50	0.00	0.	60	15	K50	0.05
7414 508D	51.	74.	245.	341.	0	0.	0.00000	0.00	0.00	0.	60	14	K50	0.05
7414 509CD	245.	341.	419.	671.	1	2000.	0.02100	0.00	0.00	0.	10	0	K50	0.00
7414 510C	44.	86.	463.	662.	0	0.	0.00000	0.00	0.00	0.	40	14	K50	0.05
7414 511C	65.	158.	528.	769.	1	1950.	0.02870	0.00	0.00	0.	10	14	K50	0.05
7414 512C	86.	148.	614.	760.	1	1600.	0.02130	0.00	0.00	0.	50	15	K50	0.05
7414 513C	71.	152.	685.	750.	2	1250.	0.02400	0.00	0.00	0.	20	15	K50	0.05
7414 514C	26.	31.	711.	747.	1	2100.	0.01800	0.00	0.00	0.	70	10	K50	0.00
7414 515C	34.	85.	745.	728.	0	0.	0.00000	0.00	0.00	0.	20	11	K50	0.00
7414 516C	39.	101.	784.	740.	0	0.	0.00000	0.00	0.00	0.	10	12	K50	0.00
7414 517C	60.	42.	844.	740.	5	900.	0.01850	9.00	0.00	0.	70	16	K50	0.00
7414 518BC	844.	739.	2678.	3245.	5	1450.	0.00500	18.00	0.00	0.	10	0	K50	0.00
7414 519B	28.	75.	2706.	3250.	5	3300.	0.00900	17.00	0.00	0.	40	11	K50	0.70
7414 520B	0.	0.	2706.	3217.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 521AB	2706.	3217.	9253.	9927.	0	0.	0.00000	0.00	0.00	0.	10	0	K50	0.00
7414 522B	0.	0.	0.	3217.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 523B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 524B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 525B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 526B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 527B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 528B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 529B	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 530B	38.	77.	38.	77.	3	750.	0.02670	0.00	0.00	0.	40	13	K50	0.03
7414 531B	70.	155.	108.	219.	4	1700.	0.02350	4.00	0.00	0.	20	14	K50	0.02
7414 532B	34.	70.	142.	276.	4	1200.	0.03330	4.00	0.00	0.	50	11	K50	0.02
7414 533B	71.	158.	213.	415.	4	1050.	0.02380	5.00	0.00	0.	20	14	K50	0.02
7414 534B	62.	132.	275.	530.	4	1400.	0.02360	5.50	0.00	0.	20	15	K50	0.01
7414 535B	35.	88.	310.	594.	0	0.	0.00000	0.00	0.00	0.	20	11	K50	0.03
7414 536C	0.	0.	0.	739.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 537C	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 538C	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 539C	0.	0.	0.	0.	0	0.	0.00000	0.00	0.00	0.	10	99	K50	0.00
7414 540C	41.	99.	41.	99.	3	1200.	0.04170	0.00	0.00	0.	20	12	K50	0.05
7414 541C	30.	76.	71.	160.	0	0.	0.00000	0.00	0.00	0.	20	11	K50	0.05
7414 542D	40.	96.	40.	96.	0	0.	0.00000	0.00	0.00	0.	20	12	K50	0.05
7414 543E	29.	79.	29.	79.	0	0.	0.00000	0.00	0.00	0.	10	11	K50	0.05

PROJECT SITE BETWEEN NODES 518 BC AND 519 B

Technical Addendum

Gabbert & Walnut Canyon Channels Flood Control Deficiency Study - Addendum

July 2005

Revised:
August 2005

VENTURA COUNTY
WATERSHED PROTECTION DISTRICT
Planning & Regulatory Division
Advance Planning Section

Prepared for:

Triliad Development Company
270 Conejo Ridge, Suite 200
Thousand Oaks, CA 91361

Prepared by:

PACE

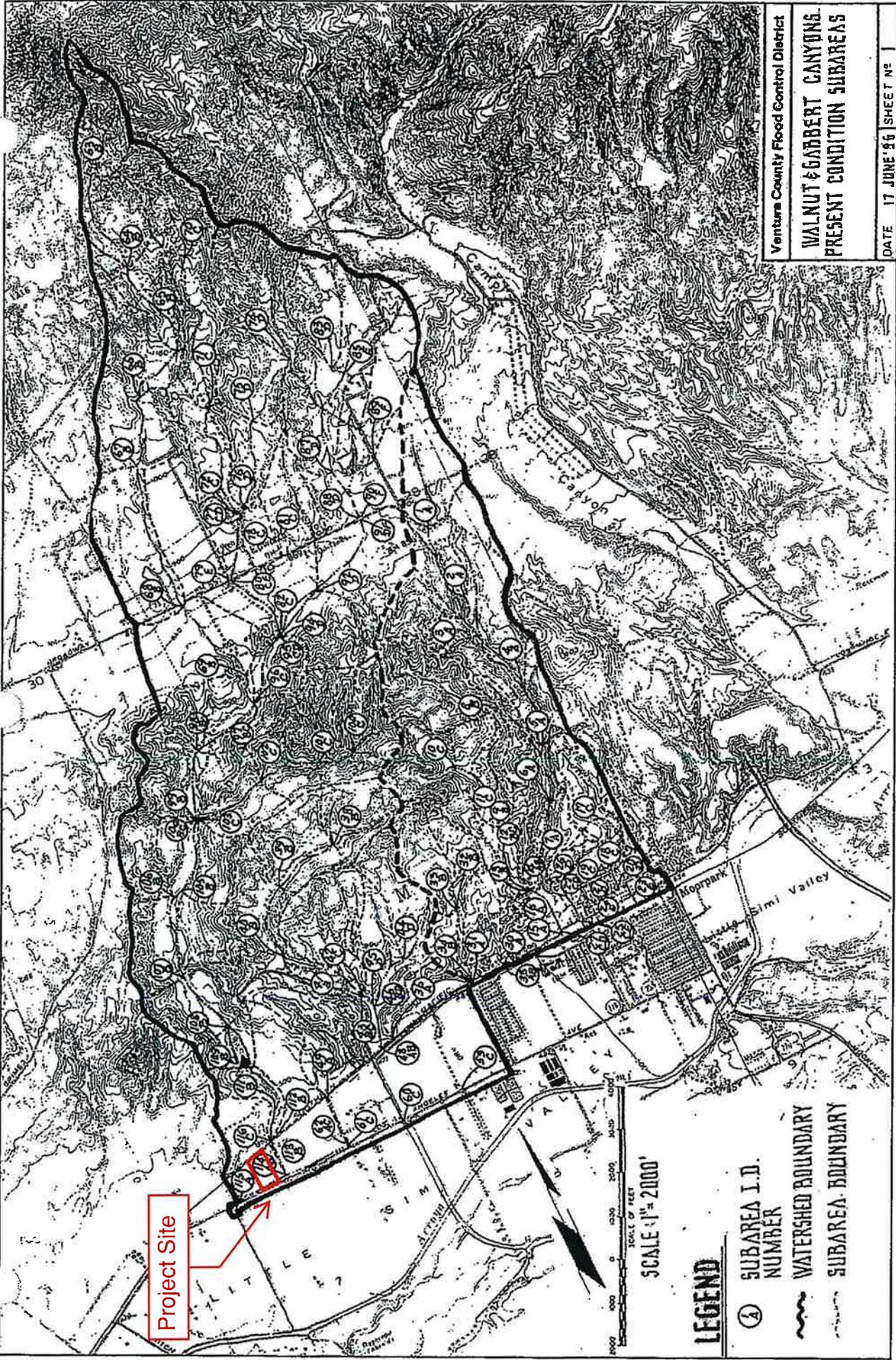
Pacific Advanced Civil Engineering, Inc. (PACE)
17520 Newhope Street, Suite 200
Fountain Valley, CA 92708



Contact:

Bruce M. Phillips, RCE 38635
Jonis C. Smith, RCE 58654

PACE JN #7753E



Project Site

SCALE 1" = 2000'

LEGEND

- Ⓐ SUBAREA I.D. NUMBER
- ~ WATERSHED BOUNDARY
- - - SUBAREA BOUNDARY

Ventura County Flood Control District
WALNUT & GABBERT CANYONS
 PRESENT CONDITION SUBAREAS
 DATE 17 JUNE '86 SHEET NO. 1

Application of the Ventura County Modified Rational watershed model for the current landuse (baseline watershed) conditions was evaluated for both the 50-year and 100-year return periods. The hydrograph peak discharges associated with critical concentration points along the channel system are indicated in *Table No. 4 - Summary of Existing Watershed Hydrology - Clearwater Design Flowrates*. The detailed input and output for the watershed models are contained in the *Technical Appendix*. All discharges generated from the VCFCO baseline watershed model reflect clearwater values. Runoff conveying debris and sediment has an increased total volume which tends to increase or “bulk” the apparent clearwater flowrate. However, it is assumed that the potential for debris production will be reduced through future development and debris collection facilities and no “bulking factor” was applied to the discharges.

PROJECT SITE BETWEEN NODES 114AB AND 115A

Channel	Watershed Model Node	Drainage Area (acres)	Design Clearwater Flow		Channel Reach Description
			Q ₅₀	Q ₁₀₀	
Gabbert	109B	2,433	1,732 cfs	2,185 cfs	Gabbert Debris Basin spillway
Gabbert	114AB	4,365	2,275 cfs	2,944 cfs	Downstream of Walnut Canyon confluence
Gabbert	115A	4,388	2,276 cfs	2,945 cfs	Los Angeles Avenue Culvert crossing
Gabbert	118AC	4,425	2,279 cfs	2,947 cfs	Outlet to the Arroyo Simi
Walnut	6A	382	283 cfs	382 cfs	Existing improved channel headworks next to Walnut Canyon Road
Walnut	7A	433	292 cfs	431 cfs	Upstream Casey Road culvert
Walnut	14AB	709	469 cfs	696 cfs	Confluence at Casey Road culvert with small offsite canyon area
Walnut	28AC	846	603 cfs	889 cfs	Downstream of confluence at High Street Drain with Moorpark Drain No. 1
Walnut	35AB	1,044	797 cfs	1,149 cfs	Downstream of confluence at Poindexter culvert crossing
Walnut	48AB	1,553	1,123 cfs	1,619 cfs	Downstream of confluence at Gabbert Canyon Road
Walnut	49A	1,623	1,176 cfs	1,688 cfs	Southern Pacific Railroad culvert crossing
Walnut	62AC	1,794	1,258 cfs	1,810 cfs	Downstream of confluence with 54" dia. Los Angeles Avenue city storm drain

Angie Maldonado

From: Bandurraga, Mark <Mark.Bandurraga@ventura.org>
Sent: Tuesday, May 5, 2020 3:28 PM
To: Angie Maldonado
Cc: Marotto, Ron; PWA HydroData; Sheppard, Tony
Subject: Request for Gabbert Channel Hydrology
Attachments: GabbertProjectMap.jpg; Gabbert-WalnutCynChnls-FloodCtrlDeficStudy-2005.pdf

Angie:

I don't know if you know the history behind all of the studies in the area. You can confirm this with the City, but I believe they have an old MDP that probably is not current for this area.

In 1997 RBF did a Regional Study of the Walnut Gabbert channel and selected some alternatives to fix the deficiencies in the channel.

We have a hydrology study from 2003 that provides hydrology but it is not suitable for design because it has not been updated to reflect current conditions.

In 2005 the 1997 study author had moved to PACE and updated the study based on projects that had been constructed since 1997 and some that were proposed at that time. It selected different alternatives to fix the deficiencies.

Recently a developer did an extensive drainage study for the Hitch Ranch development upstream. We reviewed this study as part of our process but I will have to check to see if it is public info that we can give to you. You could also request it through the City if you are in contact with them.

I am attaching the 2005 study because it gives you some excellent background on the area and the suggested alternatives.

When we do CEQA reviews on Walnut Gabbert projects, one of the conditions we apply to projects is that the proposed condition runoff can only be 90% of the undeveloped condition runoff per the 2005 report that was adopted by the City.

Let me know if need additional info or clarification on any of this.

Our normal data request email is hydrodata@ventura.org if you want to use it in the future.

Mark Bandurraga
Engineer IV (Design Hydrology)
Watershed Protection District

 800 S. Victoria Ave. / #1600
Ventura, CA 93009
P: 805.654. 2015

NEW on District Webpages:

2017 Hydrology Manual and VCRat2.64 Program

Tc Calculator Using Excel

VCRat Calcs for 1 Subarea + Routing Using Excel

APPENDIX B

HYDROLOGY CALCULATIONS

EXISTING CONDITION

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
 TIME OF CONCENTRATION
 TC Program Version: 2.6.2009.7
 Project: PentAir, Moorpark
 Date: 12:00:00 AM
 Engineer: Ricky Hwa
 Consultant: Thienes Engineering

S U M M A R Y O F C O M P U T A T I O N S

Watershed Name: Existing 100-Year

Name	Zone	Storm	Soil	Area (acres)	TC (min)
SubArea 20A	J'	100	6.00	5.7 / 6	17.254 / 17
SubArea 21B	J'	100	6.00	0.4 / 0	6.559 / 7
SubArea 22C	J'	100	6.00	2.6 / 3	16.243 / 16
SubArea 23D	J'	100	6.00	26.3 / 26	TC ERROR

▲

Watershed Name: Existing 100-Year

Sub-Area Name: SubArea 20A
 Tc: 17.254 Minutes
 DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 17.254 min. = 17 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea 20A
 Total Area (ac): 5.65
 Flood Zone: 3
 Rainfall Zone: J'
 Storm Frequency (years): 100
 Development Type: Undeveloped
 Soil Type: 6.00
 Percent Impervious: 0
 SUB AREA OUTPUT

Intensity (in/hr): 2.224
 C Total: 0.475
 Sum Q Segments (cfs): 5.97
 Q Total (cfs): 5.97
 Sum Percent Area (%): 100.0
 Sum of Flow Path Travel Times (sec): 1,035.25
 Time of Concentration (min): 17.254

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 20A
 FLOW PATH TRAVEL TIME (min): 17.2542
 Flow Type: Overland
 Length (ft): 840
 Top Elevation (ft): 457.5
 Bottom Elevation (ft): 444.5
 Contributing Area (acres): 5.65
 Percent of Sub-Area (%): 100.0
 Overland Type: Valley
 Development Type: Undeveloped
 Map Slope: 0.0155
 Effective Slope: 0.0155
 Q for Flow Path (cfs): 5.97
 Avg Velocity (ft/s): 0.81
 Passed Scour Check: YES
 Scour Velocity (ft/sec): 0.87

▲

Project: PentAir, Moorpark
 Date: 12:00:00 AM
 Engineer: Ricky Hwa
 Consultant: Thienes Engineering

Sub-Area Name: SubArea 21B
 Tc: 6.559 Minutes

DATA FOR SUB AREA 2

 SUB AREA TIME OF CONCENTRATION: 6.559 min. = 7 min.

SUB AREA INPUT DATA

 Sub Area Name: SubArea 21B
 Total Area (ac): 0.4
 Flood Zone: 3
 Rainfall Zone: J'
 Storm Frequency (years): 100
 Development Type: Undeveloped
 Soil Type: 6.00
 Percent Impervious: 0
 SUB AREA OUTPUT

Intensity (in/hr): 3.189
 C Total: 0.539
 Sum Q Segments (cfs): 0.69
 Q Total (cfs): 0.69
 Sum Percent Area (%): 100.0
 Sum of Flow Path Travel Times (sec): 393.52
 Time of Concentration (min): 6.559

DATA FOR FLOW PATH 1

 Flow Path Name: FlowPath 21B
 FLOW PATH TRAVEL TIME (min): 6.5586
 Flow Type: Overland
 Length (ft): 350
 Top Elevation (ft): 467.9
 Bottom Elevation (ft): 452.2
 Contributing Area (acres): 0.4
 Percent of Sub-Area (%): 100.0
 Overland Type: Valley
 Development Type: Undeveloped
 Map Slope: 0.0449
 Effective Slope: 0.0449
 Q for Flow Path (cfs): 0.69
 Avg Velocity (ft/s): 0.89
 Passed Scour Check: YES
 Scour Velocity (ft/sec): 2.93

▲
 Project: PentAir, Moorpark
 Date: 12:00:00 AM
 Engineer: Ricky Hwa
 Consultant: Thienes Engineering

Sub-Area Name: SubArea 22C

Tc: 16.243 Minutes

DATA FOR SUB AREA 3

 SUB AREA TIME OF CONCENTRATION: 16.243 min. = 16 min.

SUB AREA INPUT DATA

 Sub Area Name: SubArea 22C
 Total Area (ac): 2.6
 Flood Zone: 3
 Rainfall Zone: J'
 Storm Frequency (years): 100
 Development Type: Undeveloped
 Soil Type: 6.00
 Percent Impervious: 0
 SUB AREA OUTPUT

Intensity (in/hr): 2.288
 C Total: 0.480
 Sum Q Segments (cfs): 2.86
 Q Total (cfs): 2.86
 Sum Percent Area (%): 100.0
 Sum of Flow Path Travel Times (sec): 974.58
 Time of Concentration (min): 16.243

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 22C
FLOW PATH TRAVEL TIME (min): 16.2429
Flow Type: Overland
Length (ft): 800
Top Elevation (ft): 470.2
Bottom Elevation (ft): 454
Contributing Area (acres): 2.6
Percent of Sub-Area (%): 100.0
Overland Type: Valley
Development Type: Undeveloped
Map Slope: 0.0203
Effective Slope: 0.0203
Q for Flow Path (cfs): 2.86
Avg Velocity (ft/s): 0.82
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.62

▲
Project: PentAir, Moorpark
Date: 12:00:00 AM
Engineer: Ricky Hwa
Consultant: Thienes Engineering

Sub-Area Name: SubArea 23D
Tc: 34.854 Minutes
DATA FOR SUB AREA 4

SUB AREA TIME OF CONCENTRATION: 34.854 min. = 35 min.

SUB AREA INPUT DATA

Sub Area Name: SubArea 23D
Total Area (ac): 26.3
Flood Zone: 3
Rainfall Zone: J'
Storm Frequency (years): 100
Development Type: Undeveloped
Soil Type: 6.00
Percent Impervious: 0
SUB AREA OUTPUT

Intensity (in/hr): 1.610
C Total: 0.401
Sum Q Segments (cfs): 16.97
Q Total (cfs): 16.97
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 2,091.24
Time of Concentration (min): 34.854

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 23D
FLOW PATH TRAVEL TIME (min): 15.9026
Flow Type: Overland
Length (ft): 940
Top Elevation (ft): 605
Bottom Elevation (ft): 540
Contributing Area (acres): 6.35
Percent of Sub-Area (%): 24.1
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0691
Effective Slope: 0.0691
Q for Flow Path (cfs): 4.10
Avg Velocity (ft/s): 0.99
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.37

DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 24D
FLOW PATH TRAVEL TIME (min): 8.0647
Flow Type: Overland
Length (ft): 615
Top Elevation (ft): 540

Bottom Elevation (ft): 464
Contributing Area (acres): 11.1
Percent of Sub-Area (%): 42.2
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.1236
Effective Slope: 0.1141
Q for Flow Path (cfs): 7.16
Avg Velocity (ft/s): 1.27
Passed Scour Check: YES
Scour Velocity (ft/sec): 3.67

DATA FOR FLOW PATH 3

Flow Path Name: FlowPath 25D
FLOW PATH TRAVEL TIME (min): 10.8867
Flow Type: Overland
Length (ft): 530
Top Elevation (ft): 464
Bottom Elevation (ft): 455.8
Contributing Area (acres): 8.85
Percent of Sub-Area (%): 33.7
Overland Type: Valley
Development Type: Undeveloped
Map Slope: 0.0155
Effective Slope: 0.0155
Q for Flow Path (cfs): 5.71
Avg Velocity (ft/s): 0.81
Passed Scour Check: YES
Scour Velocity (ft/sec): 2.72

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 3885 Project: PentAir, Moorpark

Project Description

JOB #3885 PENTAIR, MOORPARK
SUBAREA 20A - PROJECT SITE AREA 5.65 AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 3885 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA				ROUTING AFTER ACCUMULATION					
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V	N
VALUES	VEL	DEPTH			(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)						
SIDES	(FT/S)	(FT)													
1A	:	SUBAREA	20A												
1A	060	J'100	17	0	6	6	6	6	1155						
2A	:	SUBAREA	20A												
2A	:	Clearing	Hydrograph	Bank:	A										
2A	060	J'100	17	0	6	6	6	6	1155						

FROM TC CALCULATOR

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
------	--------	-----------	----------	---------

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 3885 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2A

DESCRIPTION: SUBAREA 20A
 2A : Clearing Hydrograph Bank: A
 TOTAL AREA TO HYDROGRAPH: 6 acres
 HYDROGRAPH PEAK: 6 cfs
 TIME OF PEAK: 1155 minutes
 HYDROGRAPH VOLUME: 0.18 acre-ft

X100A.out

TIME (min)	FLOW (cfs)								
0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.01
1130	0.01	1131	0.01	1132	0.01	1133	0.01	1134	0.01
1135	0.01	1136	0.10	1137	0.34	1138	0.62	1139	0.96
1140	1.15	1141	1.41	1142	1.68	1143	1.92	1144	2.19
1145	2.49	1146	2.77	1147	3.06	1148	3.25	1149	3.11
1150	2.98	1151	3.56	1152	5.52	1153	6.08	1154	6.27
1155	6.35	1156	6.31	1157	6.27	1158	6.20	1159	6.01
1160	5.89	1161	5.72	1162	5.48	1163	5.19	1164	4.92
1165	4.64	1166	4.65	1167	4.65	1168	3.95	1169	1.46
1170	0.10	1171	0.01	1172	0.01	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	0.00
1235	0.00	1236	0.00	1237	0.00	1238	0.00	1239	0.00
1240	0.00	1241	0.00	1242	0.00	1243	0.00	1244	0.00
1245	0.00	1246	0.00	1247	0.00	1248	0.00	1249	0.00
1250	0.00	1251	0.00	1252	0.00	1253	0.00	1254	0.00
1255	0.00	1256	0.00	1257	0.00	1258	0.00	1259	0.00
1260	0.00	1261	0.00	1262	0.00	1263	0.00	1264	0.00
1265	0.00	1266	0.00	1267	0.00	1268	0.00	1269	0.00
1270	0.00	1271	0.00	1272	0.00	1273	0.00	1274	0.00
1275	0.00	1276	0.00	1277	0.00	1278	0.00	1279	0.00
1280	0.00	1281	0.00	1282	0.00	1283	0.00	1284	0.00
1285	0.00	1286	0.00	1287	0.00	1288	0.00	1289	0.00
1290	0.00	1291	0.00	1292	0.00	1293	0.00	1294	0.00
1295	0.00	1296	0.00	1297	0.00	1298	0.00	1299	0.00
1300	0.00	1310	0.00	1320	0.00	1330	0.00	1340	0.00
1350	0.00	1360	0.00	1370	0.00	1380	0.00	1390	0.00
1400	0.00	1420	0.00	1440	0.00	1460	0.00	1500	0.00

← PEAK Q₁₀₀ AT 1155 min:
 6.35 cfs / 6.00 AC
 PRORATED FOR 5.65 AC:
 $= 6.35 \text{ cfs} \times \frac{5.65 \text{ AC}}{6.00 \text{ AC}}$
 $= 6.0 \text{ cfs}$
 ALLOWABLE DISCHARGE
 FROM PROJECT SITE:
 $6.0 \text{ cfs} \times 0.90$
 $= 5.4 \text{ cfs}$

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 3885 Project: PentAir, Moorpark

Page: 4

VCRat Model Input

Model Lines

005 3885 001A Header place holder
 005 3885 002A Header place holder
 999
 999
 006 3885 001A 060000000617A97
 006 3885 002A 060000000617A97
 999

G1
 1 A2

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB # 3885 PENTAIR, MOORPARK
SUBAREA 21B - OFFSITE TRIBUTARY AREA 0.40 AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA			ROUTING AFTER ACCUMULATION						
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V	N
VALUES	VEL	DEPTH	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
ID	TYPE	ZONE													
SIDES	(FT/S)	(FT)													
1B	:	SUBAREA	21B												
1B	060	J'100	7	0	5	9	5	9	1157						
2B	:	SUBAREA	21B												
2B	:	Clearing Hydrograph Bank:	B												
2B	060	J'100	7	0	5	9	5	9	1157						

FROM TC CALCULATOR
5 AC MINIMUM AREA INPUT ALLOWED BY VCRAT CALCULATOR, TO BE PRORATED FOR 0.40 AC

Issue/Warning Messages

TYPE ERR NO PROCEDURE LOCATION MESSAGE

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2B

DESCRIPTION: SUBAREA 21B
2B : Clearing Hydrograph Bank: B
TOTAL AREA TO HYDROGRAPH: 5 acres
HYDROGRAPH PEAK: 9 cfs
TIME OF PEAK: 1157 minutes
HYDROGRAPH VOLUME: 0.15 acre-ft

X100B.out

TIME (min)	FLOW (cfs)								
0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.30	1134	0.91
1135	1.22	1136	1.53	1137	1.82	1138	1.78	1139	1.78
1140	1.82	1141	1.98	1142	2.13	1143	2.27	1144	2.45
1145	2.85	1146	3.19	1147	3.56	1148	3.79	1149	3.36
1150	2.94	1151	3.93	1152	7.60	1153	8.44	1154	8.44
1155	8.20	1156	8.41	1157	8.63	1158	7.39	1159	3.14
1160	1.86	1161	1.04	1162	0.40	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	0.00
1235	0.00	1236	0.00	1237	0.00	1238	0.00	1239	0.00
1240	0.00	1241	0.00	1242	0.00	1243	0.00	1244	0.00
1245	0.00	1246	0.00	1247	0.00	1248	0.00	1249	0.00
1250	0.00	1251	0.00	1252	0.00	1253	0.00	1254	0.00
1255	0.00	1256	0.00	1257	0.00	1258	0.00	1259	0.00
1260	0.00	1261	0.00	1262	0.00	1263	0.00	1264	0.00
1265	0.00	1266	0.00	1267	0.00	1268	0.00	1269	0.00
1270	0.00	1271	0.00	1272	0.00	1273	0.00	1274	0.00
1275	0.00	1276	0.00	1277	0.00	1278	0.00	1279	0.00
1280	0.00	1281	0.00	1282	0.00	1283	0.00	1284	0.00
1285	0.00	1286	0.00	1287	0.00	1288	0.00	1289	0.00
1290	0.00	1291	0.00	1292	0.00	1293	0.00	1294	0.00
1295	0.00	1296	0.00	1297	0.00	1298	0.00	1299	0.00
1300	0.00	1310	0.00	1320	0.00	1330	0.00	1340	0.00
1350	0.00	1360	0.00	1370	0.00	1380	0.00	1390	0.00
1400	0.00	1420	0.00	1440	0.00	1460	0.00	1500	0.00

← PEAK Q₁₀₀ AT 1157 MIN:
 8.63 cfs / 5.00 AC
 PRORATED FOR 0.40 AC =
 = 8.63 cfs × $\frac{0.40 \text{ AC}}{5.00 \text{ AC}}$
 = 0.7 cfs

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

VCRat Model Input

Page: 4

Model Lines

005	1	001B	Header place holder
005	1	002B	Header place holder
999			
999			
006	1	001B	060000000507A97
006	1	002B	060000000507A97
999			

G1
 1 B2

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB #3885 PENTAIR, MOORPARK
SUBAREA 22C - OFFSITE TRIBUTARY AREA 2.60 AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS					ACCUMULATED DATA			ROUTING AFTER ACCUMULATION							
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V	N
VALUES	VEL	DEPTH			(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
SIDES	(FT/S)	(FT)													
1C	060	J'100	16	0	5	6	5	6	1155						
2C	060	J'100	16	0	5	6	5	6	1155						

Handwritten notes:
 - Arrow from 'FROM TC CALCULATOR' points to the '16' in the TC column of row 1C.
 - Arrow from '5 AC MINIMUM AREA INPUT ALLOWED BY VCRAT CALCULATOR, TO BE PRORATED FOR 2.60 AC' points to the '5' in the AREA (AC) column of row 1C.

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
------	--------	-----------	----------	---------

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2C

DESCRIPTION: SUBAREA 22C
 2C : Clearing Hydrograph Bank: C
 TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 6 cfs
 TIME OF PEAK: 1155 minutes
 HYDROGRAPH VOLUME: 0.15 acre-ft

X100C.out

TIME (min)	FLOW (cfs)								
0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.00	1134	0.00
1135	0.00	1136	0.10	1137	0.40	1138	0.65	1139	0.90
1140	1.03	1141	1.27	1142	1.50	1143	1.71	1144	1.92
1145	2.18	1146	2.43	1147	2.60	1148	2.76	1149	2.65
1150	2.52	1151	3.03	1152	4.77	1153	5.27	1154	5.44
1155	5.51	1156	5.47	1157	5.37	1158	5.31	1159	5.14
1160	5.02	1161	4.78	1162	4.58	1163	4.32	1164	4.08
1165	4.12	1166	4.13	1167	3.49	1168	1.51	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	0.00
1235	0.00	1236	0.00	1237	0.00	1238	0.00	1239	0.00
1240	0.00	1241	0.00	1242	0.00	1243	0.00	1244	0.00
1245	0.00	1246	0.00	1247	0.00	1248	0.00	1249	0.00
1250	0.00	1251	0.00	1252	0.00	1253	0.00	1254	0.00
1255	0.00	1256	0.00	1257	0.00	1258	0.00	1259	0.00
1260	0.00	1261	0.00	1262	0.00	1263	0.00	1264	0.00
1265	0.00	1266	0.00	1267	0.00	1268	0.00	1269	0.00
1270	0.00	1271	0.00	1272	0.00	1273	0.00	1274	0.00
1275	0.00	1276	0.00	1277	0.00	1278	0.00	1279	0.00
1280	0.00	1281	0.00	1282	0.00	1283	0.00	1284	0.00
1285	0.00	1286	0.00	1287	0.00	1288	0.00	1289	0.00
1290	0.00	1291	0.00	1292	0.00	1293	0.00	1294	0.00
1295	0.00	1296	0.00	1297	0.00	1298	0.00	1299	0.00
1300	0.00	1310	0.00	1320	0.00	1330	0.00	1340	0.00
1350	0.00	1360	0.00	1370	0.00	1380	0.00	1390	0.00
1400	0.00	1420	0.00	1440	0.00	1460	0.00	1500	0.00

← PEAK Q₁₀₀ AT 1155 min =
 5.51 cfs / 5.00 AC
 PRORATED FOR 2.60 AC =
 = 5.51 cfs × $\frac{2.60 \text{ AC}}{5.00 \text{ AC}}$
 = 2.9 cfs

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 4

VCRat Model Input

Model Lines

```

005 1 001C Header place holder
005 1 002C Header place holder
999
999
006 1 001C 060000000516A97 G1
006 1 002C 060000000516A97 1 C2
999
  
```

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: SUBAREAS 30D-32D

Project Description

JOB # 3885 PENTAIR, MOORPARK
SUBAREAS 23D-25D OFFSITE TRIBUTARY AREA 26.30 AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: SUBAREAS 30D-32D

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA			ROUTING AFTER ACCUMULATION						
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V	N
VALUES	VEL	DEPTH			(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)	CHNL
SIDES	(FT/S)	(FT)													
1D	SUBAREAS	23D-25D													
1D	060	J'100	30	0	26	19	26	19	1160						
2D	SUBAREAS	23D-25D													
2D	Clearing Hydrograph Bank:	D													
2D	060	J'100	30	0	26	19	26	19	1160						

35 MIN PER TC CALCULATOR - USE 30 MIN. MAXIMUM TC
INPUT ALLOWED BY VCRAT CALCULATOR

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
------	--------	-----------	----------	---------

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: SUBAREAS 30D-32D

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2D

DESCRIPTION: SUBAREAS 23D-25D
 2D : Clearing Hydrograph Bank: D
 TOTAL AREA TO HYDROGRAPH: 26 acres
 HYDROGRAPH PEAK: 19 cfs
 TIME OF PEAK: 1160 minutes
 HYDROGRAPH VOLUME: 0.79 acre-ft

X100D.out

TIME (min)	FLOW (cfs)								
0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.01	700	0.01	800	0.01	900	0.01
1000	0.01	1050	0.01	1100	0.02	1110	0.02	1120	0.02
1130	0.02	1131	0.02	1132	0.02	1133	0.02	1134	0.02
1135	0.02	1136	0.03	1137	0.03	1138	0.06	1139	0.95
1140	1.84	1141	3.01	1142	4.19	1143	4.86	1144	5.46
1145	6.44	1146	7.35	1147	8.26	1148	9.17	1149	8.92
1150	8.66	1151	10.68	1152	15.81	1153	17.43	1154	18.11
1155	18.52	1156	18.66	1157	18.80	1158	19.04	1159	19.01
1160	19.11	1161	18.90	1162	18.76	1163	18.52	1164	18.32
1165	18.08	1166	17.77	1167	17.43	1168	17.15	1169	16.53
1170	16.57	1171	16.05	1172	15.50	1173	14.95	1174	14.41
1175	13.58	1176	12.75	1177	11.89	1178	11.07	1179	10.96
1180	10.93	1181	8.71	1182	0.02	1183	0.02	1184	0.02
1185	0.02	1186	0.02	1187	0.02	1188	0.02	1189	0.02
1190	0.02	1191	0.02	1192	0.02	1193	0.01	1194	0.01
1195	0.01	1196	0.01	1197	0.01	1198	0.01	1199	0.01
1200	0.01	1201	0.01	1202	0.01	1203	0.01	1204	0.01
1205	0.01	1206	0.01	1207	0.01	1208	0.01	1209	0.01
1210	0.01	1211	0.01	1212	0.01	1213	0.01	1214	0.01
1215	0.01	1216	0.01	1217	0.01	1218	0.01	1219	0.01
1220	0.01	1221	0.01	1222	0.01	1223	0.01	1224	0.01
1225	0.01	1226	0.01	1227	0.01	1228	0.01	1229	0.01
1230	0.01	1231	0.01	1232	0.01	1233	0.01	1234	0.01
1235	0.01	1236	0.01	1237	0.01	1238	0.01	1239	0.01
1240	0.01	1241	0.01	1242	0.01	1243	0.01	1244	0.01
1245	0.01	1246	0.01	1247	0.01	1248	0.01	1249	0.01
1250	0.01	1251	0.01	1252	0.01	1253	0.01	1254	0.01
1255	0.01	1256	0.01	1257	0.01	1258	0.01	1259	0.01
1260	0.01	1261	0.01	1262	0.01	1263	0.01	1264	0.01
1265	0.01	1266	0.01	1267	0.01	1268	0.01	1269	0.01
1270	0.01	1271	0.01	1272	0.01	1273	0.01	1274	0.01
1275	0.01	1276	0.01	1277	0.01	1278	0.01	1279	0.01
1280	0.01	1281	0.01	1282	0.01	1283	0.01	1284	0.01
1285	0.01	1286	0.01	1287	0.01	1288	0.01	1289	0.01
1290	0.01	1291	0.01	1292	0.01	1293	0.01	1294	0.01
1295	0.01	1296	0.01	1297	0.01	1298	0.01	1299	0.01
1300	0.01	1310	0.01	1320	0.01	1330	0.00	1340	0.00
1350	0.00	1360	0.00	1370	0.00	1380	0.00	1390	0.00
1400	0.00	1420	0.00	1440	0.00	1460	0.00	1500	0.00

← PEAK Q100 AT 1160 MIN =
19.11 cfs / 26.00 AC
PRORATED FOR 26.30 AC =
= 19.11 cfs × $\frac{26.30 \text{ AC}}{26.00 \text{ AC}}$
= 19.3 cfs

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: SUBAREAS 30D-32D

VCRat Model Input

Page: 4

Model Lines

```

005 1 001D Header place holder
005 1 002D Header place holder
999
999
006 1 001D 060000002630A97          G1
006 1 002D 060000002630A97          1 D2
999
    
```

PROPOSED CONDITION

VENTURA COUNTY WATERSHED PROTECTION DISTRICT
TIME OF CONCENTRATION
TC Program Version: 2.6.2009.7
Project: PentAir, Moorpark
Date: 12:00:00 AM
Engineer: Ricky Hwa
Consultant: Thienes Engineering

S U M M A R Y O F C O M P U T A T I O N S

Watershed Name: Proposed 100-Year

Name	Zone	Storm	Soil	Area (acres)	TC (min)
SubArea 1A	J'	100	6.00	3.9 / 4	5.243 / 5
SubArea 6B	J'	100	6.00	1.2 / 1	12.833 / 13
SubArea 10C	J'	100	6.00	0.3 / 0	TC ERROR
SubArea 11D	J'	100	6.00	0.3 / 0	TC ERROR

↑

Watershed Name: Proposed 100-Year

Sub-Area Name: SubArea 1A

Tc: 5.243 Minutes

DATA FOR SUB AREA 1

SUB AREA TIME OF CONCENTRATION: 5.243 min. = 5 min. ←

USE 6 min. MINIMUM TC INPUT
ALLOWED BY VCRAT CALCULATOR

SUB AREA INPUT DATA

Sub Area Name: SubArea 1A

Total Area (ac): 3.9

Flood Zone: 3

Rainfall Zone: J'

Storm Frequency (years): 100

Development Type: Commercial

Soil Type: 6.00

Percent Impervious: 90

SUB AREA OUTPUT

Intensity (in/hr): 4.056

C Total: 0.913

Sum Q Segments (cfs): 14.44

Q Total (cfs): 14.44

Sum Percent Area (%): 100.0

Sum of Flow Path Travel Times (sec): 314.56

Time of Concentration (min): 5.243

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 1A

FLOW PATH TRAVEL TIME (min): 3.3333

Flow Type: Overland

Length (ft): 200

Top Elevation (ft): 454.56

Bottom Elevation (ft): 452

Contributing Area (acres): 0.4

Percent of Sub-Area (%): 10.3

Overland Type: Valley

Development Type: Commercial

Map Slope: 0.0128

Effective Slope: 0.0128

Q for Flow Path (cfs): 1.48

Avg Velocity (ft/s): 1.00

Passed Scour Check: N/A

DATA FOR FLOW PATH 2

Flow Path Name: FlowPath 2A

FLOW PATH TRAVEL TIME (min): 1.2074

Flow Type: Street
Length (ft): 250
Top Elevation (ft): 452
Bottom Elevation (ft): 449.36
Contributing Area (acres): 1.35
Percent of Sub-Area (%): 34.6
Street Width (ft): 40
Curb Height (in): 6
Map Slope: 0.0106
Q for Flow Path (cfs): 5.00
Q Top (cfs): 1.48
Q Bottom (cfs): 6.48
Velocity Top (ft/s): 1.91
Velocity Bottom (ft/s): 2.69
Avg Velocity (ft/s): 2.30
Wave Velocity (ft/s): 3.45

DATA FOR FLOW PATH 3

Flow Path Name: FlowPath 3A
FLOW PATH TRAVEL TIME (min): 0.2601
Flow Type: Pipe
Length (ft): 83
Top Elevation (ft): 445.86
Bottom Elevation (ft): 445.44
Contributing Area (acres): 0.45
Percent of Sub-Area (%): 11.5
Initial Pipe Diameter (in): 24
Calculated Pipe Diameter (in): 21
Used Pipe Diameter (in): 24
Manning's N: 0.012
Map Slope: 0.0051
Q for Flow Path (cfs): 1.67
Q Top (cfs): 6.48
Q Bottom (cfs): 8.15
Avg Velocity (ft/s): 4.08
Wave Velocity (ft/s): 5.32

DATA FOR FLOW PATH 4

Flow Path Name: FlowPath 4A
FLOW PATH TRAVEL TIME (min): 0.2599
Flow Type: Pipe
Length (ft): 83
Top Elevation (ft): 445.36
Bottom Elevation (ft): 444.94
Contributing Area (acres): 0.65
Percent of Sub-Area (%): 16.7
Initial Pipe Diameter (in): 24
Calculated Pipe Diameter (in): 21
Used Pipe Diameter (in): 24
Manning's N: 0.012
Map Slope: 0.0051
Q for Flow Path (cfs): 2.41
Q Top (cfs): 8.15
Q Bottom (cfs): 10.55
Avg Velocity (ft/s): 4.27
Wave Velocity (ft/s): 5.32

DATA FOR FLOW PATH 5

Flow Path Name: FlowPath 5A
FLOW PATH TRAVEL TIME (min): 0.1820
Flow Type: Pipe
Length (ft): 83
Top Elevation (ft): 444.86
Bottom Elevation (ft): 444.44
Contributing Area (acres): 1.05
Percent of Sub-Area (%): 26.9
Initial Pipe Diameter (in): 24
Calculated Pipe Diameter (in): 24

Used Pipe Diameter (in): 24
 Manning's N: 0.012
 Map Slope: 0.0051
 Q for Flow Path (cfs): 3.89
 Q Top (cfs): 10.55
 Q Bottom (cfs): 14.44
 Avg Velocity (ft/s): 6.03
 Wave Velocity (ft/s): 7.60

▲

Project: PentAir, Moorpark
 Date: 12:00:00 AM
 Engineer: Ricky Hwa
 Consultant: Thienes Engineering

 Sub-Area Name: SubArea 6B
 Tc: 12.833 Minutes
 DATA FOR SUB AREA 2

 SUB AREA TIME OF CONCENTRATION: 12.833 min. = 13 min.

 SUB AREA INPUT DATA

 Sub Area Name: SubArea 6B
 Total Area (ac): 1.15
 Flood Zone: 3
 Rainfall Zone: J'
 Storm Frequency (years): 100
 Development Type: Commercial
 Soil Type: 6.00
 Percent Impervious: 90
 SUB AREA OUTPUT

 Intensity (in/hr): 2.492
 C Total: 0.905
 Sum Q Segments (cfs): 2.59
 Q Total (cfs): 2.59
 Sum Percent Area (%): 100.0
 Sum of Flow Path Travel Times (sec): 770.00
 Time of Concentration (min): 12.833

 DATA FOR FLOW PATH 1

 Flow Path Name: FlowPath 6B
 FLOW PATH TRAVEL TIME (min): 3.1667
 Flow Type: Overland
 Length (ft): 190
 Top Elevation (ft): 455.15
 Bottom Elevation (ft): 453.3
 Contributing Area (acres): 0.2
 Percent of Sub-Area (%): 17.4
 Overland Type: Valley
 Development Type: Commercial
 Map Slope: 0.0097
 Effective Slope: 0.0097
 Q for Flow Path (cfs): 0.45
 Avg Velocity (ft/s): 1.00
 Passed Scour Check: N/A

 DATA FOR FLOW PATH 2

 Flow Path Name: FlowPath 7B
 FLOW PATH TRAVEL TIME (min): 3.3333
 Flow Type: Overland
 Length (ft): 200
 Top Elevation (ft): 453.3
 Bottom Elevation (ft): 452.28
 Contributing Area (acres): 0.3
 Percent of Sub-Area (%): 26.1
 Overland Type: Valley
 Development Type: Commercial
 Map Slope: 0.0051

Effective Slope: 0.0051
Q for Flow Path (cfs): 0.68
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

DATA FOR FLOW PATH 3

Flow Path Name: FlowPath 8B
FLOW PATH TRAVEL TIME (min): 3.0833
Flow Type: Overland
Length (ft): 185
Top Elevation (ft): 452.28
Bottom Elevation (ft): 451.2
Contributing Area (acres): 0.25
Percent of Sub-Area (%): 21.7
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0058
Effective Slope: 0.0058
Q for Flow Path (cfs): 0.56
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

DATA FOR FLOW PATH 4

Flow Path Name: FlowPath 9B
FLOW PATH TRAVEL TIME (min): 3.2500
Flow Type: Overland
Length (ft): 195
Top Elevation (ft): 451.2
Bottom Elevation (ft): 447.73
Contributing Area (acres): 0.4
Percent of Sub-Area (%): 34.8
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0178
Effective Slope: 0.0178
Q for Flow Path (cfs): 0.90
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

↑
Project: PentAir, Moorpark
Date: 12:00:00 AM
Engineer: Ricky Hwa
Consultant: Thienes Engineering

Sub-Area Name: SubArea 10C
Tc: 1.667 Minutes
DATA FOR SUB AREA 3

SUB AREA TIME OF CONCENTRATION: 1.667 min. = 2 min. ** TC ERROR **

← USE 6 min. MINIMUM TC INPUT
ALLOWED BY VCRAT CALCULATOR

SUB AREA INPUT DATA

Sub Area Name: SubArea 10C
Total Area (ac): 0.25
Flood Zone: 3
Rainfall Zone: J'
Storm Frequency (years): 100
Development Type: Commercial
Soil Type: 6.00
Percent Impervious: 90
SUB AREA OUTPUT

Intensity (in/hr): 6.600
C Total: 0.919
Sum Q Segments (cfs): 1.52
Q Total (cfs): 1.52
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 100.00
Time of Concentration (min): 1.667

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 10C
FLOW PATH TRAVEL TIME (min): 1.6667
Flow Type: Overland
Length (ft): 100
Top Elevation (ft): 450.44
Bottom Elevation (ft): 446.52
Contributing Area (acres): 0.25
Percent of Sub-Area (%): 100.0
Overland Type: Valley
Development Type: Commercial
Map Slope: 0.0392
Effective Slope: 0.0392
Q for Flow Path (cfs): 1.52
Avg Velocity (ft/s): 1.00
Passed Scour Check: N/A

↑
Project: PentAir, Moorpark
Date: 12:00:00 AM
Engineer: Ricky Hwa
Consultant: Thienes Engineering

Sub-Area Name: SubArea 11D
Tc: 0.843 Minutes
DATA FOR SUB AREA 4

SUB AREA TIME OF CONCENTRATION: 0.843 min. = 1 min. ** TC ERROR **

← USE 6 min. MINIMUM TC INPUT
ALLOWED BY VCRAT CALCULATOR

SUB AREA INPUT DATA

Sub Area Name: SubArea 11D
Total Area (ac): 0.3
Flood Zone: 3
Rainfall Zone: J'
Storm Frequency (years): 100
Development Type: Undeveloped
Soil Type: 6.00
Percent Impervious: 0
SUB AREA OUTPUT

Intensity (in/hr): 9.540
C Total: NaN
Sum Q Segments (cfs): NaN
Q Total (cfs): NaN
Sum Percent Area (%): 100.0
Sum of Flow Path Travel Times (sec): 50.56
Time of Concentration (min): 0.843

DATA FOR FLOW PATH 1

Flow Path Name: FlowPath 11D
FLOW PATH TRAVEL TIME (min): 0.8426
Flow Type: Overland
Length (ft): 50
Top Elevation (ft): 448.5
Bottom Elevation (ft): 445
Contributing Area (acres): 0.3
Percent of Sub-Area (%): 100.0
Overland Type: Mountain
Development Type: Undeveloped
Map Slope: 0.0700
Effective Slope: 0.0700
Q for Flow Path (cfs): NaN
Avg Velocity (ft/s): 0.99
Passed Scour Check: YES
Scour Velocity (ft/sec): 1.60

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB #3885 PENTAIR, MOORPARK
SUBAREAS 1A-5A 3.90AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA			ROUTING AFTER ACCUMULATION					
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)
CHNL	SIDES	(FT/S)	(FT)											
1A	SUBAREAS 1A-5A													
1A	060	J'100	6	90	5	16	5	16	1156					
2A	SUBAREAS 1A-5A													
2A	Clearing Hydrograph Bank: A													
2A	060	J'100	6	90	5	16	5	16	1156					

Handwritten notes:
 5 MIN. PER TC CALCULATOR. USE 6 MIN. MINIMUM TC INPUT ALLOWED BY VCRAT CALCULATOR.
 SAC MINIMUM AREA INPUT ALLOWED BY VCRAT CALCULATOR, TO BE PRORATED FOR 3.90 AC.

Issue/Warning Messages

TYPE ERR NO PROCEDURE LOCATION MESSAGE

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2A

DESCRIPTION: SUBAREAS 1A-5A
2A : Clearing Hydrograph Bank: A

TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 16 cfs
 TIME OF PEAK: 1156 minutes
 HYDROGRAPH VOLUME: 2.24 acre-ft

TIME (min)	FLOW (cfs)								
0	0.00	100	0.51	200	0.51	300	0.54	400	0.59
500	0.69	600	0.77	700	0.88	800	1.12	900	1.36
1000	1.67	1050	2.00	1100	2.49	1110	3.18	1120	3.85
1130	3.33	1131	3.63	1132	3.93	1133	4.25	1134	4.60
1135	4.94	1136	5.27	1137	5.27	1138	5.22	1139	5.27
1140	5.27	1141	5.50	1142	5.73	1143	5.96	1144	6.29
1145	6.88	1146	7.44	1147	7.81	1148	8.17	1149	7.48
1150	6.75	1151	8.04	1152	13.90	1153	15.15	1154	15.15
1155	15.84	1156	16.17	1157	14.13	1158	7.71	1159	5.50
1160	4.70	1161	4.14	1162	4.09	1163	3.85	1164	3.59
1165	3.63	1166	3.42	1167	3.25	1168	3.04	1169	2.61
1170	2.91	1171	2.78	1172	2.69	1173	2.65	1174	2.61
1175	2.91	1176	2.39	1177	2.35	1178	2.39	1179	2.31
1180	2.27	1181	2.18	1182	2.05	1183	1.97	1184	1.84
1185	1.80	1186	1.71	1187	1.67	1188	1.71	1189	1.75
1190	1.75	1191	1.84	1192	1.88	1193	1.92	1194	1.97
1195	1.97	1196	1.97	1197	1.97	1198	1.97	1199	1.97
1200	1.97	1201	2.01	1202	2.10	1203	2.14	1204	2.18
1205	2.27	1206	2.31	1207	2.31	1208	2.31	1209	2.31
1210	2.31	1211	2.18	1212	2.05	1213	1.92	1214	1.80
1215	1.67	1216	1.54	1217	1.54	1218	1.54	1219	1.54
1220	1.54	1221	1.54	1222	1.54	1223	1.54	1224	1.54
1225	1.54	1226	1.54	1227	1.54	1228	1.54	1229	1.54
1230	1.54	1231	1.54	1232	1.54	1233	1.54	1234	1.54
1235	1.54	1236	1.54	1237	1.54	1238	1.54	1239	1.54
1240	1.54	1241	1.50	1242	1.45	1243	1.41	1244	1.37
1245	1.33	1246	1.28	1247	1.28	1248	1.28	1249	1.28
1250	1.28	1251	1.28	1252	1.28	1253	1.28	1254	1.28
1255	1.28	1256	1.28	1257	1.28	1258	1.28	1259	1.28
1260	1.28	1261	1.28	1262	1.28	1263	1.28	1264	1.28
1265	1.28	1266	1.28	1267	1.28	1268	1.28	1269	1.28
1270	1.28	1271	1.24	1272	1.20	1273	1.15	1274	1.11
1275	1.07	1276	1.03	1277	1.03	1278	1.03	1279	1.03
1280	1.03	1281	1.03	1282	1.03	1283	1.03	1284	1.03
1285	1.03	1286	1.03	1287	1.03	1288	1.03	1289	1.03
1290	1.03	1291	1.03	1292	1.03	1293	1.03	1294	1.03
1295	1.03	1296	1.03	1297	1.03	1298	1.03	1299	1.03
1300	1.03	1310	0.77	1320	0.77	1330	0.51	1340	0.51
1350	0.77	1360	0.51	1370	0.51	1380	0.51	1390	0.51
1400	0.26	1420	0.13	1440	0.10	1460	0.01	1500	0.01

← PEAK Q100 AT 1156 min =
 16.17 cfs / 5.00 AC
 PRORATED FOR 3.90 AC:
 = 16.17 cfs × $\frac{3.90 AC}{5.00 AC}$
 = 12.6 cfs

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

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VCRat Model Input

Model Lines

005	1	001A	Header place holder	
005	1	002A	Header place holder	
999				
999				
006	1	001A	060090000506A97	G1
006	1	002A	060090000506A97	1 A2
999				

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB #3885 PENTAIR, MOORPARK
SUBAREAS 6B-9B 1.15AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS										ACCUMULATED DATA			ROUTING AFTER ACCUMULATION			
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V		
VALUES	TYPE	ZONE	DEPTH	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)		
ID	SIDES	(FT/S)	(FT)													
1B	SUBAREAS 6B-9B															
1B	060	J'100	13	90	5	11	5	11	1155							
2B	SUBAREAS 6B-9B															
2B	Clearing Hydrograph Bank: B															
2B	060	J'100	13	90	5	11	5	11	1155							

PER TC CALCULATOR
5
5AC MINIMUM AREA INPUT ALLOWED BY VCRAT
CALCULATOR, TO BE PRORATED FOR 1.15AC

Issue/Warning Messages

TYPE ERR NO PROCEDURE LOCATION MESSAGE

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2B

DESCRIPTION: SUBAREAS 6B-9B
2B : Clearing Hydrograph Bank: B

TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 11 cfs
 TIME OF PEAK: 1154 minutes
 HYDROGRAPH VOLUME: 2.25 acre-ft

TIME (min)	FLOW (cfs)								
0	0.00	100	0.51	200	0.51	300	0.54	400	0.59
500	0.69	600	0.77	700	0.88	800	1.12	900	1.36
1000	1.67	1050	2.00	1100	2.49	1110	3.02	1120	3.69
1130	3.45	1131	3.55	1132	3.65	1133	3.73	1134	3.87
1135	4.02	1136	4.19	1137	4.37	1138	4.50	1139	4.66
1140	4.81	1141	5.07	1142	5.34	1143	5.59	1144	5.72
1145	6.00	1146	6.28	1147	6.55	1148	6.83	1149	6.62
1150	6.40	1151	7.30	1152	10.25	1153	11.10	1154	11.27
1155	11.27	1156	11.10	1157	10.91	1158	10.64	1159	10.21
1160	9.85	1161	9.44	1162	9.57	1163	9.61	1164	8.61
1165	5.51	1166	4.43	1167	3.89	1168	3.61	1169	3.32
1170	3.39	1171	3.20	1172	3.14	1173	3.00	1174	2.92
1175	2.78	1176	2.72	1177	2.62	1178	2.57	1179	2.49
1180	2.47	1181	2.39	1182	2.47	1183	2.19	1184	2.13
1185	2.07	1186	2.03	1187	1.95	1188	1.91	1189	1.89
1190	1.85	1191	1.82	1192	1.84	1193	1.80	1194	1.82
1195	1.85	1196	1.85	1197	1.87	1198	1.91	1199	1.91
1200	1.95	1201	1.99	1202	2.01	1203	2.05	1204	2.07
1205	2.09	1206	2.13	1207	2.15	1208	2.17	1209	2.21
1210	2.23	1211	2.19	1212	2.17	1213	2.13	1214	2.07
1215	2.01	1216	1.95	1217	1.89	1218	1.84	1219	1.78
1220	1.72	1221	1.66	1222	1.60	1223	1.54	1224	1.54
1225	1.54	1226	1.54	1227	1.54	1228	1.54	1229	1.54
1230	1.54	1231	1.54	1232	1.54	1233	1.54	1234	1.54
1235	1.54	1236	1.54	1237	1.54	1238	1.54	1239	1.54
1240	1.54	1241	1.52	1242	1.50	1243	1.48	1244	1.46
1245	1.44	1246	1.42	1247	1.40	1248	1.38	1249	1.36
1250	1.34	1251	1.32	1252	1.30	1253	1.28	1254	1.28
1255	1.28	1256	1.28	1257	1.28	1258	1.28	1259	1.28
1260	1.28	1261	1.28	1262	1.28	1263	1.28	1264	1.28
1265	1.28	1266	1.28	1267	1.28	1268	1.28	1269	1.28
1270	1.28	1271	1.26	1272	1.24	1273	1.22	1274	1.20
1275	1.18	1276	1.16	1277	1.14	1278	1.12	1279	1.11
1280	1.09	1281	1.07	1282	1.05	1283	1.03	1284	1.03
1285	1.03	1286	1.03	1287	1.03	1288	1.03	1289	1.03
1290	1.03	1291	1.03	1292	1.03	1293	1.03	1294	1.03
1295	1.03	1296	1.03	1297	1.03	1298	1.03	1299	1.03
1300	1.03	1310	0.83	1320	0.77	1330	0.57	1340	0.51
1350	0.71	1360	0.57	1370	0.51	1380	0.51	1390	0.51
1400	0.32	1420	0.13	1440	0.10	1460	0.01	1500	0.01

← PEAK Q₁₀₀ AT 1154 MIN:
 11.27 CFS / 5.00 AC
 PRORATED FOR 1.15 AC:
 = 11.27 CFS × $\frac{1.15 AC}{5.00 AC}$
 = 2.6 CFS

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 4

VCRat Model Input

Model Lines

005	1	001B Header place holder	
005	1	002B Header place holder	
999			
999			
006	1	001B 060090000513A97	G1
006	1	002B 060090000513A97	1 B2
999			

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB # 3885 PENTAIR, MOORPARK
SUBAREAS 10C 0.25AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA			ROUTING AFTER ACCUMULATION					
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)
CHNL	SIDES	(FT/S)	(FT)											
1C	SUBAREA 10C													
1C	060	J'100	6	90	5	16	5	16	1156					
2C	SUBAREA 10C													
2C	Clearing Hydrograph Bank: C													
2C	060	J'100	6	90	5	16	5	16	1156					

Handwritten notes:
 2 MIN. PER TC CALCULATOR. USE 6 MIN. MINIMUM TC INPUT ALLOWED BY VCRAT CALCULATOR (circled 6)
 5 AC. MINIMUM AREA INPUT ALLOWED BY VCRAT CALCULATOR, TO BE PRORATED FOR 0.25AC (circled 5)

Issue/Warning Messages

TYPE ERR NO PROCEDURE LOCATION MESSAGE

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2C

DESCRIPTION: SUBAREA 10C
2C : Clearing Hydrograph Bank: C

TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 16 cfs
 TIME OF PEAK: 1156 minutes
 HYDROGRAPH VOLUME: 2.24 acre-ft

TIME (min)	FLOW (cfs)								
0	0.00	100	0.51	200	0.51	300	0.54	400	0.59
500	0.69	600	0.77	700	0.88	800	1.12	900	1.36
1000	1.67	1050	2.00	1100	2.49	1110	3.18	1120	3.85
1130	3.33	1131	3.63	1132	3.93	1133	4.25	1134	4.60
1135	4.94	1136	5.27	1137	5.27	1138	5.22	1139	5.27
1140	5.27	1141	5.50	1142	5.73	1143	5.96	1144	6.29
1145	6.88	1146	7.44	1147	7.81	1148	8.17	1149	7.48
1150	6.75	1151	8.04	1152	13.90	1153	15.15	1154	15.15
1155	15.84	1156	16.17	1157	14.13	1158	7.71	1159	5.50
1160	4.70	1161	4.14	1162	4.09	1163	3.85	1164	3.59
1165	3.63	1166	3.42	1167	3.25	1168	3.04	1169	2.61
1170	2.91	1171	2.78	1172	2.69	1173	2.65	1174	2.61
1175	2.91	1176	2.39	1177	2.35	1178	2.39	1179	2.31
1180	2.27	1181	2.18	1182	2.05	1183	1.97	1184	1.84
1185	1.80	1186	1.71	1187	1.67	1188	1.71	1189	1.75
1190	1.75	1191	1.84	1192	1.88	1193	1.92	1194	1.97
1195	1.97	1196	1.97	1197	1.97	1198	1.97	1199	1.97
1200	1.97	1201	2.01	1202	2.10	1203	2.14	1204	2.18
1205	2.27	1206	2.31	1207	2.31	1208	2.31	1209	2.31
1210	2.31	1211	2.18	1212	2.05	1213	1.92	1214	1.80
1215	1.67	1216	1.54	1217	1.54	1218	1.54	1219	1.54
1220	1.54	1221	1.54	1222	1.54	1223	1.54	1224	1.54
1225	1.54	1226	1.54	1227	1.54	1228	1.54	1229	1.54
1230	1.54	1231	1.54	1232	1.54	1233	1.54	1234	1.54
1235	1.54	1236	1.54	1237	1.54	1238	1.54	1239	1.54
1240	1.54	1241	1.50	1242	1.45	1243	1.41	1244	1.37
1245	1.33	1246	1.28	1247	1.28	1248	1.28	1249	1.28
1250	1.28	1251	1.28	1252	1.28	1253	1.28	1254	1.28
1255	1.28	1256	1.28	1257	1.28	1258	1.28	1259	1.28
1260	1.28	1261	1.28	1262	1.28	1263	1.28	1264	1.28
1265	1.28	1266	1.28	1267	1.28	1268	1.28	1269	1.28
1270	1.28	1271	1.24	1272	1.20	1273	1.15	1274	1.11
1275	1.07	1276	1.03	1277	1.03	1278	1.03	1279	1.03
1280	1.03	1281	1.03	1282	1.03	1283	1.03	1284	1.03
1285	1.03	1286	1.03	1287	1.03	1288	1.03	1289	1.03
1290	1.03	1291	1.03	1292	1.03	1293	1.03	1294	1.03
1295	1.03	1296	1.03	1297	1.03	1298	1.03	1299	1.03
1300	1.03	1310	0.77	1320	0.77	1330	0.51	1340	0.51
1350	0.77	1360	0.51	1370	0.51	1380	0.51	1390	0.51
1400	0.26	1420	0.13	1440	0.10	1460	0.01	1500	0.01

← PEAK Q100 AT 1156 min:
 16.17 cfs / 5.00 AC
 PROPORTIONED FOR 0.25 AC:
 $= 16.17 \text{ cfs} \times \frac{0.25 \text{ AC}}{5.00 \text{ AC}}$
 = 0.8 cfs

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moonpark

Page: 4

VCRat Model Input

Model Lines

005	1	001C Header place holder	
005	1	002C Header place holder	
999			
999			
006	1	001C 060090000506A97	G1
006	1	002C 060090000506A97	1 C2
999			

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB # 3885 PENTAIR, MOORPARK
SUBAREA 11D 0.30 AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS											ACCUMULATED DATA			ROUTING AFTER ACCUMULATION			
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V			
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)			
CHNL	SIDES	(FT/S)	(FT)														
1D	SUBAREA 11D																
1D	060	J'100	6	0	5	10	5	10	1156								
2D	SUBAREA 11D																
2D	Clearing Hydrograph Bank: D																
2D	060	J'100	6	0	5	10	5	10	1156								

Handwritten notes:
 1 MIN. PER TC CALCULATOR. USE 6 MIN. MINIMUM TC INPUT ALLOWED BY VCRAT CALCULATOR.
 SAC MINIMUM AREA INPUT ALLOWED BY VCRAT CALCULATOR, TO BE PRORATED FOR 0.30 AC.

Issue/Warning Messages

TYPE ERR NO PROCEDURE LOCATION MESSAGE

NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2D

DESCRIPTION: SUBAREA 11D
2D : Clearing Hydrograph Bank: D

TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 10 cfs
 TIME OF PEAK: 1156 minutes
 HYDROGRAPH VOLUME: 0.15 acre-ft

TIME (min)	FLOW (cfs)								
0	0.00	100	0.00	200	0.00	300	0.00	400	0.00
500	0.00	600	0.00	700	0.00	800	0.00	900	0.00
1000	0.00	1050	0.00	1100	0.00	1110	0.00	1120	0.00
1130	0.00	1131	0.00	1132	0.00	1133	0.62	1134	1.11
1135	1.47	1136	1.81	1137	1.81	1138	1.76	1139	1.81
1140	1.81	1141	2.00	1142	2.17	1143	2.34	1144	2.58
1145	3.01	1146	3.41	1147	3.68	1148	3.94	1149	3.44
1150	2.92	1151	3.84	1152	8.17	1153	9.14	1154	9.14
1155	9.68	1156	9.93	1157	8.35	1158	3.61	1159	2.00
1160	1.22	1161	0.40	1162	0.29	1163	0.00	1164	0.00
1165	0.00	1166	0.00	1167	0.00	1168	0.00	1169	0.00
1170	0.00	1171	0.00	1172	0.00	1173	0.00	1174	0.00
1175	0.00	1176	0.00	1177	0.00	1178	0.00	1179	0.00
1180	0.00	1181	0.00	1182	0.00	1183	0.00	1184	0.00
1185	0.00	1186	0.00	1187	0.00	1188	0.00	1189	0.00
1190	0.00	1191	0.00	1192	0.00	1193	0.00	1194	0.00
1195	0.00	1196	0.00	1197	0.00	1198	0.00	1199	0.00
1200	0.00	1201	0.00	1202	0.00	1203	0.00	1204	0.00
1205	0.00	1206	0.00	1207	0.00	1208	0.00	1209	0.00
1210	0.00	1211	0.00	1212	0.00	1213	0.00	1214	0.00
1215	0.00	1216	0.00	1217	0.00	1218	0.00	1219	0.00
1220	0.00	1221	0.00	1222	0.00	1223	0.00	1224	0.00
1225	0.00	1226	0.00	1227	0.00	1228	0.00	1229	0.00
1230	0.00	1231	0.00	1232	0.00	1233	0.00	1234	0.00
1235	0.00	1236	0.00	1237	0.00	1238	0.00	1239	0.00
1240	0.00	1241	0.00	1242	0.00	1243	0.00	1244	0.00
1245	0.00	1246	0.00	1247	0.00	1248	0.00	1249	0.00
1250	0.00	1251	0.00	1252	0.00	1253	0.00	1254	0.00
1255	0.00	1256	0.00	1257	0.00	1258	0.00	1259	0.00
1260	0.00	1261	0.00	1262	0.00	1263	0.00	1264	0.00
1265	0.00	1266	0.00	1267	0.00	1268	0.00	1269	0.00
1270	0.00	1271	0.00	1272	0.00	1273	0.00	1274	0.00
1275	0.00	1276	0.00	1277	0.00	1278	0.00	1279	0.00
1280	0.00	1281	0.00	1282	0.00	1283	0.00	1284	0.00
1285	0.00	1286	0.00	1287	0.00	1288	0.00	1289	0.00
1290	0.00	1291	0.00	1292	0.00	1293	0.00	1294	0.00
1295	0.00	1296	0.00	1297	0.00	1298	0.00	1299	0.00
1300	0.00	1310	0.00	1320	0.00	1330	0.00	1340	0.00
1350	0.00	1360	0.00	1370	0.00	1380	0.00	1390	0.00
1400	0.00	1420	0.00	1440	0.00	1460	0.00	1500	0.00

← PEAK Q100 AT 1156 min:
 9.93 cfs / 5.00 AC
 PRORATED FOR 0.30 AC:
 $= 9.93 \text{ cfs} \times \frac{0.30 \text{ AC}}{5.00 \text{ AC}}$
 $= 0.6 \text{ cfs}$

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 4

VCRat Model Input

Model Lines

005	1	001D Header place holder	
005	1	002D Header place holder	
999			
999			
006	1	001D 060000000506A97	G1
006	1	002D 060000000506A97	1 D2
999			

APPENDIX C

DETENTION ANALYSIS

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Modified Rational Model Results Report

Job: 1 Project: PentAir, Moorpark

Project Description

JOB #3885 PENTAIR, MOORPARK
SUBAREAS 1A-5A 3.90AC

VCRat version: 2.6.2009.7
VCRain version: 200703
DOS EXE version: PC 2.2-200809

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 2

Model Results

SUBAREA DATA AND RESULTS						ACCUMULATED DATA			ROUTING AFTER ACCUMULATION					
NODE	SOIL	RAIN	TC	%	AREA	FLOW	AREA	FLOW	TIME	CHANNEL	LENGTH	SLOPE	SIZE	H:V
ID	TYPE	ZONE	(MIN)	IMP	(AC)	(CFS)	(AC)	(CFS)	(MIN)	TYPE	(FT)	(FT/FT)	(FT)	(Z)
CHNL	SIDES	(FT/S)	(FT)											
1A : SUBAREAS 1A-5A														
1A	060	J'100	6	90	5	16	5	16	1156					
2A : SUBAREAS 1A-5A														
2A : Clearing Hydrograph Bank: A														
2A	060	J'100	6	90	5	16	5	16	1156					

Issue/Warning Messages

TYPE	ERR NO	PROCEDURE	LOCATION	MESSAGE
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NO ISSUES OR WARNINGS DETECTED

Ventura County Watershed Protection District
Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

Page: 3

Hydrograph Printouts

HYDROGRAPH PRINTOUT AT: 2A

DESCRIPTION: SUBAREAS 1A-5A
2A : Clearing Hydrograph Bank: A

TOTAL AREA TO HYDROGRAPH: 5 acres
 HYDROGRAPH PEAK: 16 cfs
 TIME OF PEAK: 1156 minutes
 HYDROGRAPH VOLUME: 2.24 acre-ft

TIME (min)	FLOW (cfs)								
0	0.00	100	0.51	200	0.51	300	0.54	400	0.59
500	0.69	600	0.77	700	0.88	800	1.12	900	1.36
1000	1.67	1050	2.00	1100	2.49	1110	3.18	1120	3.85
1130	3.33	1131	3.63	1132	3.93	1133	4.25	1134	4.60
1135	4.94	1136	5.27	1137	5.27	1138	5.22	1139	5.27
1140	5.27	1141	5.50	1142	5.73	1143	5.96	1144	6.29
1145	6.88	1146	7.44	1147	7.81	1148	8.17	1149	7.48
1150	6.75	1151	8.04	1152	13.90	1153	15.15	1154	15.15
1155	15.84	1156	16.17	1157	14.13	1158	7.71	1159	5.50
1160	4.70	1161	4.14	1162	4.09	1163	3.85	1164	3.59
1165	3.63	1166	3.42	1167	3.25	1168	3.04	1169	2.61
1170	2.91	1171	2.78	1172	2.69	1173	2.65	1174	2.61
1175	2.91	1176	2.39	1177	2.35	1178	2.39	1179	2.31
1180	2.27	1181	2.18	1182	2.05	1183	1.97	1184	1.84
1185	1.80	1186	1.71	1187	1.67	1188	1.71	1189	1.75
1190	1.75	1191	1.84	1192	1.88	1193	1.92	1194	1.97
1195	1.97	1196	1.97	1197	1.97	1198	1.97	1199	1.97
1200	1.97	1201	2.01	1202	2.10	1203	2.14	1204	2.18
1205	2.27	1206	2.31	1207	2.31	1208	2.31	1209	2.31
1210	2.31	1211	2.18	1212	2.05	1213	1.92	1214	1.80
1215	1.67	1216	1.54	1217	1.54	1218	1.54	1219	1.54
1220	1.54	1221	1.54	1222	1.54	1223	1.54	1224	1.54
1225	1.54	1226	1.54	1227	1.54	1228	1.54	1229	1.54
1230	1.54	1231	1.54	1232	1.54	1233	1.54	1234	1.54
1235	1.54	1236	1.54	1237	1.54	1238	1.54	1239	1.54
1240	1.54	1241	1.50	1242	1.45	1243	1.41	1244	1.37
1245	1.33	1246	1.28	1247	1.28	1248	1.28	1249	1.28
1250	1.28	1251	1.28	1252	1.28	1253	1.28	1254	1.28
1255	1.28	1256	1.28	1257	1.28	1258	1.28	1259	1.28
1260	1.28	1261	1.28	1262	1.28	1263	1.28	1264	1.28
1265	1.28	1266	1.28	1267	1.28	1268	1.28	1269	1.28
1270	1.28	1271	1.24	1272	1.20	1273	1.15	1274	1.11
1275	1.07	1276	1.03	1277	1.03	1278	1.03	1279	1.03
1280	1.03	1281	1.03	1282	1.03	1283	1.03	1284	1.03
1285	1.03	1286	1.03	1287	1.03	1288	1.03	1289	1.03
1290	1.03	1291	1.03	1292	1.03	1293	1.03	1294	1.03
1295	1.03	1296	1.03	1297	1.03	1298	1.03	1299	1.03
1300	1.03	1310	0.77	1320	0.77	1330	0.51	1340	0.51
1350	0.77	1360	0.51	1370	0.51	1380	0.51	1390	0.51
1400	0.26	1420	0.13	1440	0.10	1460	0.01	1500	0.01

Ventura County Watershed Protection District
 Modified Rational Method Hydrology Program (VCRat v2.6)

Job: 1 Project: PentAir, Moorpark

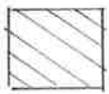
Page: 4

VCRat Model Input

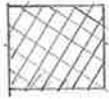
Model Lines

005	1	001A Header place holder	
005	1	002A Header place holder	
999			
999			
006	1	001A 060090000506A97	G1
006	1	002A 060090000506A97	1 A2
999			

SUBAREAS 1A-5A DETENTION VOLUME CALCULATIONS



TOTAL REQUIRED
DETENTION VOLUME FOR
SUBAREAS 1A-5A



VOLUME BETWEEN
TIMES T₁ AND T₂

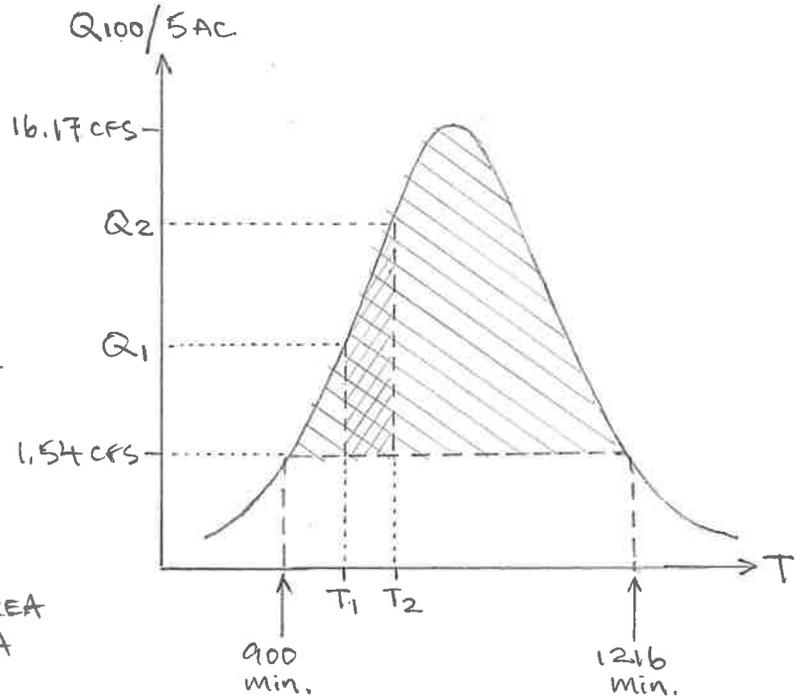
16.17 CFS = PEAK Q₁₀₀ RUNOFF FOR
SUBAREAS 1A-5A

TRIBUTARY AREA FOR
HYDROGRAPH

$$1.2 \text{ CFS} \times \frac{5.00 \text{ AC}}{3.90 \text{ AC}} = 1.54 \text{ CFS}$$

ACTUAL TRIBUTARY AREA
FOR SUBAREAS 1A-5A

INTENDED Q₁₀₀ DISCHARGE
FROM SUBAREAS 1A-5A



VOLUME BETWEEN TIMES T₁ AND T₂

$$= (T_2 - T_1) \times \left[(Q_1 - 1.54 \text{ CFS}) + (Q_2 - 1.54 \text{ CFS}) \right] / 2$$

E.G. VOLUME BETWEEN 1000 MIN. AND 1050 MIN.

$$= (1050 - 1000) \text{ MIN} \times \frac{60 \text{ SEC}}{\text{MIN}} \times \left[(1.67 - 1.54) \frac{\text{FT}^3}{\text{SEC}} + (2.00 - 1.54) \frac{\text{FT}^3}{\text{SEC}} \right] / 2$$

$$= 885 \text{ FT}^3$$

SEE NEXT PAGE FOR TOTAL REQUIRED DETENTION VOLUME

SUBAREAS 1A-5A DETENTION VOLUME CALCULATIONS

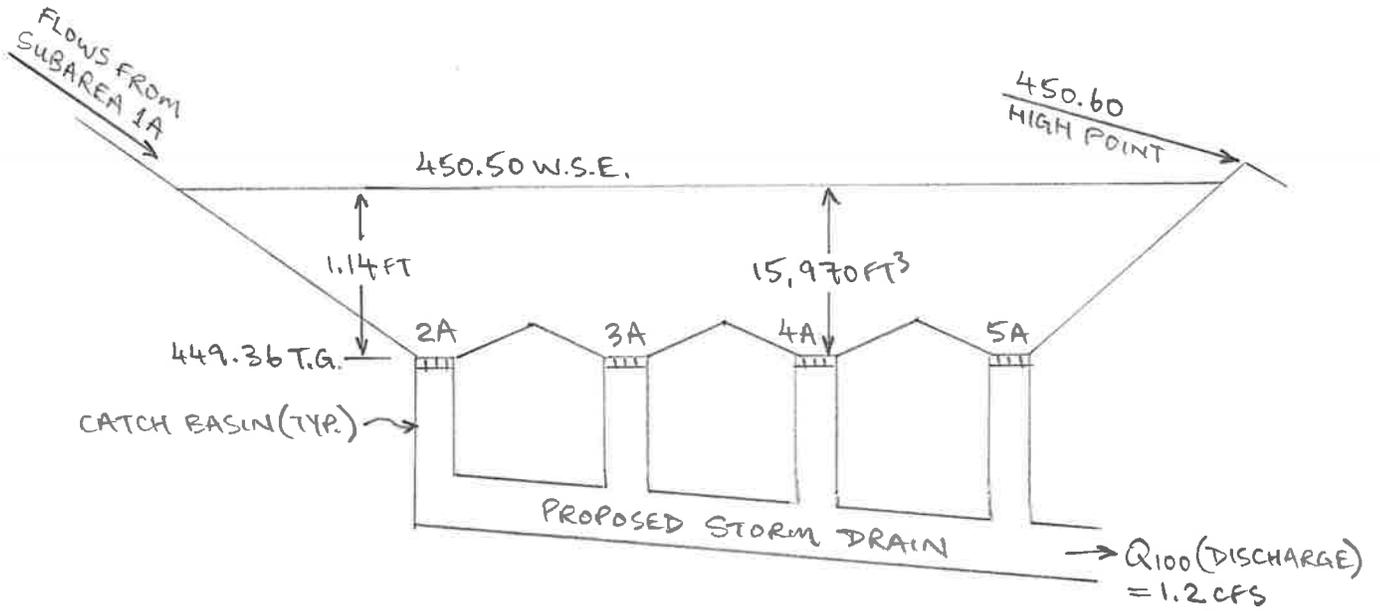
Q100-Discharge = 1.20 CFS per 3.9 acres
 = 1.54 CFS per 5 acres
 Total Volume = 20475 FT³ per 5 acres = 15970 FT³ per 3.9 acres

Time(Min)	Q(CFS)	V(FT ³)	Total V(FT ³)	Time(Min)	Q(CFS)	V(FT ³)	Total V(FT ³)
900	1.54	0	0	1169	2.61	77	18814
1000	1.67	390	390	1170	2.91	73	18887
1050	2.00	885	1275	1171	2.78	78	18966
1100	2.49	2115	3390	1172	2.69	72	19037
1110	3.18	777	4167	1173	2.65	68	19105
1120	3.85	1185	5352	1174	2.61	65	19171
1130	3.33	1230	6582	1175	2.91	73	19244
1131	3.63	116	6698	1176	2.39	67	19310
1132	3.93	134	6833	1177	2.35	50	19360
1133	4.25	153	6986	1178	2.39	50	19410
1134	4.60	173	7159	1179	2.31	49	19459
1135	4.94	194	7353	1180	2.27	45	19504
1136	5.27	214	7567	1181	2.18	41	19545
1137	5.27	224	7790	1182	2.05	35	19579
1138	5.22	222	8013	1183	1.97	28	19607
1139	5.27	222	8235	1184	1.84	22	19629
1140	5.27	224	8459	1185	1.80	17	19646
1141	5.50	231	8690	1186	1.71	13	19659
1142	5.73	245	8934	1187	1.67	9	19668
1143	5.96	258	9192	1188	1.71	9	19677
1144	6.29	275	9467	1189	1.75	11	19688
1145	6.88	303	9770	1190	1.75	13	19701
1146	7.44	337	10107	1191	1.84	15	19716
1147	7.81	365	10472	1192	1.88	19	19736
1148	8.17	387	10859	1193	1.92	22	19757
1149	7.48	377	11237	1194	1.97	24	19781
1150	6.75	335	11571	1200	1.97	155	19936
1151	8.04	351	11922	1201	2.01	27	19963
1152	13.90	566	12488	1202	2.10	31	19994
1153	15.15	779	13267	1203	2.14	35	20029
1154	15.15	817	14084	1204	2.18	37	20066
1155	15.84	837	14921	1205	2.27	41	20107
1156	16.17	868	15789	1206	2.31	45	20152
1157	14.13	817	16606	1210	2.31	185	20337
1158	7.71	563	17168	1211	2.18	42	20379
1159	5.50	304	17472	1212	2.05	35	20414
1160	4.70	214	17686	1213	1.92	27	20441
1161	4.14	173	17859	1214	1.80	19	20460
1162	4.09	155	18013	1215	1.67	12	20471
1163	3.85	146	18159	1216	1.54	4	20475
1164	3.59	131	18290				
1165	3.63	124	18414				
1166	3.42	119	18533				
1167	3.25	108	18641				
1168	3.04	96	18737				

JOB #3885 PENTAIR, MOORPARK
TRUCK YARD VOLUME, SUBAREAS 1A-5A

Elevation	Depth (feet)	Area (s.f.)	Volume (c.f.)	Σ Volume (c.f.)	Σ Volume (ac-ft)
449.36	0.00	0	563	563	0.01
449.60	0.24	4690	1659	2222	0.05
449.80	0.44	11900	2821	5043	0.12
450.00	0.64	16310	3753	8796	0.20
450.20	0.84	21220	4711	13507	0.31
450.40	1.04	25890	5636	19143	0.44
450.60	1.24	30470			

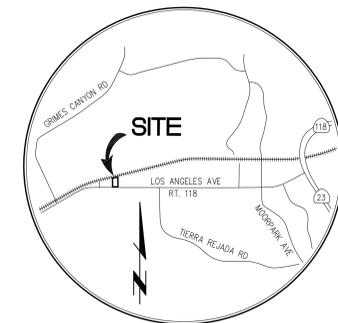
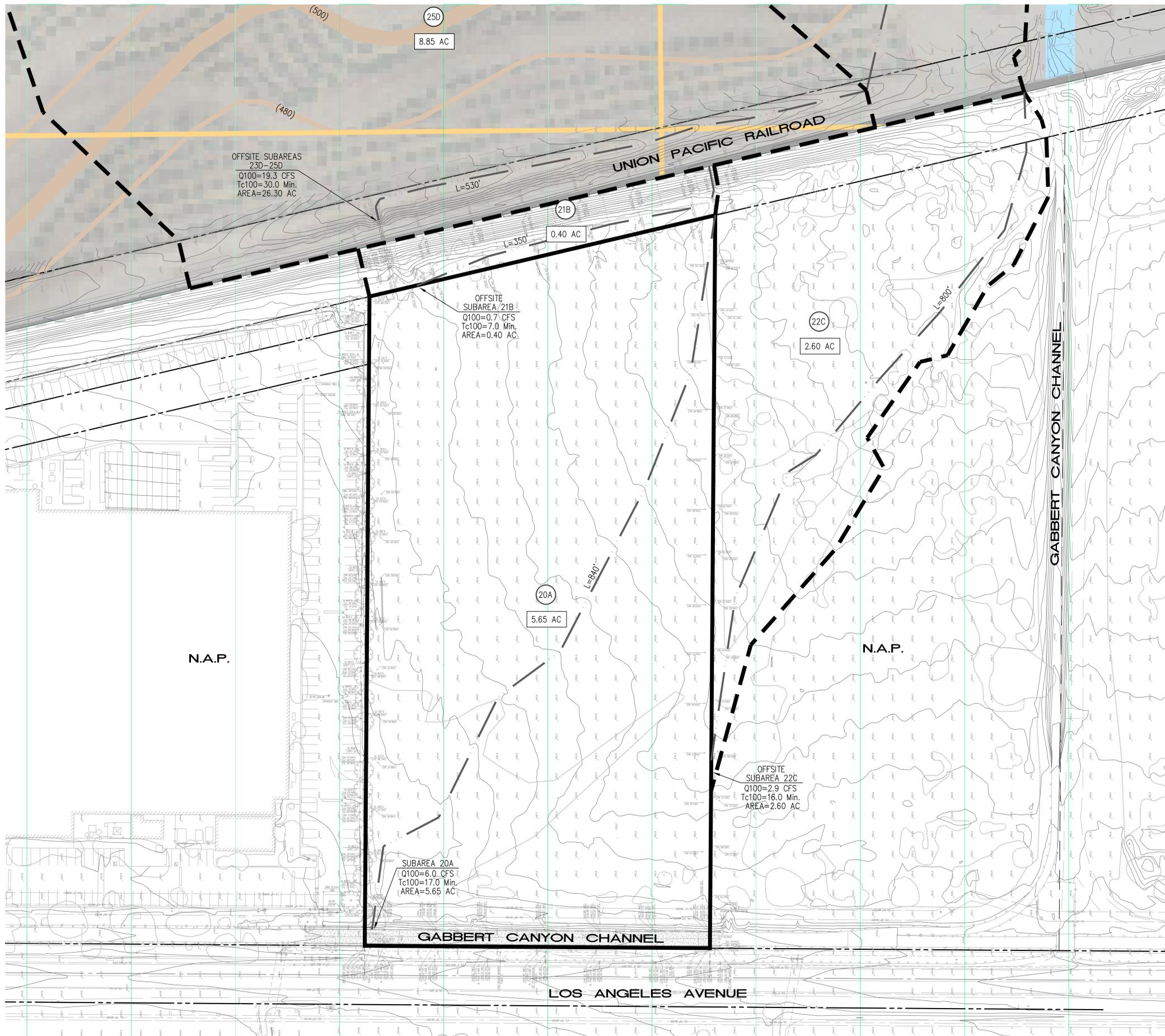
$15,970 \text{ FT}^3$
 $\approx 450.50 \text{ W.S.E.}$
 1.14 FT DEPTH



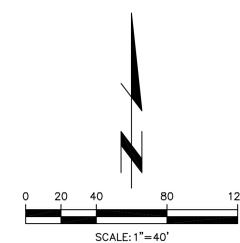
APPENDIX D

HYDROLOGY MAP

SEE SHEET 2



LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	SUBAREA NUMBER

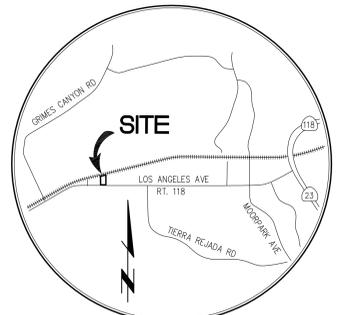
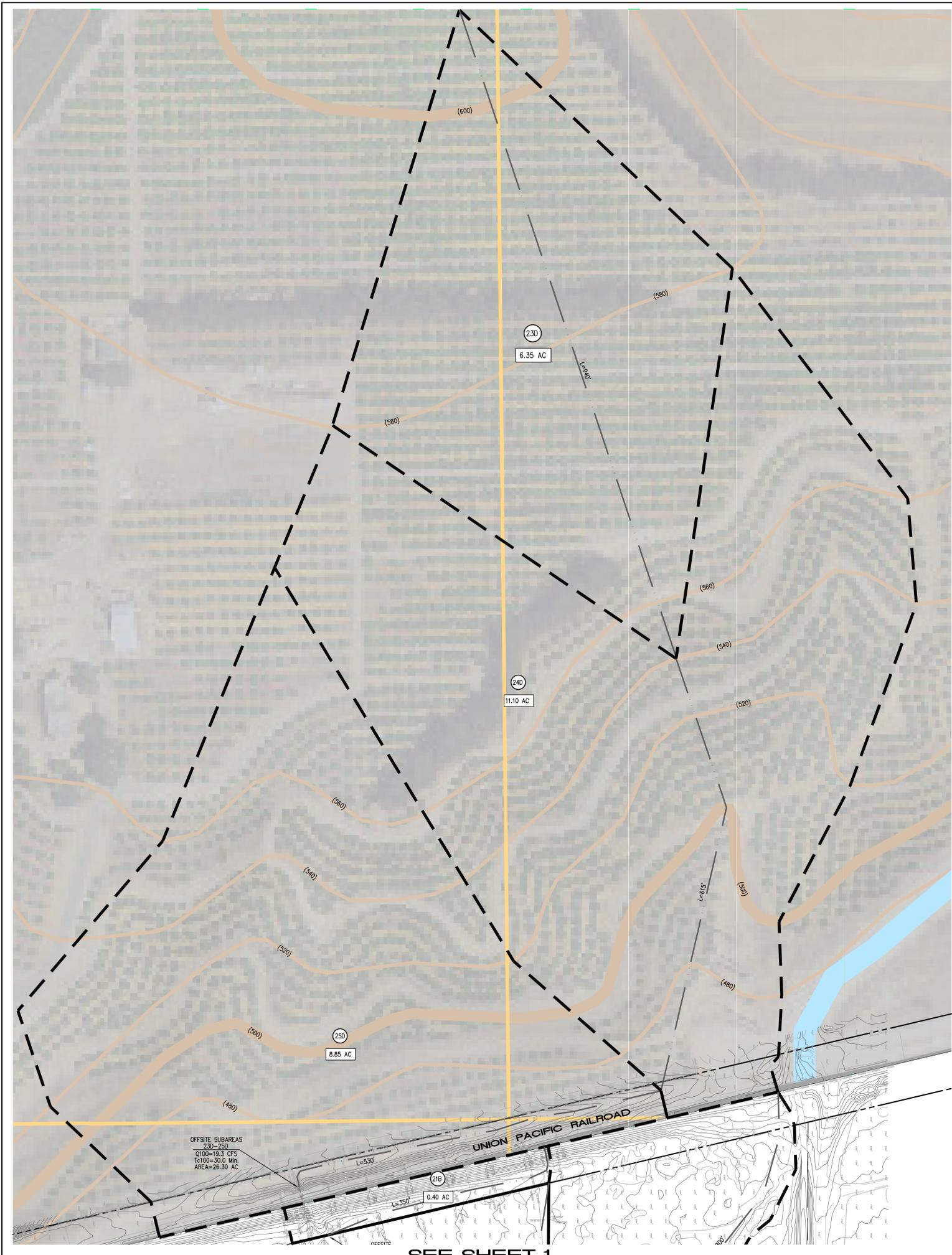


Last Update: 5/24/22
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CITY OF MOORPARK PUBLIC WORKS DEPARTMENT	
EXISTING CONDITION HYDROLOGY MAP	
PENTAIR	
LOS ANGELES AVENUE	
MOORPARK, CA	
Designed by _____ Checked by _____ Date _____ Designed by _____ Checked by _____ Date _____	Approved by _____ Date _____ Public Works Director R.C.E. XXXXX Sheet 1 of 2 Sheets

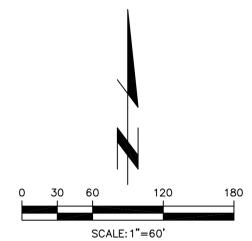
PREPARED FOR:
 AMIR DEVELOPMENT CO.
 ATTN: STEVEN JUHNKE
 8730 WILSHIRE BLVD, SUITE 300
 BEVERLY HILLS, CA 90211
 PHONE: (310) 657-8887





VICINITY MAP
N.T.S.

LEGEND	
	PROJECT BOUNDARY
	SUBAREA BOUNDARY
	FLOW PATH
	SUBAREA AREA
	SUBAREA NUMBER



Last Update: 5/24/22
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CITY OF MOORPARK
PUBLIC WORKS DEPARTMENT
EXISTING CONDITION HYDROLOGY MAP
PENTAIR
LOS ANGELES AVENUE
MOORPARK, CA

PREPARED FOR:
AMIR DEVELOPMENT CO.
ATTN: STEVEN JUHNKE
8730 WILSHIRE BLVD, SUITE 300
BEVERLY HILLS, CA 90211
PHONE: (310) 657-8887

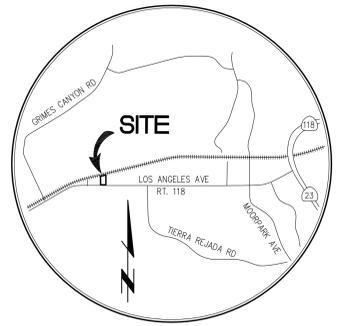


Designed by _____	Approved by _____	Date _____
Checked by _____	Public Works Director _____	R.C.E. XXXXX
Designed by _____		
Date _____		
Checked by _____		
Date _____		
Sheet 2 of 2 Sheets		

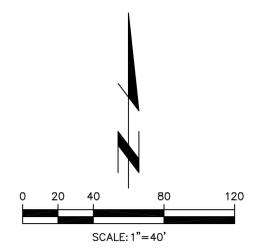
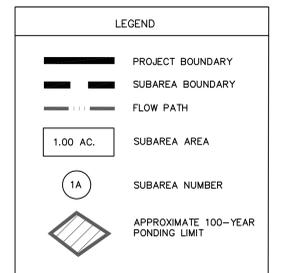
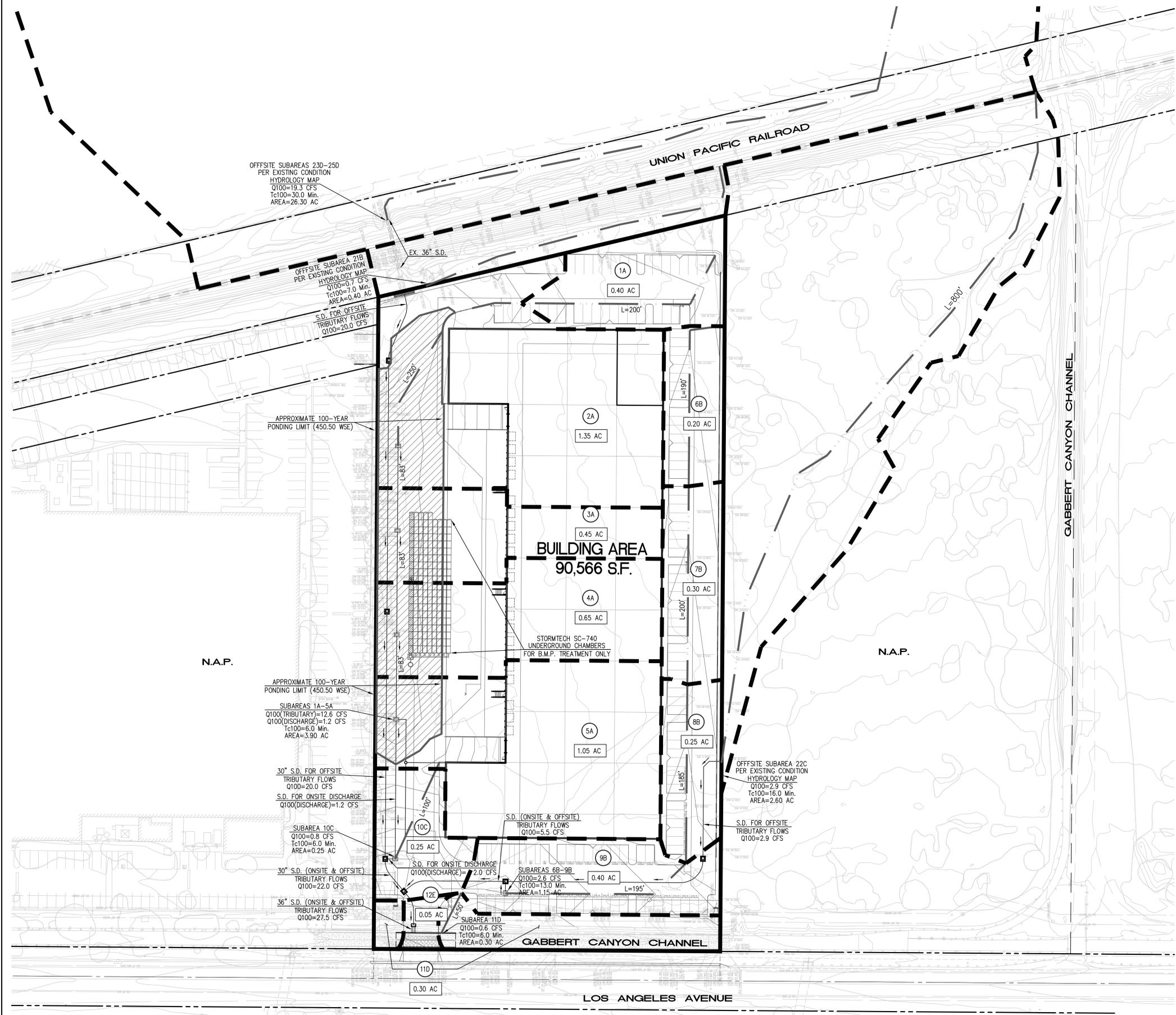
3885/2 OF 2 SHEETS

SEE SHEET 1

SEE EXISTING CONDITION HYDROLOGY MAP FOR TRIBUTARY OFFSITE AREAS



VICINITY MAP
N.T.S.



Last Update: 5/24/22
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CITY OF MOORPARK PUBLIC WORKS DEPARTMENT PROPOSED CONDITION HYDROLOGY MAP PENTAIR LOS ANGELES AVENUE MOORPARK, CA		3885/1 OF 1 SHEET
Prepared for: AMIR DEVELOPMENT CO. ATTN: STEVEN JUHNKE 8730 WILSHIRE BLVD, SUITE 300 BEVERLY HILLS, CA 90211 PHONE: (310) 657-8887	Designed by _____ Date _____ Checked by _____ Date _____ Designed by _____ Date _____ Checked by _____ Date _____	
Thien Engineering, Inc. CIVIL ENGINEERING - LAND SURVEYING 14349 FIRESTONE BOULEVARD LA MIRADA, CALIFORNIA 90638 PH: (714) 521-4011 FAX: (714) 521-4173		Approved by _____ Date _____ Public Works Director R.C.E. XXXXX Sheet 1 of 1 Sheets