DSCN6946.JPG
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159.09 Kb

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211.15 Kb

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202.01 Kb

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181.94 Kb

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1024x768x24(RGB)
177.00 Kb

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185.66 Kb

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166.85 Kb

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170.67 Kb

DSCN6973.JPG
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167.07 Kb

DSCN6974.JPG
1024x768x24(RGB)
171.10 Kb

DSCN6975.JPG
1024x768x24(RGB)
200.97 Kb

DSCN6976.JPG
1024x768x24(RGB)
175.23 Kb

APPENDIX 5.5

RESUME OF THE PREPARER OF THIS SOIL GAS SURVEY REPORT AND COPY OF CURRENT INSURANCE CERTIFICATE

RESUME

ROBERT A. BATCHELOR
President of Batchelor Environmental Services, Inc and holder of both California Registered Environmental Assessor (REA)I(#06089)& II (#20097)Certifications.

For over 30 years, I have been involved in the petroleum and environmental services industries providing services to a wide variety of industrial, transportation, real property lenders and developer clients. I have performed and/or managed over 4,000 environmental projects throughout the United States during the last twenty years with the majority being in California. Because of my industrial plant auditing experience as a petroleum lubricants application engineer and transportation expertise in rail and tanker operations with Shell Oil Company and an MBA, I bring to Batchelor Environmental Services a combination of technical expertise, practical business-oriented problem solving skills and the understanding of cost-effective solutions in solving environmental problems. I utilize my technical expertise, cost saving abilities and twenty years of real estate environmental assessment experience to provide Batchelor Environmental Services' clients with well documented environmental reports exceeding ASTM E-1527-00 Standard of Practice.

In addition to the numerous Phase I, Limited Phase I ESA/Transaction Screen reports performed I have completed a wide variety of Phase II Site Assessments and Remedial Project including dry cleaning facilities, ten years of groundwater monitoring at an oil refinery in Long Beach, Leaking Underground Storage Tank (LUST) sites including a former gasoline service station, a San Diego Hotel property and several agricultural properties, the installation of groundwater monitoring wells and various site investigations in areas of recognized environmental conditions at commercial/industrial properties. The Phase III/Site Remediations which I have managed include the removal of leaking subsurface petroleum pipelines, the re-abandonment of crude oil wells, the remediation of several LUST and other contaminated sites by means of ex-situ bio-remediation and the recent completion of the regulatory closure in place of leaking USTs within the Maryland Hotel situated in San Diego, CA. The Maryland Hotel project was performed in accordance with regulatory procedures, site closure was obtained and the costs of the LUST project was recovered for the client (First Commercial Corp) from the State of California LUST reimbursement Fund.

I provide my clients with narrative reports which include very clear and specific conclusions and recommendations and not to exceed costs for any recommended additional site investigations. Your environmental reports are researched and prepared entirely by me and your projects will always be delivered on time at the price agreed upon. I will answer your calls or respond to your e-mails the same day and you can rely on me to be available for discussions or for the performance of projects. I will travel anywhere to complete a project for you.

I was awarded a Batchelor of Science Degree in Biology from Allegheny College, a Masters in Business Administration (MBA) from the University of Santa Clara and have been a California Registered Environmental Assessor (REA) I for the past eleven (11) years and the much more demanding REA II for the past five (5) years. The REA II California Environmental Assessors II certification is for REA Is with a minimum of eight (8) years site assessment and remediation experience.

ACORD®

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 1/30/2012

PRODUCER
E E I S
7996 California Avenue, Ste. A
Fair Oaks, CA 95628
(916) 965-5079

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED
BATCHELOR ENVIRONMENTAL SERVICES, INC.
3340 PUNTA ALTA, UNIT B
LAGUNA WOODS, CA 92637
(949) 756-0333

INSURERS AFFORDING COVERAGE	NAIC#
INSURER A: AMERICAN SAFETY RISK RETENTION GROUP, INC.	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YYYY)	POLICY EXPIRATION DATE (MM/DD/YYYY)	LIMITS	
A		GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [X] PROFESSIONAL [X] LIABILITY/CM GEN'L AGGREGATE LIMIT APPLIES PER [X] POLICY [ ] PRO-JECT [ ] LOC	ENV 011473-11-07	12/08/11	12/08/12	EACH OCCURRENCE	$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurence)	$ 50,000
						MED EXP (Any one person)	$ 5,000
						PERSONAL & ADV INJURY	$ 1,000,000
						GENERAL AGGREGATE	$ 1,000,000
						PRODUCTS - COMP/OP AGG	$ 1,000,000
		AUTOMOBILE LIABILITY [ ] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS				COMBINED SINGLE LIMIT (Ea accident)	$
						BODILY INJURY (Per person)	$
						BODILY INJURY (Per accident)	$
						PROPERTY DAMAGE (Per accident)	$
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT	$
						OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS / UMBRELLA LIABILITY [ ] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $				EACH OCCURRENCE	$
						AGGREGATE	$
							$
							$
							$
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N [ ] (Mandatory in NH) If yes, describe under SPECIAL PROVISIONS below				WC STATU-TORY LIMITS / OTH-ER	
						E.L. EACH ACCIDENT	$
						E.L. DISEASE - EA EMPLOYEE	$
						E.L. DISEASE - POLICY LIMIT	$
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

CERTIFICATE HOLDER

INFORMATION AND BID PURPOSES ONLY

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE David O. Neve II

ACORD 25 (2009/01)

Appendix H

Grading, Drainage, and Hydrology Study

LEGAL DESCRIPTION

PARCEL 1:

THAT PORTION OF LOT "H" OF THE PARTITION OF THE RANCHO LAS VIRGENES, IN THE CITY OF AGOURA HILLS, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP OF SAID PARTITION, FILED WITH DECREE IN CASE No. 2898, OF THE SUPERIOR COURT OF SAID COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTH LINE OF VENTURA HIGHWAY DISTANT EASTERLY ALONG SAID LINE, 806.87 FEET FROM THE WEST LINE OF SAID LOT "H"; THENCE EASTERLY ALONG SAID NORTH LINE; 125 FEET; THENCE (THE BEARING OF THE WEST LINE OF SAID LOT "H" BEING ASSUMED AS NORTH 0°12'EAST), NORTH 13°53'15" EAST 890.06 FEET TO THE SOUTH LINE OF PARCEL 1 OF THE LAND DESCRIBED IN THE DEED RECORDED IN BOOK 3422, PAGE 147 OF OFFICIAL RECORDS, OF SAID COUNTY; THENCE ALONG SAID SOUTH LINE NORTH 79°52'50" WEST 127.50 FEET; THENCE SOUTHERLY IN A DIRECT LINE TO THE POINT OF BEGINNING.

EXCEPT THEREFROM THAT PORTION OF SAID LAND LYING NORTHERLY OF THE SOUTHERLY LINE OF THE LAND DESCRIBED IN PARCEL 1 OF THE RELINQUISHMENT OF HIGHWAY RIGHT OF WAY, COUNTY OF LOS ANGELES, RECORDED NOVEMBER 1, 1965 AS INSTRUMENT NO. 3250, OF OFFICIAL RECORDS, OF SAID COUNTY.

ALSO EXCEPT THEREFROM THAT PORTION OF LAND LYING WITHIN THE STRIPS OF LAND DESCRIBED IN THE GRANT DEED TO THE CITY OF AGOURA HILLS, A CALIFORNIA MUNICIPAL CORPORATION RECORDED DECEMBER 8, 2005 AS INSTRUMENT No. 05-3006990 OF OFFICIAL RECORDS.

SAID LAND IS SHOWN IS SHOWN AS A PORTION OF PARCEL 3, IN THE CITY OF AGOURA HILLS, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS SHOWN ON LICENSED SURVEYOR'S MAP, FILED IN BOOK 15, PAGES 8 AND 9 OF RECORD OF SURVEYS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY

ASSESSOR'S PARCEL NUMBER: 2061-004-035

PARCEL 2:

THAT PORTION OF LOT "H" OF THE PARTITION OF THE RANCHO LAS VIRGENES, IN THE CITY OF AGOURA HILLS, COUNTY OF LOS ANGELES, STATE OF CALIFORNIA, AS PER MAP OF SAID PARTITION, FILED WITH DECREE IN CASE No. 2898, OF THE SUPERIOR COURT OF SAID COUNTY, DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT IN THE NORTH LINE OF AGOURA ROAD, FORMERLY VENTURA STATE HIGHWAY, DISTANT EASTERLY ALONG SAID LINE, 681.87 FEET FROM THE WEST LINE OF SAID LOT "H"; THENCE (THE BEARING OF THE WEST LINE OF SAID LOT "H" BEING ASSUMED AS NORTH 0°12' EAST) NORTH 13°35'17" EAST 866.96 FEET TO THE SOUTH LINE OF PARCEL 1, OF THE LAND DESCRIBED IN THE DEED RECORDED IN BOOK 3422, PAGE147, OFFICIAL RECORDS OF SAID COUNTY; THENCE ALONG SAID LINE 79°52'50" EAST 127.59 FEET; THENCE IN A DIRECT LINE TO A POINT IN THE NORTH LINE OF SAID STATE HIGHWAY, DISTANT EASTERLY ALONG SAID NORTH LINE 125 FEET FROM THE BEGINNING; THENCE WESTERLY ALONG THE NORTH LINE OF SAID HIGHWAY, 125 FEET TO THE POINT OF BEGINNING.

EXCEPTING AND RESERVING THEREFROM, ALL CRUDE OIL, GAS, PETROLEUM ASPHALTUM AND ALL KINDRED SUBSTANCES AND OTHER MINERALS UNDER AND IN SAID LAND.

VICINITY MAP

LEGEND:

- PROPERTY / BOUNDARY LINE
- EXISTING BOUNDARY LINE
- STREET R/W LINE
- CENTER LINE
- EDGE OF ASPHALT PAVING
- BUILDING FOOT PRINT LINE
- WALL (SIZE VARIES)
- CATCH BASIN
- LT LIGHT
- MH MANHOLE (SEWER, STORM DRAIN, POWER, TELEPHONE)
- PP/TP POWER POLE (P.P.) / TELEPHONE POLE (T.P.)
- FH FIRE HYDRANT
- GM/WM GAS / WATER METER
- GV/WV GAS / WATER VALVE
- EPB/SLRB/TSPB/UPB ELEC./STREET LIGHT/TRAFFIC/UNKNOWN PULL BOX
- PL PLANTER
- GP GUARD POST
- BC BUILDING CORNER
- BW BACK OF WALK ELEVATION
- EC EDGE OF CONCRETE ELEVATION
- EP EDGE OF PAVEMENT ELEVATION
- FD FOUND
- REF REFERENCE
- CLF CHAIN LINK FENCE
- PWFB PUBLIC WORKS FIELD BOOK (CORNER RECORD)
- CLR CLEAR
- ENC ENCROACHMENT
- ℄ PROPERTY LINE
- GB GRADE BREAK
- FS FINISHED SURFACE
- FL FLOWLINE
- INV INVERT ELEVATION
- TC TOP OF CURB
- (TYP) TYPICAL
- TW TOP OF WALL

PARCEL 1: EASEMENT HOLDERS

1. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: LAS VIRGENES MUNICIPAL WATER DISTRICT, A MUNICIPAL CORPORATION
   - PURPOSE: A LINE OF PIPE
   - RECORDED: FEBRUARY 18, 1965 AS INSTRUMENT NO. 3806 OF OFFICIAL RECORDS
   - AFFECTS: THE NORTH 10 FEET OF THE SOUTH 15.00 FEET
2. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: LAS VIRGENES MUNICIPAL WATER DISTRICT, A MUNICIPAL CORPORATION
   - PURPOSE: A LINE OF PIPE
   - RECORDED: JULY 14, 1965 AS INSTRUMENT NO. 4426 OF OFFICIAL RECORDS
   - AFFECTS: THE NORTH 10 FEET OF THE SOUTH 15.00 FEET
3. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: COUNTY OF LOS ANGELES
   - PURPOSE: PUBLIC ROAD AND HIGHWAY PURPOSES
   - RECORDED: JUNE 13, 1966 AS INSTRUMENT NO. 1813 OF OFFICIAL RECORDS
   - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN TO BE KNOWN AS AGOURA ROAD
4. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT, A BODY CORPORATE ANF POLITIC
   - PURPOSE: COVERED STORM DRAIN
   - RECORDED: APRIL 23, 1971 AS INSTRUMENT NO. 3210 OF OFFICIAL RECORDS
   - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN
5. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
   - PURPOSE: STORM DRAIN
   - RECORDED: JULY 25, 1972 AS INSTRUMENT NO. 3904 OF OFFICIAL RECORDS
   - AFFECTS: A PORTION OF SAID LAND LYING WITHIN A STRIP OF LAND 26 FEET WIDE, AS MORE PARTICULARLY DESCRIBED THEREIN
6. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
   - PURPOSE: A COVERED STORM DRAIN
   - RECORDED: FEBRUARY 8, 1973 AS INSTRUMENT NO. 3101 OF OFFICIAL RECORDS
   - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN
7. *AN EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
   - GRANTED TO: CITY OF AGOURA HILLS
   - PURPOSE: TEMPORARY CONSTRUCTION EASEMENT FOR THE AGOURA ROAD WIDENING AND CANWOOD STREET IMPROVEMENT PROJECT
   - RECORDED DATE: DECEMBER 19, 2013
   - RECORDING NO: AS INSTRUMENT NO. 2013-178313 OF OFFICIAL RECORDS
   - AFFECTS: SAID LAND

PARCEL 2: EASEMENT HOLDERS

10. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: LAS VIRGENES MUNICIPAL WATER DISTRICT, A MUNICIPAL CORPORATION
    - PURPOSE: A LINE OF PIPE
    - RECORDED: FEBRUARY 18, 1965 AS INSTRUMENT NO. 3806 OF OFFICIAL RECORDS
    - AFFECTS: THE NORTH 10 FEET OF THE SOUTH 15.00 FEET
11. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: LAS VIRGENES MUNICIPAL WATER DISTRICT, A MUNICIPAL CORPORATION
    - PURPOSE: A LINE OF PIPE
    - RECORDED: JULY 14, 1965 AS INSTRUMENT NO. 4426 OF OFFICIAL RECORDS
    - AFFECTS: THE NORTH 10 FEET OF THE SOUTH 15.00 FEET
12. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: COUNTY OF LOS ANGELES
    - PURPOSE: ROAD
    - RECORDED: JUNE 13, 1966 AS INSTRUMENT NO. 1813 OF OFFICIAL RECORDS
    - AND RECORDED MAY 28, 1970, AS INSTRUMENT NO. 3443 OF OFFICIAL RECORDS
    - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN TO BE KNOWN AS AGOURA ROAD
13. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT, A BODY CORPORATE ANF POLITIC
    - PURPOSE: COVERED STORM DRAIN
    - RECORDED: APRIL 23, 1971 AS INSTRUMENT NO. 3210 OF OFFICIAL RECORDS
    - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN
14. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
    - PURPOSE: STORM DRAIN
    - RECORDED: JULY 25, 1972 AS INSTRUMENT NO. 3904 OF OFFICIAL RECORDS
    - AFFECTS: A PORTION OF SAID LAND LYING WITHIN A STRIP OF LAND 26 FEET WIDE, AS MORE PARTICULARLY DESCRIBED THEREIN
15. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
    - PURPOSE: A COVERED STORM DRAIN
    - RECORDED: FEBRUARY 8, 1973 AS INSTRUMENT NO. 3101 OF OFFICIAL RECORDS
    - AFFECTS: THAT PORTION OF SAID LAND AS MORE PARTICULARLY DESCRIBED THEREIN
16. *AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: SOUTHERN CALIFORNIA EDISON COMPANY
    - PURPOSE: PUBLIC UTILITIES
    - RECORDED DATE: OCTOBER 30, 1980
    - RECORDING NO: AS INSTRUMENT NO. 80-1089418 OF OFFICIAL RECORDS
    - AFFECTS: A PORTION OF SAID LAND
20. *AN EASEMENT(S) FOR THE PURPOSE(S) SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT*
    - GRANTED TO: CITY OF AGOURA HILLS
    - PURPOSE: TEMPORARY CONSTRUCTION EASEMENT FOR THE AGOURA ROAD WIDENING AND CANWOOD STREET IMPROVEMENT PROJECT
    - RECORDED DATE: DECEMBER 19, 2013
    - RECORDING NO: AS INSTRUMENT NO. 2013-178312 OF OFFICIAL RECORDS
    - AFFECTS: SAID LAND

PUBLIC UTILITIES / SERVICES

- WATER: LAS VIRGENES MUNICIPAL WATER DIST. ENGINEER : DOUG BARROW, 4232 LAS VIRGENES ROAD, CALABASAS, CA 91302, (818) 880-4110
- ELECTRICAL: SOUTHERN CALIFORNIA EDISON ENGINEER : ALLAN MORENO, 3589 FOOTHILL DRIVE, THOUSAND OAKS, CA 91361, (805) 494-7016
- TELEPHONE: SBC (PAC BELL), 16201 RAYMER STREET, #115, VAN NUYS, CA 91406, (818) 373-6889
- GAS: SOUTHERN CALIFORNIA GAS ENGINEER : ROBERT STEWART, 9400 OAKDALE AVENUE, CHATSWORTH, CA 91313, (818) 701-3324
- SEWER: LA COUNTY, DEPT. OF PUBLIC WORKS, SEWER MAINTENANCE DIVISION, 1000 S. FREMONT AVENUE, BLDG A9 EAST ALHAMBRA, CA 91803, (626) 300-3308
- CABLE: ATT, PLANNER: MICHAEL SMITH, 2250 WARD AV, SIMI VALLEY, CA 93065, (805) 583-6640
- CABLE: CHARTER COMMUNICATIONS, 3806 CROSSCREEK ROAD, MALIBU, CA 90265, (310) 456-9010
- CALTRANS: CALTRANS, 5660 RESEDA BOULEVARD, TARZANA, CA 91356, (805) 388-1426

ZONING NOTE

- CURRENT ZONING: PD (PLANNED DEVELOPMENT)
- CURRENT PROPERTY USE: VACANT
- MAXIMUM BUILDING HEIGHT: 35 FT.
- BUILDING SETBACKS: **
  - **FRONT: 20 FT. OR HEIGHT OF BUILDING WHICHEVER GREATER
  - SIDE/STREET: 20 FT. OR HEIGHT OF BUILDING WHICHEVER GREATER
  - **REAR: 20 FT.
  - SIDE: 70 FT. COMBINED, WITH NO LESS THAN 15 FT. ON ANY ONE SIDE

**FREEWAY CORRIDOR ZONE SETBACKS TAKE PRECEDENT (SEE BELOW) (IF THEY ARE GREATER THAN THE UNDERLYING ZONE SETBACKS)

- GENERAL RETAIL: 1 PER 250 SF/GFA
- OFFICES (PROF.): 1 PER 300 SF/GFA
- WAREHOUSE: 1 PER 1000 SF/GFA

APPLIES TO PROPERTIES WITHIN 660 FT. NORTH AND SOUTH OF FREEWAY RIGHT-OF-WAY EDGE:

A SETBACK OF ALL STRUCTURES FROM THE FREEWAY R/W OF ONE (1) FT., FOR EACH TWO (2) FEET OF BLDG. HEIGHT, WITH A MINIMUM OF 20 FT., FOR ONE STORY; AND TWO (2) FEET OF SETBACK PER ONE (1) FOOT OF BLDG. HEIGHT FOR ANY BUILDING TALLER THAN 20 FT.

PROPOSED LAND USAGE & AREAS

PROPOSED LAND USES: 24 HOUR FITNESS
TOTAL NUMBER OF LOTS: 1

PARCEL	EXISTING	PROPOSED
PARCEL 1	156,610 S.F.	173,520 S.F.

ESTIMATED EARTHWORK QUANTITIES

- ESTIMATED CUT: 1270.0 CY
- ESTIMATED FILL: 38575.0 CY
- ESTIMATED IMPORT 37305.0 CY

UTILITY NOTE

UTILITY INFORMATION SHOWN HEREON WAS COMPILED FROM PUBLIC RECORDS. NO LIABILITY IS ASSUMED OR INFERRED BY HMK ENGINEERING AS TO THE ACCURACY OF SAID INFORMATION.

BOUNDARY DATUM

ESTABLISHED FROM THE LOCAL CITY OR COUNTY ENGINEERING BUREAU'S BOUNDING MONUMENTED CENTERLINES OR FROM POINTS OF RECORD AS SHOWN. IF ELEVATIONS ARE SHOWN, THEY ARE FOR INFORMATION ONLY AND ARE NOT FOR CERTIFICATION OF GRADE, DRAINAGE OR ANY OTHER ITEM WHICH MAY BE CONNECTED TO VERTICAL DATUM.

SURVEYOR'S STATEMENT

PREPARED UNDER THE SUPERVISION OF:

MARK D. HARDY P.L.S 5440 _____ *DATE*
EXPIRY 30-SEP-16

DIGALERT
DIAL TOLL FREE
1-800-422-4133
AT LEAST TWO DAYS BEFORE YOU DIG

LINE TABLE

LINE	BEARING	DIST.
L1	N 59°31'52" E	21.01'
L2	N 65°58'48" E	14.28'
L3	N 24°01'12" W	17.36'
L4	S 15°25'41" W	31.28'
L5	N 69°02'08" W	5.50'
L6	N 00°53'36" E	10.79'
L7	N 84°11'38" E	17.67'
L8	S 66°09'54" W	14.69'
L9	N 67°18'37" W	21.13'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH
C1	5°14'29"	351.70'	32.17'
C2	97°47'07"	37.00'	63.15'
C3	52°28'47"	20.00'	18.32'
C4	97°15'42"	25.00'	42.44'

SCALE: 1"=40'
40 30 20 10 0 40

NO.	REVISION	REVISED BY	APPROVED BY	DATE

PREPARED BY:

HARDY ENGINEERING

Civil, Environmental and Structural Engineers
Land Surveyors and Planners, Architects

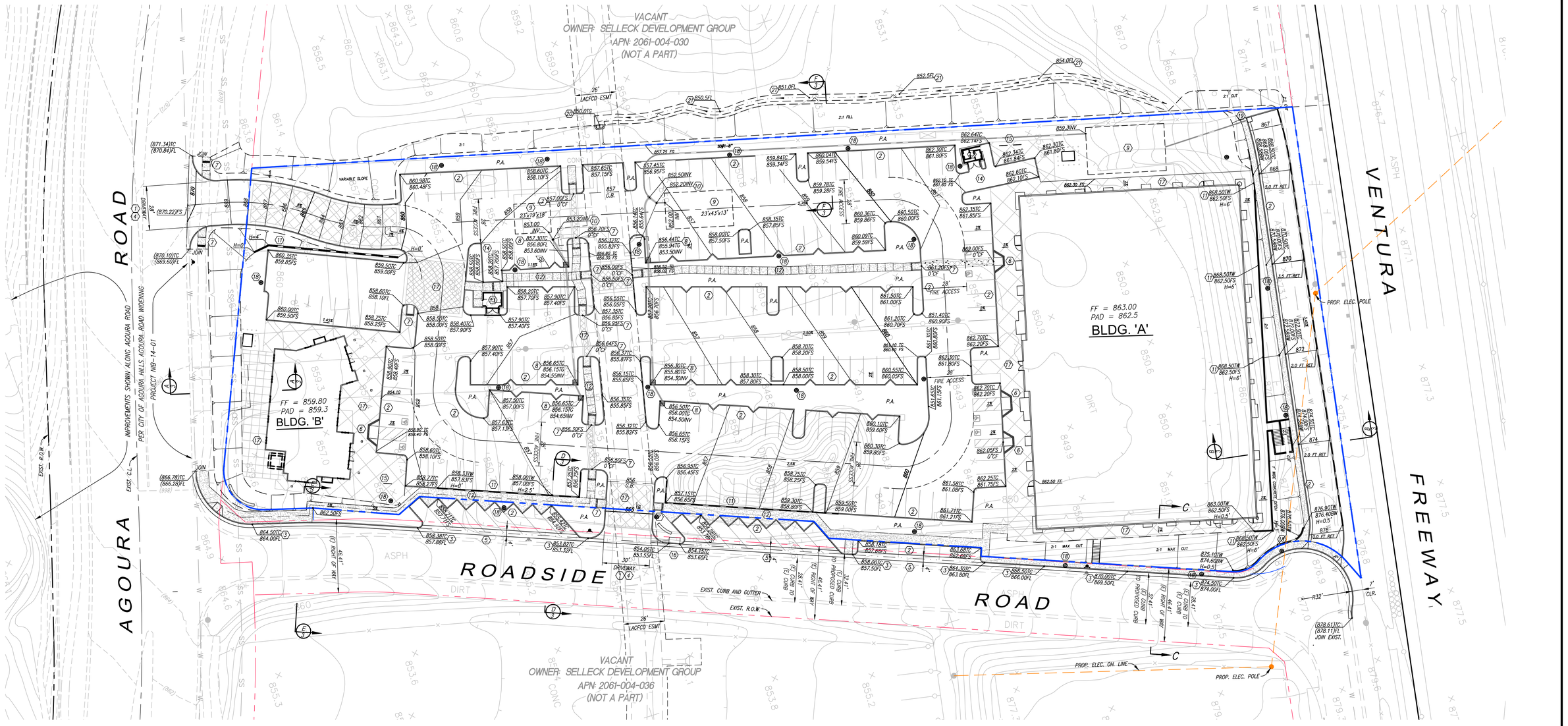
351 Rolling Oaks Drive, Ste 202, Thousand Oaks, Ca 91361, Phone 818.222.2606
122 E. Arrellaga Street, Santa Barbara, Ca 93101, Phone 805.845.9936

(OWNER& DEVELOPER)
SELLECK DEVELOPMENT GROUP
30770 RUSSELL RANCH ROAD SUITE 1
WESTLAKE VILLAGE, CALIFORNIA 91362
(805) 495-5400 CONTACT: DANIEL SELLECK

VESTING TENTATIVE PARCEL MAP NUMBER 73266

LOCATED IN CITY OF AGOURA HILLS, THE COUNTY OF LOS ANGELES, STATE OF CALIFORNIA
JULY 2015

SHEET 1 OF 1 SHEETS



CONSTRUCTION NOTES:

1. CONSTRUCT DRIVEWAY PER SPPWC STD PLAN 110-2 TYPE C
2. CONSTRUCT 6" CONCRETE CURB PER SPPWC STD. PLAN 120-2 TYPE A1-6
3. CONSTRUCT 6" CONCRETE CURB AND 24" GUTTER PER SPPWC STD. PLAN 120-2 TYPE A2-6
4. CONSTRUCT CROSS GUTTER PER SPPWC STD. PLAN 122-2
5. CONSTRUCT LONGITUDINAL GUTTER PER SPPWC STD. PLAN 122-2
6. CONSTRUCT CURB RAMP PER SPPWC STD. PLAN 111-4 CASE A TYPE 1
7. CONSTRUCT CURB RAMP PER SPPWC STD. PLAN 111-4 CASE D TYPE 1
8. INSTALL 16"x16" PRECAST CONCRETE CATCH BASIN PER JENSEN MODEL NO. 1616-HDI W/ TRAFFIC GRATE OR APPROVED EQUAL.
9. INSTALL CONTECH DUROMAXX UNDERGROUND DETENTION SYSTEM OR APPROVED EQUAL
10. INSTALL CONTECH CDS UNIT WITH OVERFLOW PIPE
11. CONSTRUCT RETAINING WALL PER SEPARATE PERMIT
12. CONSTRUCT CONCRETE WALK PER ARCHITECT PLANS
13. TRASH ENCLOSURE PER ARCHITECT PLANS
14. LOADING AREA PER ARCHITECT PLANS
15. BIKE RACK PER ARCHITECT PLANS
16. CONSTRUCT CATCH BASIN PER SPPWC STD. PLAN 300-3, W=7', Vn=4' AND CONSTRUCT LOCAL DEPRESSION PER SPPWC 313-3 CASE B
17. DECORATIVE CONCRETE PAVERS PER ARCHITECT PLANS
18. LIGHT POLES PER ARCHITECT PLANS
19. CONSTRUCT GRATE BASIN PER SPPWC STD. PLAN 303-3 W=4', Vn=4'
20. CONSTRUCT GRATE BASIN PER SPPWC STD. PLAN 303-3 W=8', Vn=4'
21. CONSTRUCT EARTHEN SWALE

REGISTERED PROFESSIONAL ENGINEER
MARK D. HARDY
No. 36538
Expiry 2016-JUN-30
CIVIL
STATE OF CALIFORNIA

LEGEND:

- PROPERTY / BOUNDARY LINE
- EXISTING BOUNDARY LINE
- STREET R/W LINE
- CENTER LINE
- EDGE OF ASPHALT PAVING
- BUILDING FOOT PRINT LINE
- WALL (SIZE VARIES)
- CATCH BASIN
- LT — LIGHT
- MH — MANHOLE (SEWER, STORM DRAIN, POWER, TELEPHONE)
- PP/TP — POWER POLE (P.P.) / TELEPHONE POLE (T.P.)
- FH — FIRE HYDRANT
- GM/WM — GAS / WATER METER
- GV/WV — GAS / WATER VALVE
- EPB/SLPB/TSPB/UPB — ELEC./STREET LIGHT/TRAFFIC/UNKNOWN PULL BOX
- PL — PLANTER
- GP — GUARD POST
- BC — BUILDING CORNER
- BW — BACK OF WALK ELEVATION
- EC — EDGE OF CONCRETE ELEVATION
- EP — EDGE OF PAVEMENT ELEVATION

- FD — FOUND
- REF — REFERENCE
- CLF — CHAIN LINK FENCE
- PWFB — PUBLIC WORKS FIELD BOOK (CORNER RECORD)
- CLR — CLEAR
- ENC — ENCROACHMENT
- PL — PROPERTY LINE
- GB — GRADE BREAK
- FS — FINISHED SURFACE
- FL — FLOWLINE
- INV — INVERT ELEVATION
- TC — TOP OF CURB
- (TYP) — TYPICAL
- TW — TOP OF WALL
- D/4 — SECTION CALLOUT
- SHEET NUMBER

NOTE:
THE ACCESS ROAD TO THE NORTH OF BUILDING "A" SHALL BE FULLY IMPROVED FROM ROADSIDE ROAD TO THE WEST PROPERTY LINE.

SCALE: 1"=30'
30' 15' 0 30'

JOB NO: 98-470

REVISION #	SYMBOL	DESCRIPTION OF CHANGE	APPROVED	DATE

PREPARED BY:
HARDY ENGINEERING
CIVIL ENVIRONMENTAL AND STRUCTURAL ENGINEERS
LAND SURVEYORS LAND PLANNERS
351 ROLLING OAKS DRIVE, SUITE 202, THOUSAND OAKS, CA 91361
PHONE 818.222.2606
122 E. ARRELLAGA STREET, SANTA BARBARA, CA 93101
PHONE 805.845.9936

MARK D. HARDY DATE

CITY OF AGOURA HILLS APPROVAL

REVIEWED BY DATE

RAMIRO ADEVA DATE RCE NO. EXP DATE
CITY ENGINEER

CITY OF AGOURA HILLS

GRADING AND DRAINAGE PLAN
29431 AND 29439 AGOURA ROAD
AGOURA HILLS, CA 91301

SHEET 2 OF 3

CITY OF AGOURA HILLS DWG. NO. _____

Civil, Environmental and Structural Engineers
HARDY Engineering
Land Planners and Surveyors

Small Business Certified No. 1232540 *email: info@hardyengr.com*

HYDROLOGY AND LOW IMPACT DEVELOPMENT (LID) STUDY

FOR

SELLECK DEVELOPMENT
AGOURA ROAD 29431-29439
AGOURA HILLS, CALIFORNIA

Our Job No. 98-470

2015-AUGUST-14

Prepared under the direction of:

Mark D. Hardy PE 36538 Expiry 2016-JUN-30 Date:

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TABLE OF CONTENTS

TABLES

APPENDIX

EXHIBITS

1. ***Proposed Project Characteristics***

A_{total} *4.1 Acres*

Type of Development *Commercial Development*

Predominate Soil Type No.: *28*

50-year 24-hour Isohyet (inch): *7.4*

85^{th} percentile 24-hour storm (inch): *0.96*

Table 1 - Onsite Drainage Summary (Existing Condition)

Drainage Area	Area (ac)	Imperviousness (decimal)	Frequency (Design Storm)	Soil Type	50-year 24-hour Isohyet (in)	Tc calculated (min)	Intensity (in/hr)	Cu	Cd	Q (cfs)
1	3.43	0.50	50	28	7.4	5	4.42	0.69	0.80	12.06
2	0.67	0.50	50	28	7.4	5	4.42	0.69	0.80	2.36
Total (ac)	4.10									12.97*

*: Peak Q at the outlet (from MODRAT model result).

Table 2 – Onsite Drainage Summary (Proposed Condition)

Drainage Area	Area (ac)	Imperviousness (decimal)	Frequency (Design Storm)	Soil Type	50-year 24-hour Isohyet (in)	Tc calculated (min)	Intensity (in/hr)	Cu	Cd	Q (cfs)
1	0.84	0.48	50	28	7.4	6	4.05	0.67	0.78	2.66
2	0.34	0.71	50	28	7.4	5	4.42	0.69	0.84	1.26
3	1.49	0.78	50	28	7.4	5	4.42	0.69	0.86	5.62
4	0.28	0.67	50	28	7.4	5	4.42	0.69	0.83	1.03
5	0.30	0.64	50	28	7.4	5	4.42	0.69	0.83	1.09
6	0.39	0.80	50	28	7.4	5	4.42	0.69	0.88	1.48
7	0.47	0.82	50	28	7.4	5	4.42	0.69	0.87	1.79
Total (ac)	4.10									14.74*

*: Peak Q at outlet without detention/LID (from MODRAT model result).

Table 3 – Stormwater Treatment Flow and Volume

Drainage Area	Area (ac)	Frequency (Design Storm)	85th Percentile Storm (in)	Tc (min)	Q_{pm} (cfs)	V_m (ft^3)
1	0.84	50	0.96	34	0.095	1405.1
2	0.34	50	0.96	14	0.080	784.9
3	1.49	50	0.96	21	0.315	3728.2
4	0.28	50	0.96	19	0.055	615.4
5	0.30	50	0.96	14	0.065	634.5
6	0.39	50	0.96	12	0.110	997.4
7	0.47	50	0.96	12	0.135	1228.0
Total					0.855	9393.5

Table 4 – Stormwater Cistern Summary

Cistern #	Subarea	Area (ac)	Q_{pm} (cfs)	V_m (ft^3)	Diameter (ft)	Foot Print (ft*ft)
1	1, 2 , 3, and 4	2.95	0.55	6,535	10	23*43
2	5, 6, and 7	1.15	0.31	2,860	10	23*19

Table 5 – Storm Drain Pipe Size Summary

Storm Drain Pipe	Area/Subarea	Peak Flow (cfs)	Manning's Coefficient	Pipe Diameter (in)	Depth (ft)
1	Building A	2.06	0.013	8	0.57
2	partial 3 & partial 4	2.43	0.013	10	0.58
3	2, partial 3 & partial 4	4.04	0.013	12	0.83
4	partial 1, 2, partial 3 & 4	6.05	0.013	12	0.78
5	CDS 1 inflow	8.08	0.013	12	0.87
6	Cistern 1 inflow	0.545	0.013	6	0.24
7	CDS 1 overflow	7.585	0.013	8	0.45
8	7	1.79	0.013	10	0.5
9	6 & 7	3.27	0.013	12	0.64
10	5, 6 & 7	4.35	0.013	10	0.56
11	Cistern 2 inflow	0.31	0.013	8	0.17
12	CDS 2 overflow	4.04	0.013	8	0.22

2. Site Description

The subject property is located at the southwest corner of the intersection of Freeway 101 and the Roadside Road, between the Agoura Road and Freeway 101, in the County of Los Angeles. The site is presently an undeveloped parcel totaling 4.1 acres. The 50-year 24-Hour Isohyet closest to the site is 7.4 inch, with soil classification of Type 028 (see Appendix A).

3. Regularity Jurisdiction

The study site is under the jurisdiction of the City of Agoura Hills Department of Public Works. All values are calculated in accordance with the Los Angeles County Department of Public Works hydrological standards [1].

4. Watershed Hydrology Study

The main scope of this report is to determine the runoff of existing and post-developed area under 50-year design storm, and the flows and volumes for detention/retention with the development. The hydrology methodology used is the new modified rational method by the Los Angeles County Department of Public Works (LACDPW), Land Development Division. Time of concentration (Tc) is calculated for each subarea using hydrologic calculator (HydroCalc) of LACDPW [2]. The peak runoff and flow volume were calculated using LAR04, which is a text-based implementation of the modified rational method similar to F0601.

5. Existing Condition

The existing site generally drains from the northern and southern sides towards the central area (Map 1. The runoff of 50-year storm was calculated for the existing condition using HydroCalc. The results are summarized in Table 1. LAR04 model was created to calculate the hydrograph and total volume of runoff of the site. The HydroCalc and the LAR04 calculations are provided in Appendix B.

6. Proposed Condition

A commercial development consisting of a fitness center, and a restaurant, with parking lots are planned for the site. The proposed site consists of seven (7) drainage subareas (Map 2). The runoff from Building A and the north and north-west area of subarea 1 is conveyed to a detention chamber located at the northwest corner of the site. The runoff from the rest of subarea 1, together with the flow from the west portion of subarea 4 drains along grades into catch basin #1. The runoff of subarea 2, together with the mid-portion of subarea 4, follows street grades and drains into catch basin #2. The south portion of subarea 3 and the east portion of subarea 4 drains into catch basin

#3. The flow from these three catch basins, combined with the flow from the detention chamber, is conveyed via proposed storm drains through CDS unit #1, where the water is pretreated, and discharged to underground cistern #1 (by CONTECH, Inc.) for rainfall harvest. The excessive overflow bypasses the cistern and is discharged via an overflow pipe into the public storm drain box via an inlet connector on the north side of the drain. The runoff of subarea 5 drains north-eastly into catch basin #4. The runoff of subareas 6 and 7 drains overland through streets into catch basins #5 and #6, respectively. The combined flow from these three catch basins flows through CDS unit #2, and is discharged to underground cistern #2 for rainfall harvest. The excessive overflow bypasses the cistern and is discharged via an overflow pipe into the public storm drain box via an inlet connector on the south side of the drain.

Time of concentration (Tc) is calculated for 50-year storm for each subarea using HydroCalc. LAR04 model was created to calculate the hydrograph and total volume of runoff of the site. The HydroCalc and the LAR04 calculations are provided in Appendix C. The hydrology is summarized in Table 2.

7. Stormwater Treatment

The Los Angeles County LID requirements for the proposed project will be satisfied as defined by the County of Los Angeles LID Manual (2014)[3]. According to the LID manual, design storm is the greater of 0.75 inch storm and the 85th percentile storm[4]. In this case, the 85th percentile storm of the site is 0.96 inch, thus it is used for stormwater quality calculations. The LID peak rates and volumes were calculated using HydroCalc (see Table 3 and Appendix D).

Per the Preliminary Geotechnical Investigation Report by Advanced Geotechnical Services, Inc., dated January, 2001, the soil property of the site is expansive. Therefore, infiltration is not considered for LID. Instead, the stormwater quality control measure of cistern (RET-6) is used. Contech underground cisterns were sized using Contech sizing worksheet based on the design treatment volumes V_{PM} (see Table 4 and Appendix E). Inline CDS units are used to pretreat the stormwater before being routed to underground cisterns. The CDS units were sized to treat the Q_{PM} on a flow rate basis. The cisterns will store pretreated stormwater before being reused onsite for landscaping irrigation. Cisterns will be located at a minimum of 3' from the right of way, 10' from an adjoining private property line and 15' from the nearest building pad or footing.

8. Stormwater Detention

The pre- and post-construction conditions have peak runoff of 12.97 cfs and 14.67 cfs, respectively. The increased flow of 1.70 cfs needs to be detained onsite to satisfy that the developed runoff does not exceed the existing runoff. Since retention is not applicable for this site, release of the runoff is moderated by the detention chamber.

The detention chamber is designed to store the runoff from Building A, and the north and northwest portion of Subarea 1. An outflow pipe is installed at the bottom of the basin and the downstream end is directed to Cistern #1. RETARD program of LADPW is used to model the flow routing through this chamber. The inflow hydrograph is prorated from the proposed Subarea 1 based on area ratio. The result shows that the peak outflow is moderated from 4.13 cfs to 2.06 cfs with a reduction of 2.07 cfs, which exceeds the required 1.70 cfs (see Appendix F).

The storm drain pipes are sized using FlowMaster (see Table 5 and Appendix G).

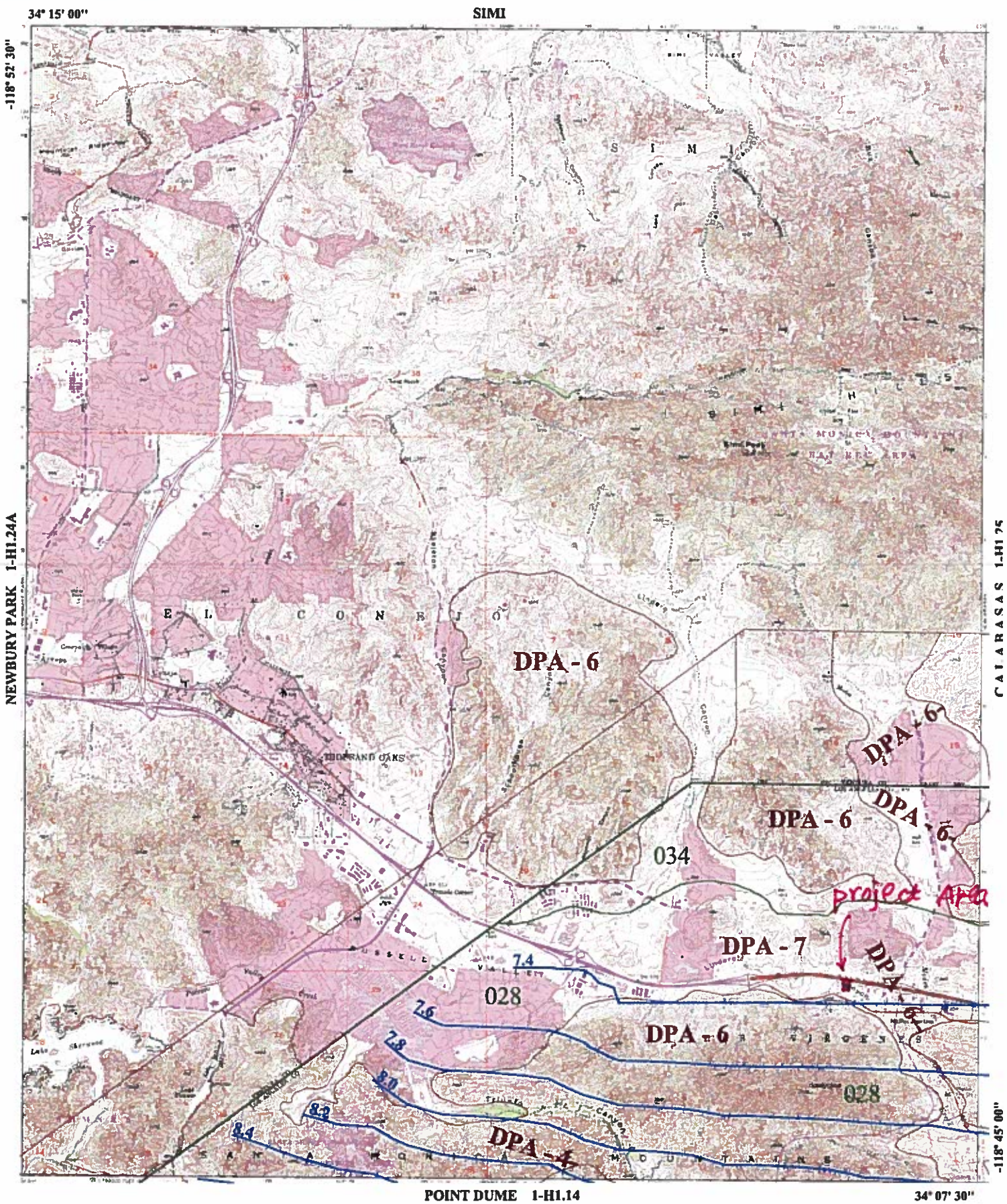
9. Conclusions

The LID requirement for stormwater quality is achieved by using two storage cisterns for stormwater reuse. The detention basin detains the runoff from Building A and the northern area of subarea A, and reduces the peak discharge by 2.10 cfs. The catch basins and storm drain pipes are sized to ensure adequate capacity to convey the runoff to public stormdrain system.

10. References

1. *Hydrology Manual, County of Los Angeles Department of Public Works, 2006*
2. *Hydrologic Calculator, LACDPW, http://dpw.lacounty.gov/wrd/publication/.*
3. *85th Percentile 24-hour Rainfall Depth, http://dpw.lacounty.gov/wrd/hydrologygis/*
4. *Low Impact Development Standards Manual, County of Los Angeles Department of Public Works, 2014*

Appendix A



N
W E
S

016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

THOUSAND OAKS
50-YEAR 24-HOUR ISOHYET

1-H1.24

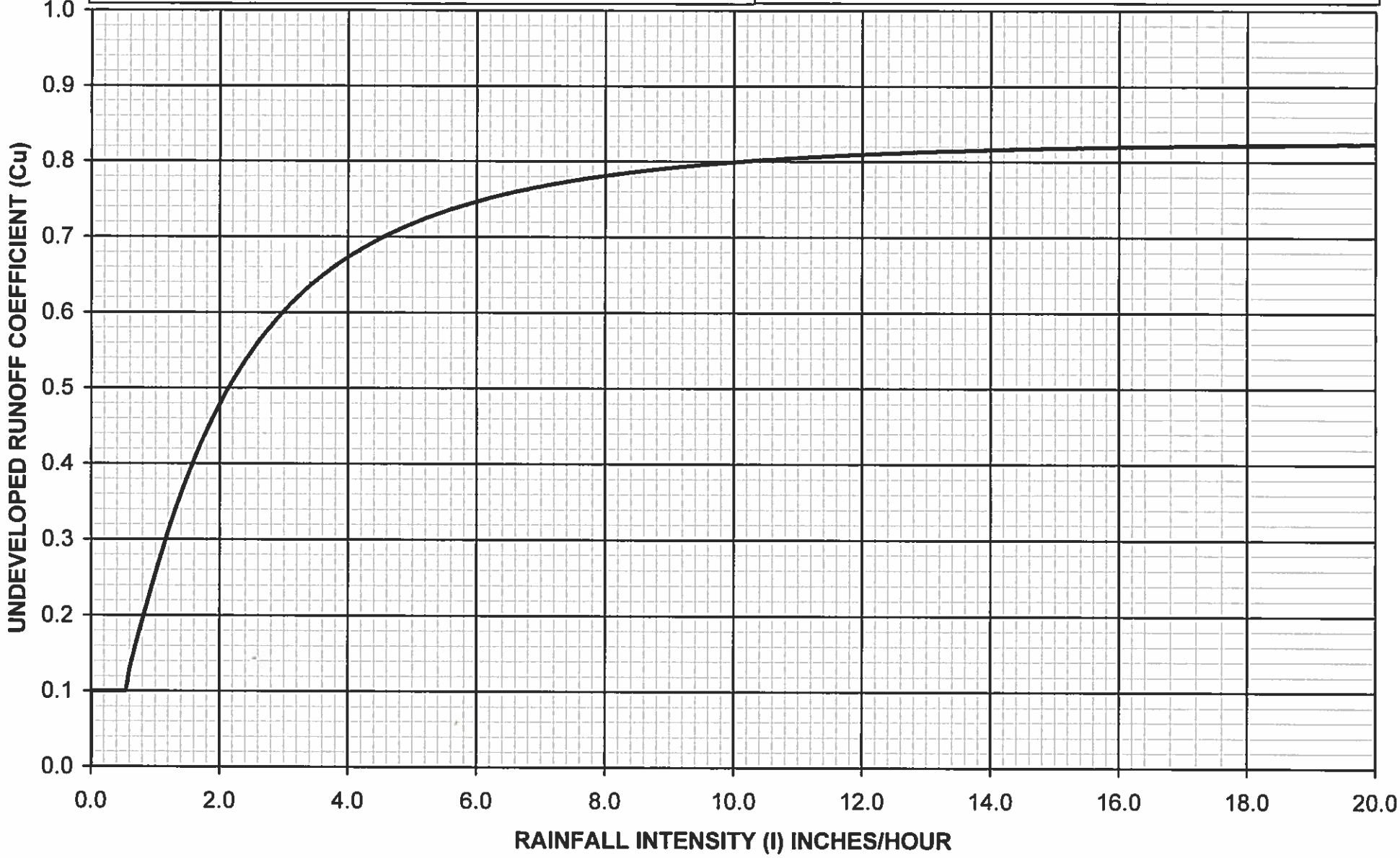
LOS ANGELES COUNTY PUBLIC WORKS
Public Service That Works

$C_D = (0.9 * IMP) + (1.0 - IMP) * C_U$

Where: C_D = Developed Runoff Coefficient
IMP = Proportion Impervious
C_U = Undeveloped runoff coefficient

Los Angeles County Department of Public Works

RUNOFF COEFFICIENT CURVE
SOIL TYPE NO. 028



Appendix B

Peak Flow Hydrologic Analysis

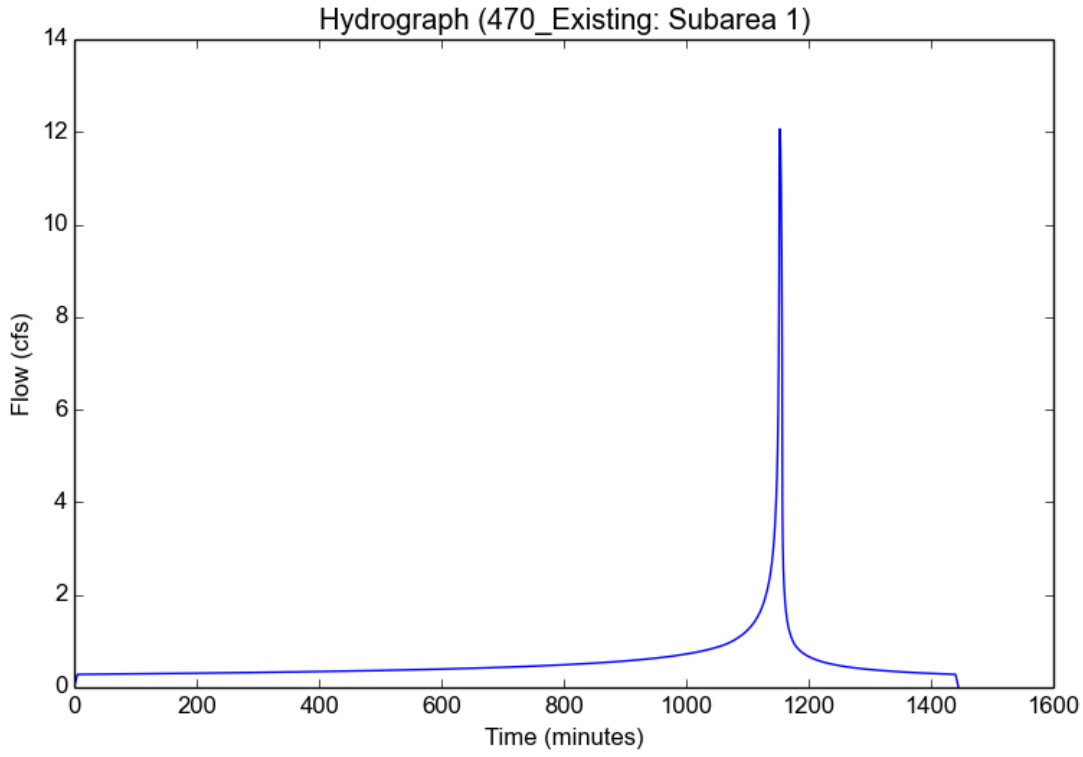
File location: C:/Users/tracey/Desktop/470_Existing - Subarea 1.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Existing
Subarea ID	Subarea 1
Area (ac)	3.43
Flow Path Length (ft)	448.0
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.5
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.7965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	12.062
Burned Peak Flow Rate (cfs)	12.062
24-Hr Clear Runoff Volume (ac-ft)	1.1095
24-Hr Clear Runoff Volume (cu-ft)	48331.3366



Peak Flow Hydrologic Analysis

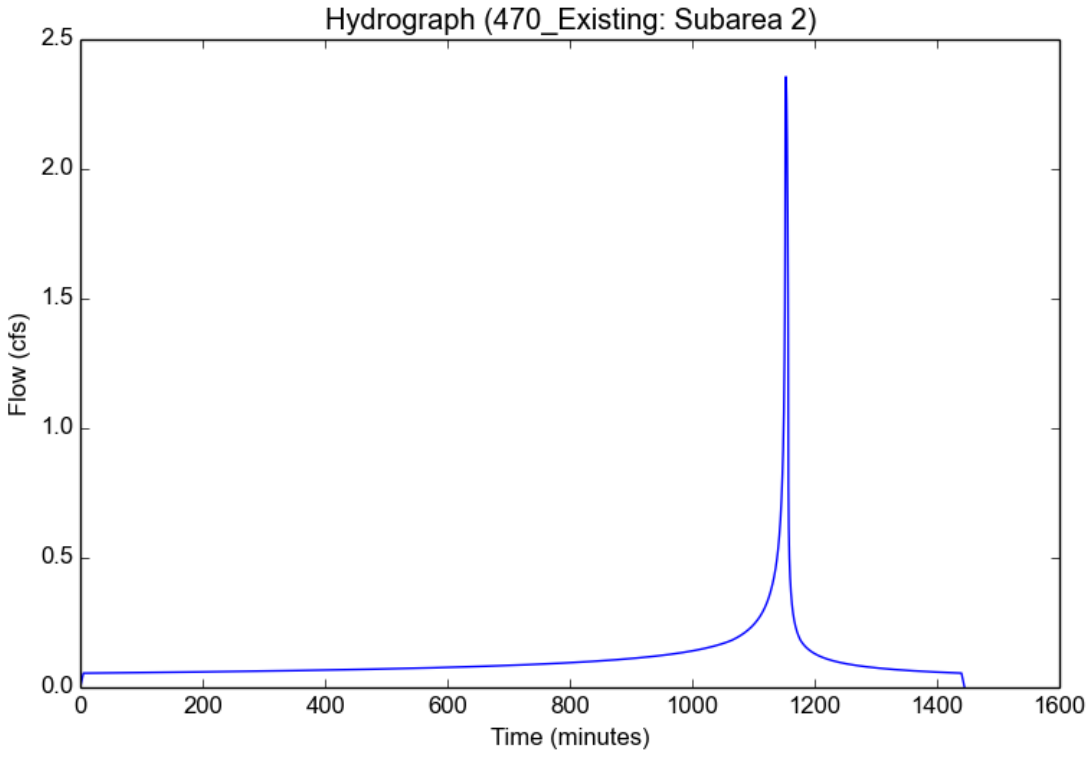
File location: C:/Users/tracey/Desktop/470_Existing - Subarea 2.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Existing
Subarea ID	Subarea 2
Area (ac)	0.67
Flow Path Length (ft)	255.0
Flow Path Slope (vft/hft)	0.044
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.5
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.7965
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	2.3561
Burned Peak Flow Rate (cfs)	2.3561
24-Hr Clear Runoff Volume (ac-ft)	0.2167
24-Hr Clear Runoff Volume (cu-ft)	9440.815



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006   470    2B  28 50 0.7 5A372140.0000800                0
006   470    3AB 28  0  .0 0A37                            02  2
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Program Package Serial Number: 2091

08/12/15 FILE: ex50c INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: c:\civilid\470\cst_soilx_83.dat

RESULTS - 50 YEAR STORM - PREDEVELOPED - CLEAR STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
470	1A	3.4	11.97	3.4	11.97	2	140.	.00800	.00	.00	0.	28	5	A37	.50
470	2B	.7	2.46	.7	2.46	2	140.	.00800	.00	.00	0.	28	5	A37	.50
470	3AB	.7	2.21	4.1	12.97	0	0.	.00000	.00	.00	0.	28	0	A37	.00

Appendix C

Peak Flow Hydrologic Analysis

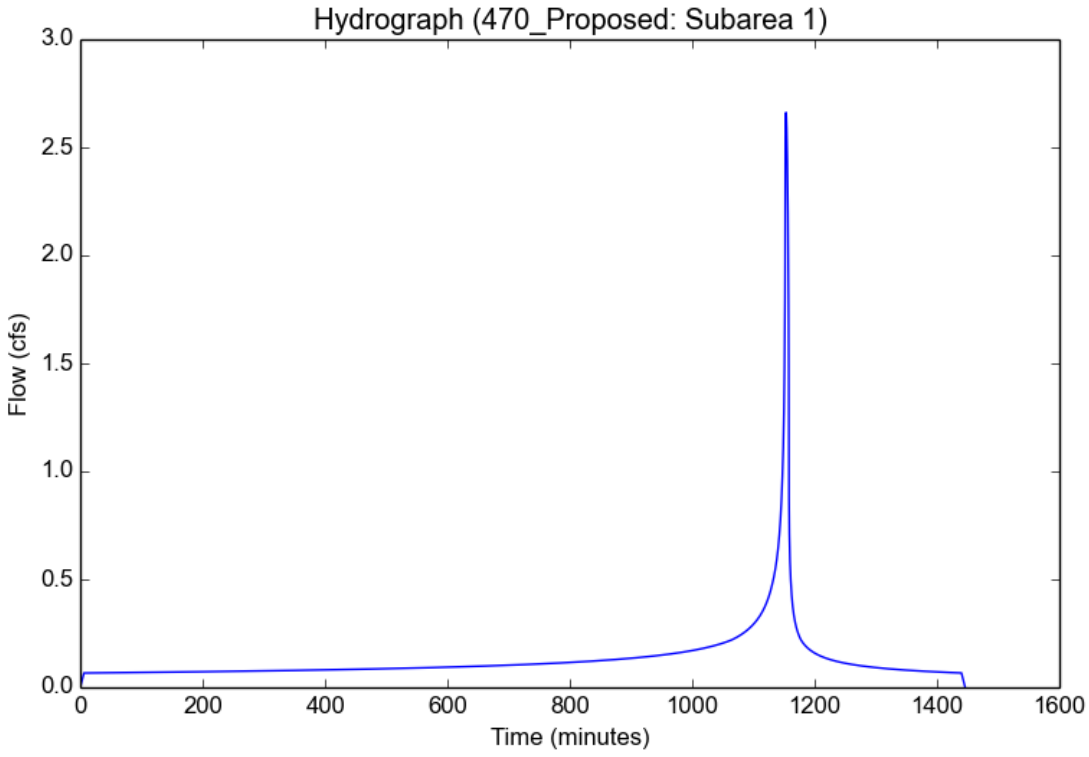
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 1.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 1
Area (ac)	0.84
Flow Path Length (ft)	625.0
Flow Path Slope (vft/hft)	0.0352
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.48
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.0525
Undeveloped Runoff Coefficient (Cu)	0.6727
Developed Runoff Coefficient (Cd)	0.7818
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	2.6614
Burned Peak Flow Rate (cfs)	2.6614
24-Hr Clear Runoff Volume (ac-ft)	0.264
24-Hr Clear Runoff Volume (cu-ft)	11500.9859



Peak Flow Hydrologic Analysis

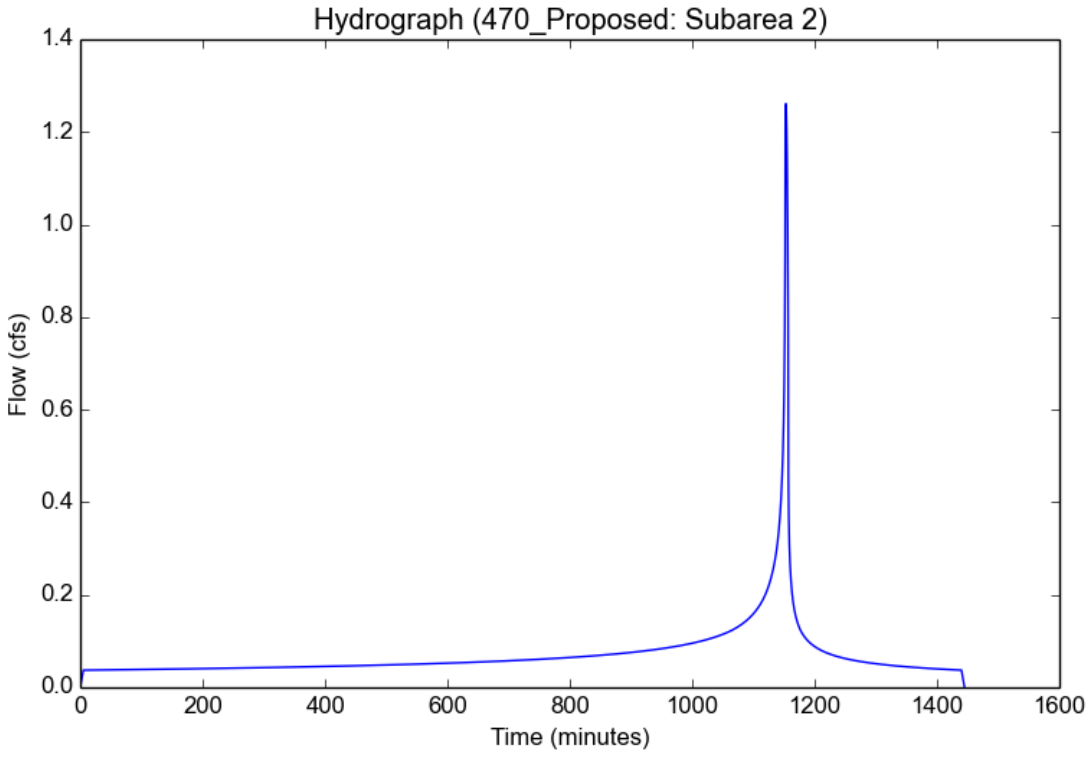
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 2.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 2
Area (ac)	0.34
Flow Path Length (ft)	205.0
Flow Path Slope (vft/hft)	0.0275
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.71
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.84
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.2609
Burned Peak Flow Rate (cfs)	1.2609
24-Hr Clear Runoff Volume (ac-ft)	0.1424
24-Hr Clear Runoff Volume (cu-ft)	6202.4735



Peak Flow Hydrologic Analysis

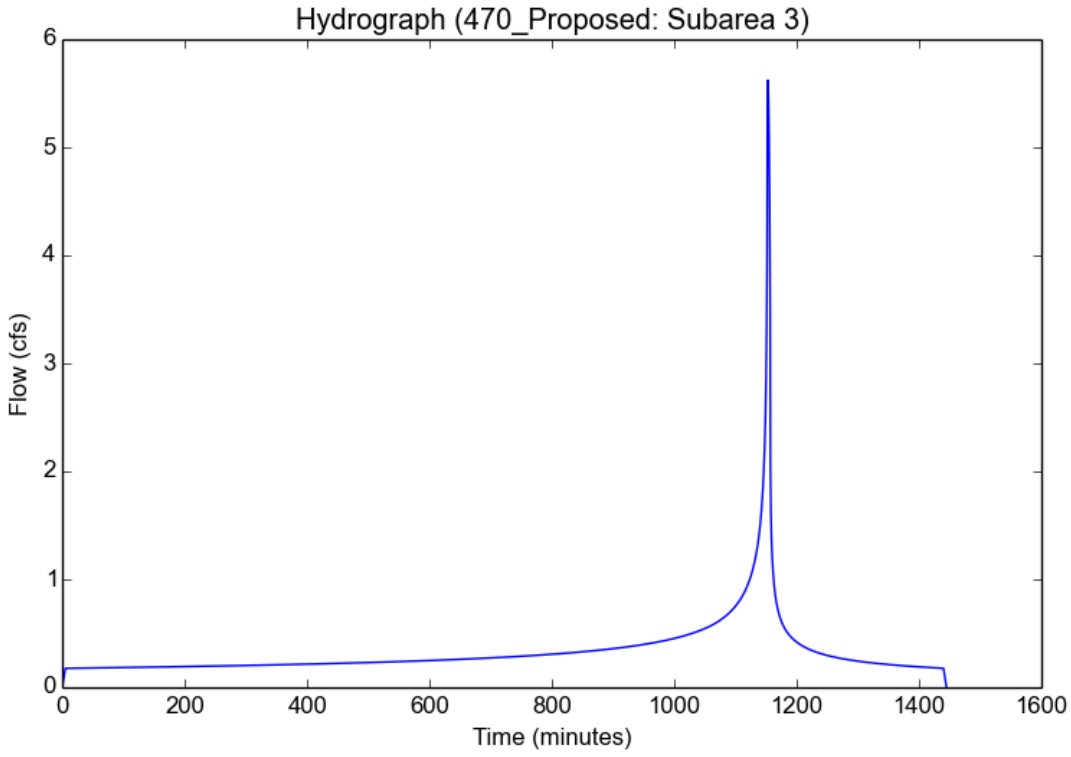
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 3.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 3
Area (ac)	1.49
Flow Path Length (ft)	429.0
Flow Path Slope (vft/hft)	0.0317
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.78
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.8545
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	5.621
Burned Peak Flow Rate (cfs)	5.621
24-Hr Clear Runoff Volume (ac-ft)	0.6713
24-Hr Clear Runoff Volume (cu-ft)	29243.4886



Peak Flow Hydrologic Analysis

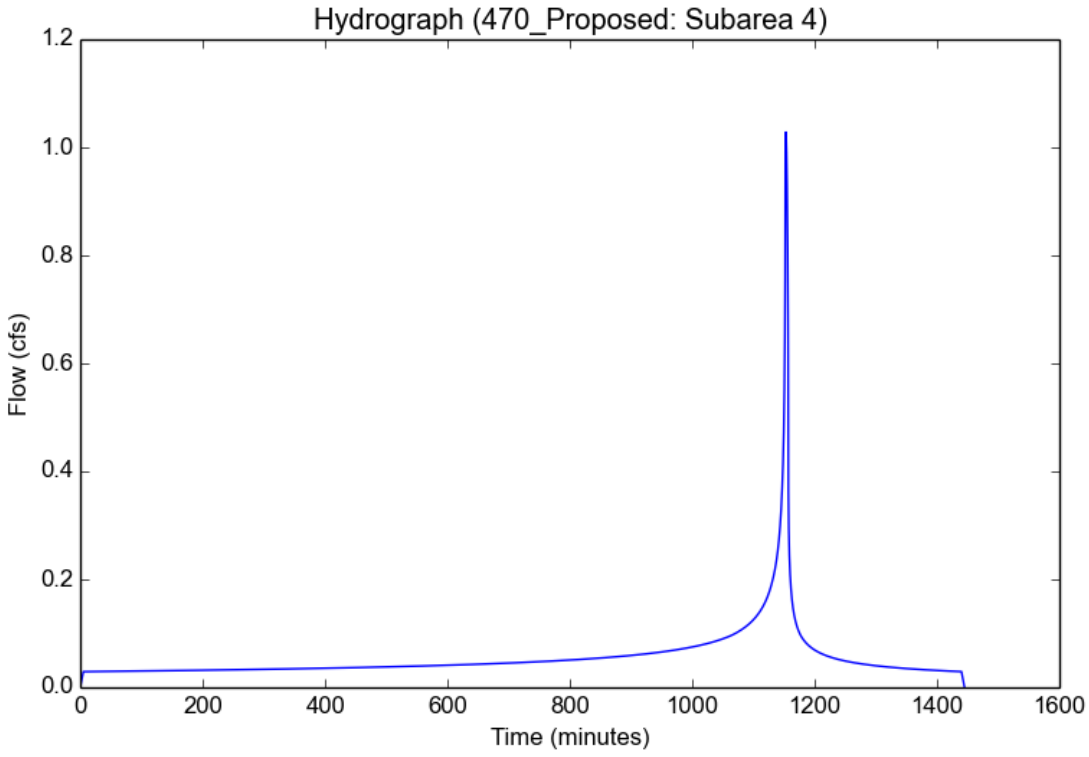
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 4.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 4
Area (ac)	0.28
Flow Path Length (ft)	243.0
Flow Path Slope (vft/hft)	0.0111
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.67
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.8317
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0282
Burned Peak Flow Rate (cfs)	1.0282
24-Hr Clear Runoff Volume (ac-ft)	0.1122
24-Hr Clear Runoff Volume (cu-ft)	4886.49



Peak Flow Hydrologic Analysis

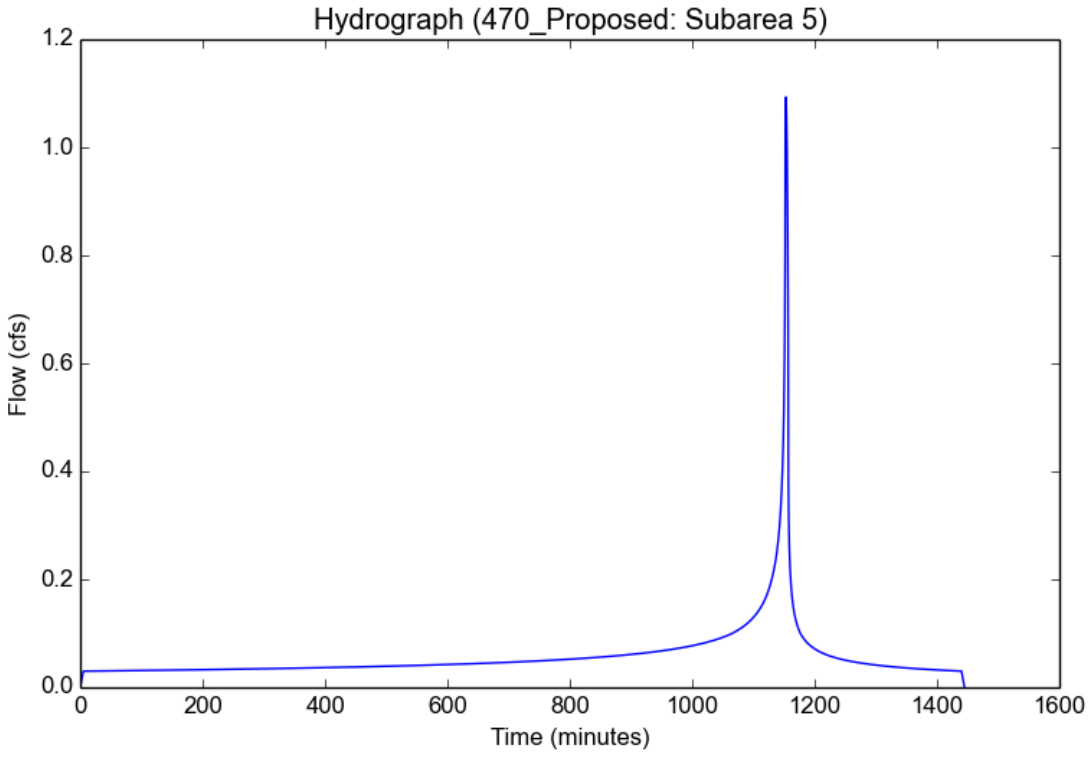
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/Submital_July2015/HydroCalc/470_Proposed - Subarea 5.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 5
Area (ac)	0.3
Flow Path Length (ft)	215.0
Flow Path Slope (vft/hft)	0.0466
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.64
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.8255
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.0934
Burned Peak Flow Rate (cfs)	1.0934
24-Hr Clear Runoff Volume (ac-ft)	0.1161
24-Hr Clear Runoff Volume (cu-ft)	5057.5907



Peak Flow Hydrologic Analysis

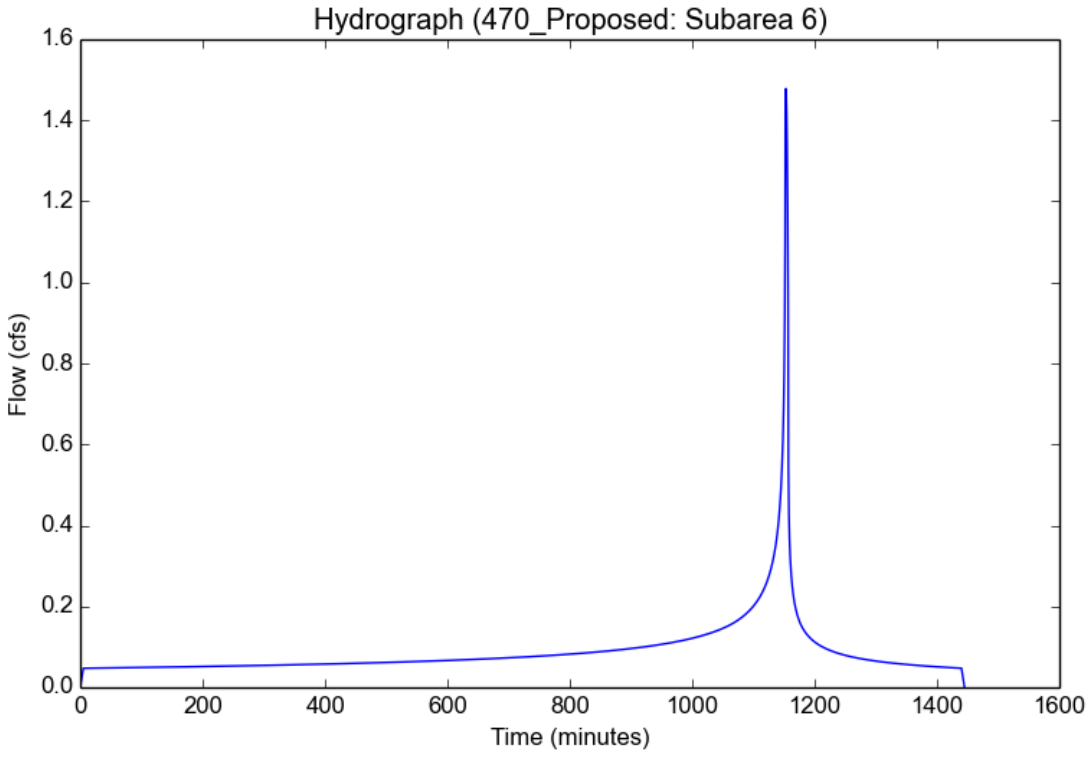
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 6.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 6
Area (ac)	0.39
Flow Path Length (ft)	226.0
Flow Path Slope (vft/hft)	0.0512
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.8
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.8586
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.4784
Burned Peak Flow Rate (cfs)	1.4784
24-Hr Clear Runoff Volume (ac-ft)	0.1793
24-Hr Clear Runoff Volume (cu-ft)	7808.5457



Peak Flow Hydrologic Analysis

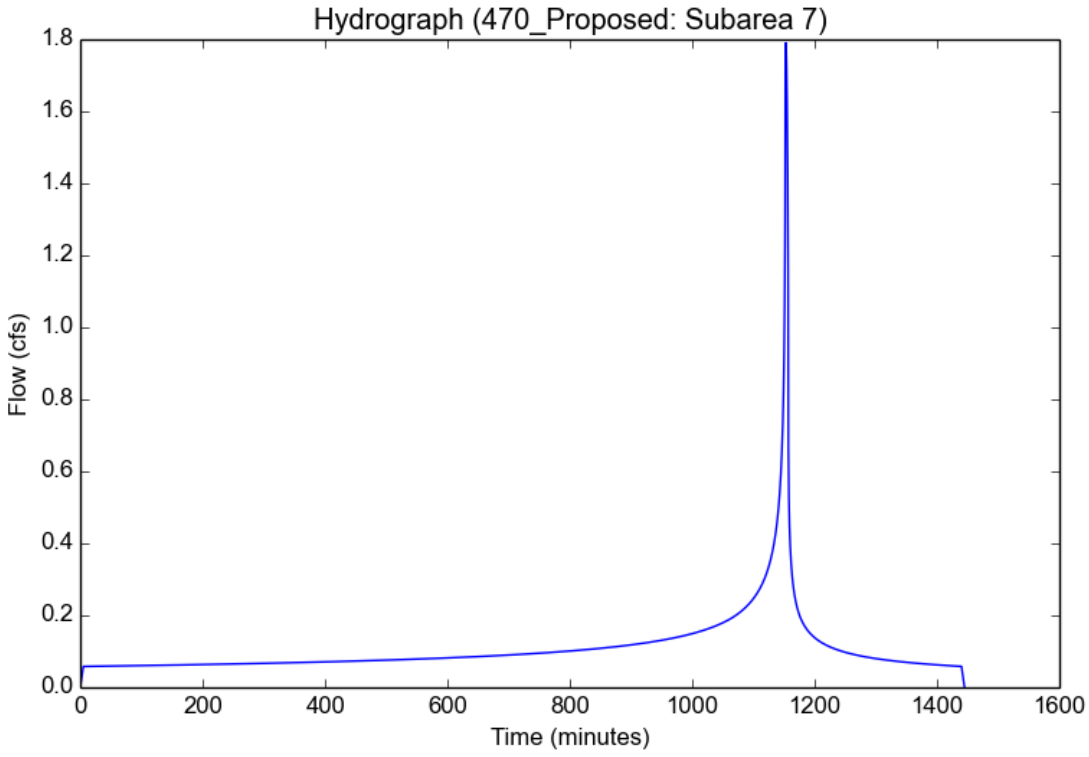
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 7.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 7
Area (ac)	0.47
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.0502
50-yr Rainfall Depth (in)	7.4
Percent Impervious	0.82
Soil Type	28
Design Storm Frequency	50-yr
Fire Factor	0
LID	False

Output Results

Modeled (50-yr) Rainfall Depth (in)	7.4
Peak Intensity (in/hr)	4.415
Undeveloped Runoff Coefficient (Cu)	0.693
Developed Runoff Coefficient (Cd)	0.8627
Time of Concentration (min)	5.0
Clear Peak Flow Rate (cfs)	1.7903
Burned Peak Flow Rate (cfs)	1.7903
24-Hr Clear Runoff Volume (ac-ft)	0.2203
24-Hr Clear Runoff Volume (cu-ft)	9596.1411



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006   470    3B  28 78 1.5 5A37                            0
006   470    4B  28 67  .3 5A37                            0
006   470    5AB 28  0  .0 0A37                            0
006   470    6C  28 64  .3 5A374 20.0010000                0
006   470    7D  28 80  .4 5A374 92.0002340                0
006   470    8D  28 82  .5 5A37                            0
006   470    9CD 28  0  .0 0A37                            0
006   470   10AC 28  0  .0 0A37                            02  2
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Program Package Serial Number: 2091

08/12/15 FILE: pr50c INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: c:\civilid\470\cst_soilx_83.dat

POST DEVELOPMENT HYDROLOGY FOR FOOTHILL

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	STORM RAIN ZONE	DAY 4 PCT IMPV
470	1A	.8	2.51	.8	2.51	4	25.	.07300	2.00	.00	0.	28	6	A37	.48
470	2B	.3	1.11	.3	1.11	4	100.	.01820	2.00	.00	0.	28	5	A37	.71
470	3B	1.5	5.66	1.8	6.72	0	0.	.00000	.00	.00	0.	28	5	A37	.78
470	4B	.3	1.10	2.1	7.82	0	0.	.00000	.00	.00	0.	28	5	A37	.67
470	5AB	2.1	7.82	2.9	10.30	0	0.	.00000	.00	.00	0.	28	0	A37	.00
470	6C	.3	1.09	.3	1.09	4	20.	.10000	2.00	.00	0.	28	5	A37	.64
470	7D	.4	1.52	.4	1.52	4	92.	.02340	2.00	.00	0.	28	5	A37	.80
470	8D	.5	1.91	.9	3.35	0	0.	.00000	.00	.00	0.	28	5	A37	.82
470	9CD	.9	3.35	1.2	4.44	0	0.	.00000	.00	.00	0.	28	0	A37	.00
470	10AC	1.2	4.44	4.1	14.74	0	0.	.00000	.00	.00	0.	28	0	A37	.00

```
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006   470    2B  28 30  .3 5A372307.0005000                  0
006   470    3AB 28  0  .0 0A37                               02  2
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Program Package Serial Number: 2091

08/12/15 FILE: pr50c INPUT DATA: English Units RAINFALL SOIL FILE: English (In) OUTPUT DATA: English Units PAGE 1

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT PROG F0601M

MODIFIED RATIONAL METHOD HYDROLOGY - STORM YEAR = 50 SOIL DATA FILE: c:\civilid\470\cst_soilx_83.dat

POST DEVELOPMENT HYDROLOGY FOR FOOTHILL STORM DAY 4

LOCATION		SUBAREA AREA(Ac)	SUBAREA Q(CFS)	TOTAL AREA(Ac)	TOTAL Q(CFS)	CONV TYPE	CONV LNGTH(Ft)	CONV SLOPE	CONV SIZE(Ft)	CONV Z	CONTROL Q(CFS)	SOIL NAME	TC	RAIN ZONE	PCT IMPV
470	1A	.9	3.54	.9	3.54	2	200.	.01000	.00	.00	0.	28	5	A37	.95
470	2B	.3	1.00	.3	1.00	2	307.	.05000	.00	.00	0.	28	5	A37	.30
470	3AB	.3	1.00	1.2	4.13	0	0.	.00000	.00	.00	0.	28	0	A37	.00

Appendix D

Peak Flow Hydrologic Analysis

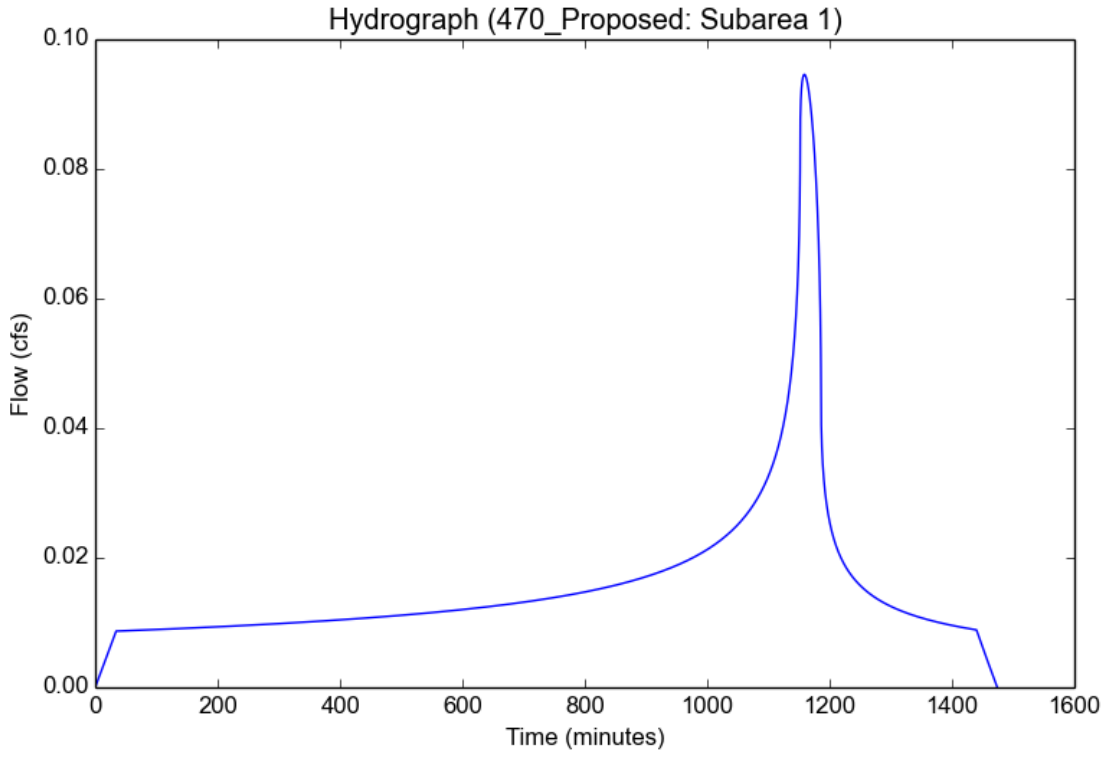
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 1_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 1
Area (ac)	0.84
Flow Path Length (ft)	625.0
Flow Path Slope (vft/hft)	0.0352
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.48
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.2326
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.484
Time of Concentration (min)	34.0
Clear Peak Flow Rate (cfs)	0.0946
Burned Peak Flow Rate (cfs)	0.0946
24-Hr Clear Runoff Volume (ac-ft)	0.0323
24-Hr Clear Runoff Volume (cu-ft)	1405.0921



Peak Flow Hydrologic Analysis

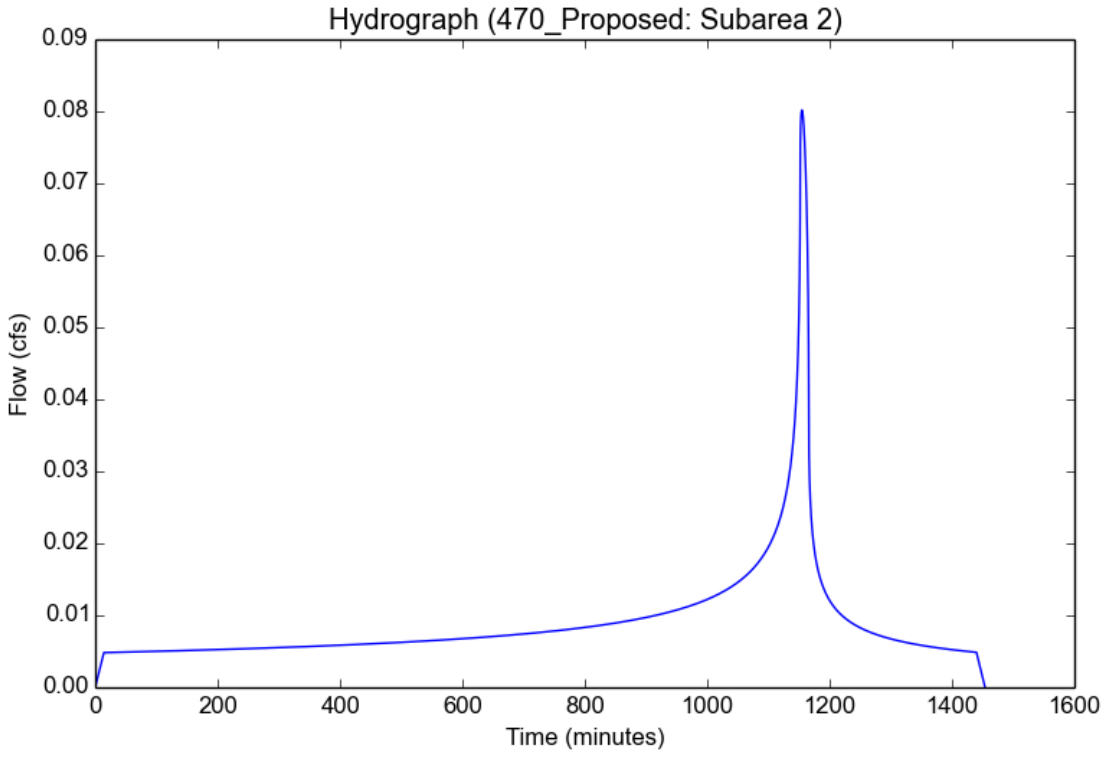
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 2_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 2
Area (ac)	0.34
Flow Path Length (ft)	205.0
Flow Path Slope (vft/hft)	0.0275
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.71
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.353
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.668
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.0802
Burned Peak Flow Rate (cfs)	0.0802
24-Hr Clear Runoff Volume (ac-ft)	0.018
24-Hr Clear Runoff Volume (cu-ft)	784.9287



Peak Flow Hydrologic Analysis

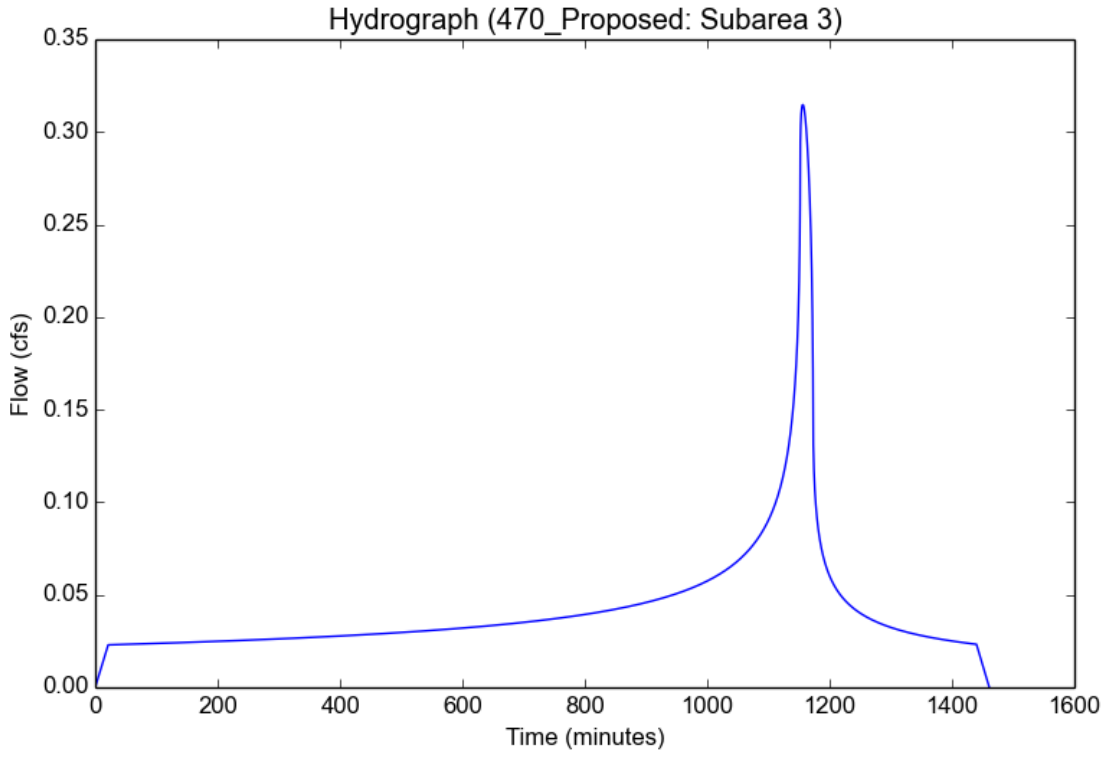
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 3_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 3
Area (ac)	1.49
Flow Path Length (ft)	429.0
Flow Path Slope (vft/hft)	0.0317
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.78
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.2918
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.724
Time of Concentration (min)	21.0
Clear Peak Flow Rate (cfs)	0.3148
Burned Peak Flow Rate (cfs)	0.3148
24-Hr Clear Runoff Volume (ac-ft)	0.0856
24-Hr Clear Runoff Volume (cu-ft)	3728.2154



Peak Flow Hydrologic Analysis

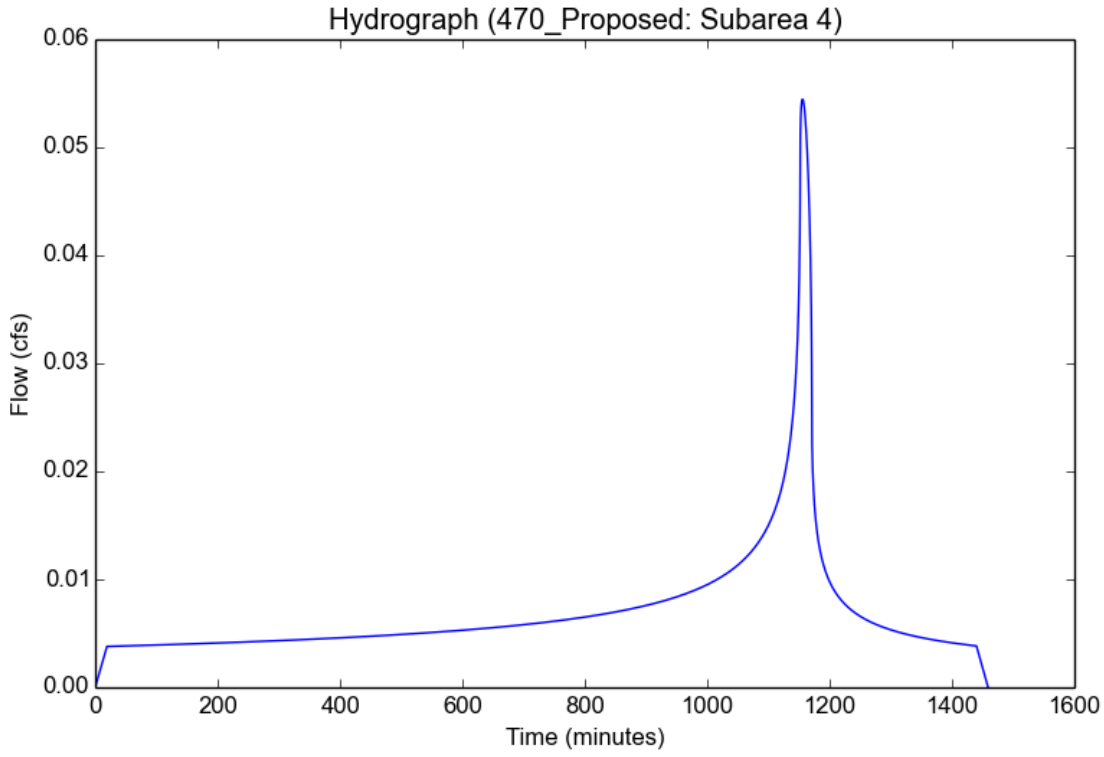
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/470_Proposed - Subarea 4_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 4
Area (ac)	0.28
Flow Path Length (ft)	243.0
Flow Path Slope (vft/hft)	0.0111
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.67
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.3058
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.636
Time of Concentration (min)	19.0
Clear Peak Flow Rate (cfs)	0.0545
Burned Peak Flow Rate (cfs)	0.0545
24-Hr Clear Runoff Volume (ac-ft)	0.0141
24-Hr Clear Runoff Volume (cu-ft)	615.4473



Peak Flow Hydrologic Analysis

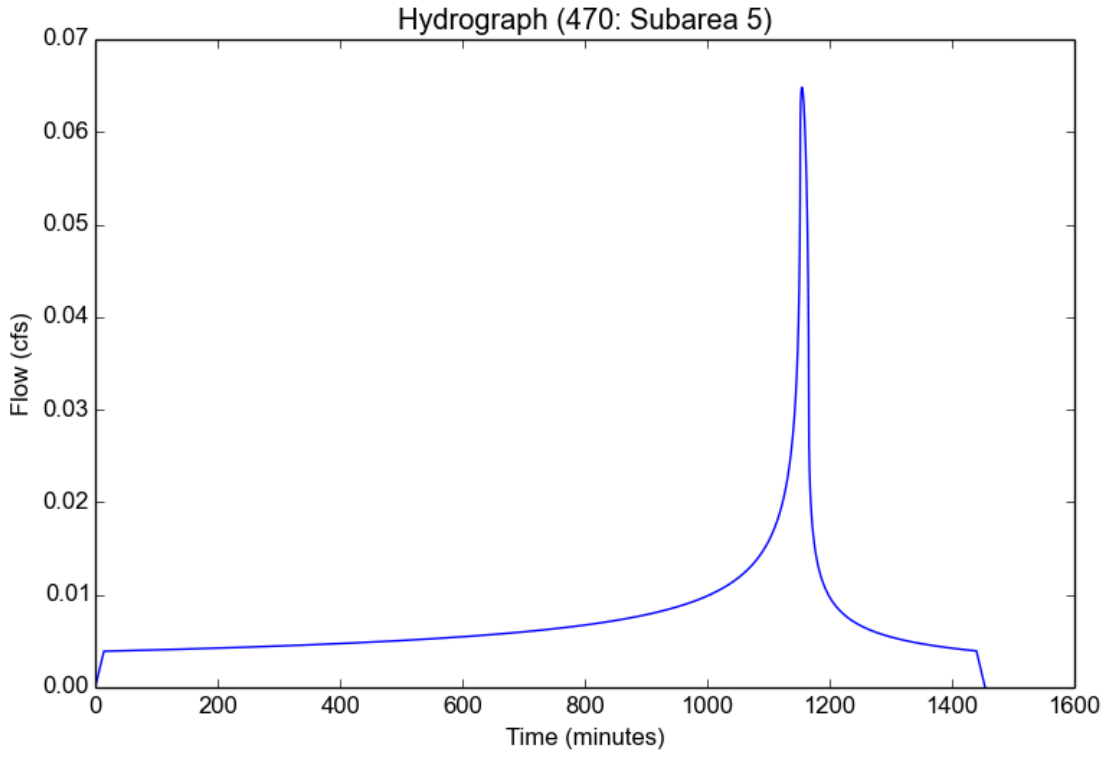
File location: C:/Local Cloud/Private/txc/Tracey/470_Agoura/Submital_July2015/470 - Subarea 5_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470
Subarea ID	Subarea 5
Area (ac)	0.3
Flow Path Length (ft)	215.0
Flow Path Slope (vft/hft)	0.0466
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.64
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.353
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.612
Time of Concentration (min)	14.0
Clear Peak Flow Rate (cfs)	0.0648
Burned Peak Flow Rate (cfs)	0.0648
24-Hr Clear Runoff Volume (ac-ft)	0.0146
24-Hr Clear Runoff Volume (cu-ft)	634.5232



Peak Flow Hydrologic Analysis

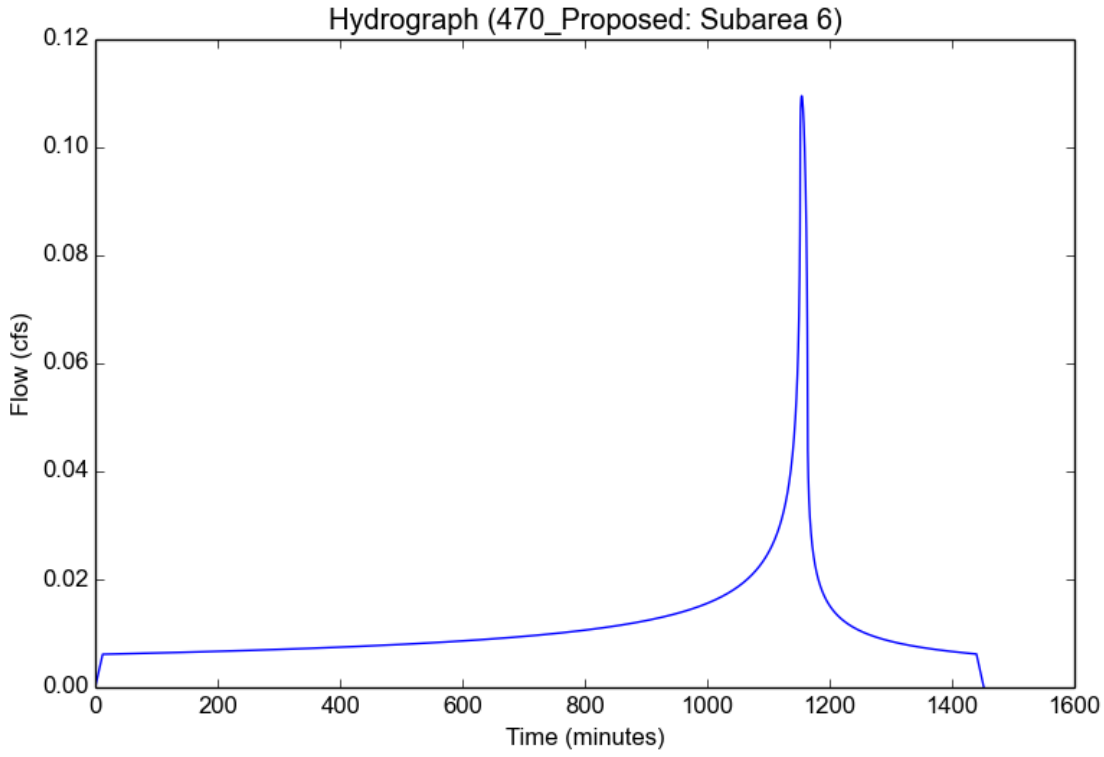
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 6_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 6
Area (ac)	0.39
Flow Path Length (ft)	226.0
Flow Path Slope (vft/hft)	0.0512
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.8
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.3796
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.74
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.1095
Burned Peak Flow Rate (cfs)	0.1095
24-Hr Clear Runoff Volume (ac-ft)	0.0229
24-Hr Clear Runoff Volume (cu-ft)	997.4034



Peak Flow Hydrologic Analysis

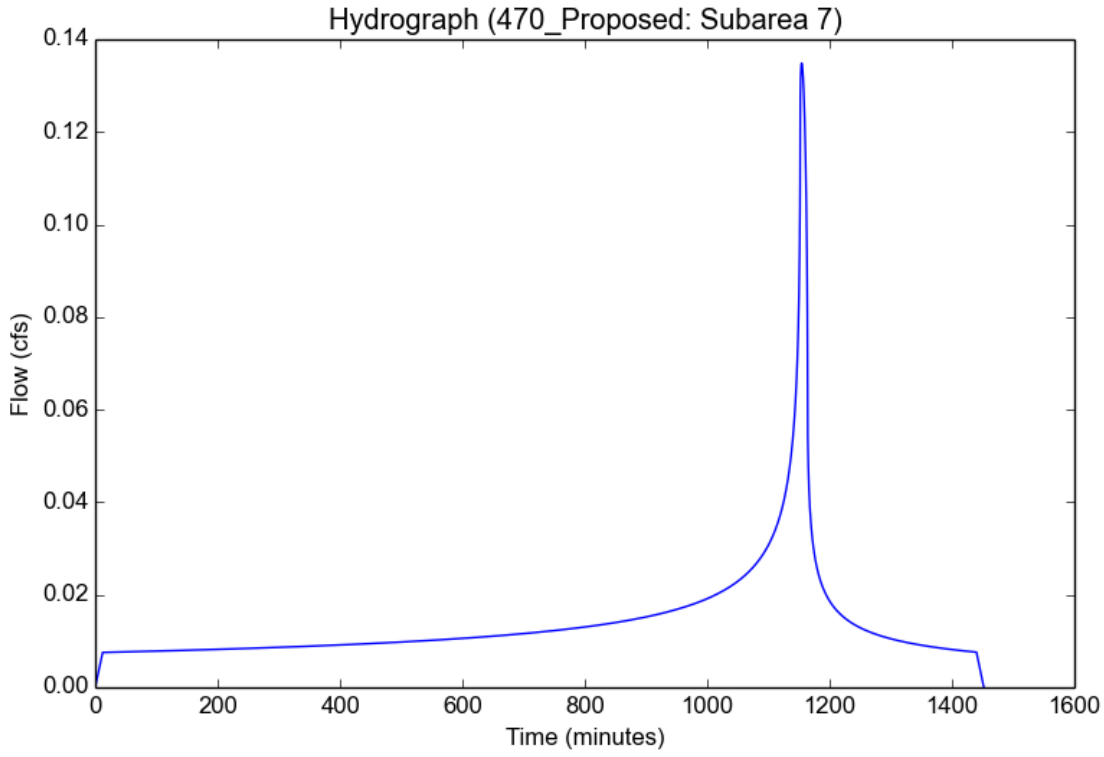
File location: C:/Users/tracey/Desktop/470_Proposed - Subarea 7_LID.pdf
Version: HydroCalc 0.3.0-beta

Input Parameters

Project Name	470_Proposed
Subarea ID	Subarea 7
Area (ac)	0.47
Flow Path Length (ft)	234.0
Flow Path Slope (vft/hft)	0.0502
85th Percentile Rainfall Depth (in)	0.96
Percent Impervious	0.82
Soil Type	28
Design Storm Frequency	85th percentile storm
Fire Factor	0
LID	True

Output Results

Modeled (85th percentile storm) Rainfall Depth (in)	0.96
Peak Intensity (in/hr)	0.3796
Undeveloped Runoff Coefficient (Cu)	0.1
Developed Runoff Coefficient (Cd)	0.756
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	0.1349
Burned Peak Flow Rate (cfs)	0.1349
24-Hr Clear Runoff Volume (ac-ft)	0.0282
24-Hr Clear Runoff Volume (cu-ft)	1227.9881



Appendix E

DYODS™
Design Your Own Detention System

DuroMaxx®
A STEEL REINFORCED POLYETHYLENE PIPE

CONTECH CONSTRUCTION PRODUCTS INC.

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com

Project Summary

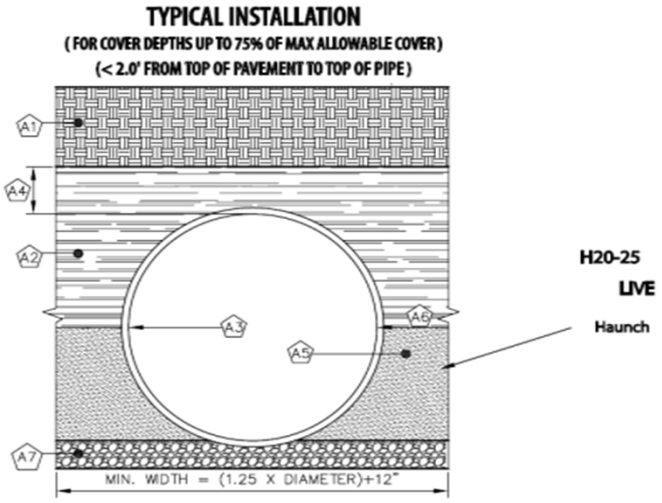
Date:	7/14/2015
Project Name:	470 - Cistern 1
City / County:	Los Angeles
State:	CA
Designed By:	KET
Company:	
Telephone:	

Enter Information in Blue Cells

DuroMaxx Pipe Calculator

Storage Volume Required (cf):	6,535
Limiting Width (ft):	30.00
Invert Depth Below Asphalt (ft):	13.00
Solid or Perforated Pipe:	Solid
Shape Or Diameter (in):	120
Number Of Headers:	0
Spacing between Barrels (ft):	3.00
Stone Width Around Perimeter of System (ft):	0
Depth A: Porous Stone Above Pipe (in):	0
Depth C: Porous Stone Below Pipe (in):	0
Stone Porosity (0 to 40%):	40

76.07 ft^2 Pipe Area
120in diameter pipe requires bulkheads and reducing tee manifold



System Sizing

Pipe Storage:	6,542	cf	
Porous Stone Storage:	0	cf	
Total Storage Provided:	6,542	cf	100.1% Of Required Storage
Number of Barrels:	2	barrels	
Length per Barrel:	43.0	ft	
Length Per Header:	0.0	ft	
Rectangular Footprint (W x L):	23. ft x 43. ft		

CONTECH Materials*

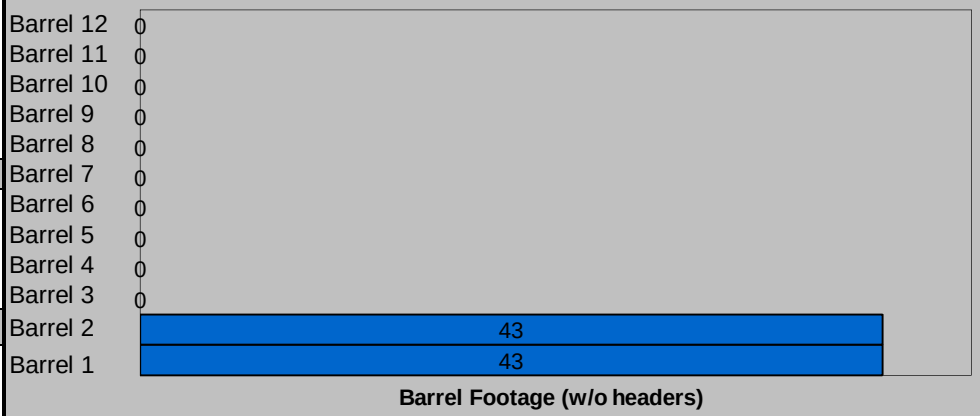
Total DuroMaxx Footage:	86	ft
Approximate Total Pieces:	4	pcs
Approximate Coupling Bands:	2	bands
Approximate Truckloads:	2	trucks

Construction Quantities**

Total Excavation:	477	cy
Porous Stone Backfill For Storage:	0	cy stone
Backfill to Grade Excluding Stone:	235	cy fill

**Assumes 22' pipe lengths*
***Construction quantities are approximate and should be verified upon final design*

System Layout



DYODS™
Design Your Own Detention System

DuroMaxx®
A STEEL REINFORCED POLYETHYLENE PIPE

CONTECH
CONSTRUCTION PRODUCTS INC.

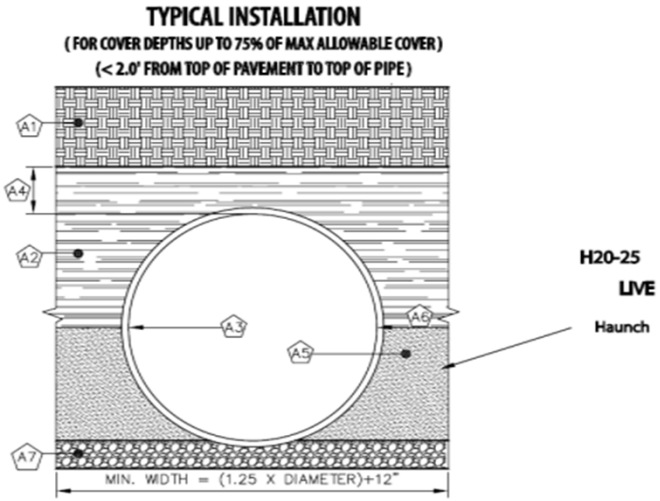
For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com

Project Summary

Date:	7/15/2015	
Project Name:	470 - Cistern 2	
City / County:	Los Angeles	
State:	CA	
Designed By:	KET	
Company:		**Enter Information in Blue Cells**
Telephone:		

DuroMaxx Pipe Calculator

Storage Volume Required (cf):	2,860	
Limiting Width (ft):	30.00	
Invert Depth Below Asphalt (ft):	18.00	
Solid or Perforated Pipe:	Solid	
Shape Or Diameter (in):	120	76.07 ft^2 Pipe Area
Number Of Headers:	0	120in diameter pipe requires bulkheads and reducing tee manifold
Spacing between Barrels (ft):	3.00	
Stone Width Around Perimeter of System (ft):	0	
Depth A: Porous Stone Above Pipe (in):	0	
Depth C: Porous Stone Below Pipe (in):	0	
Stone Porosity (0 to 40%):	40	



System Sizing

Pipe Storage:	2,891	cf	
Porous Stone Storage:	0	cf	
Total Storage Provided:	2,891	cf	101.1% Of Required Storage
Number of Barrels:	2	barrels	
Length per Barrel:	19.0	ft	
Length Per Header:	0.0	ft	
Rectangular Footprint (W x L):	23. ft x 19. ft		

CONTECH Materials*

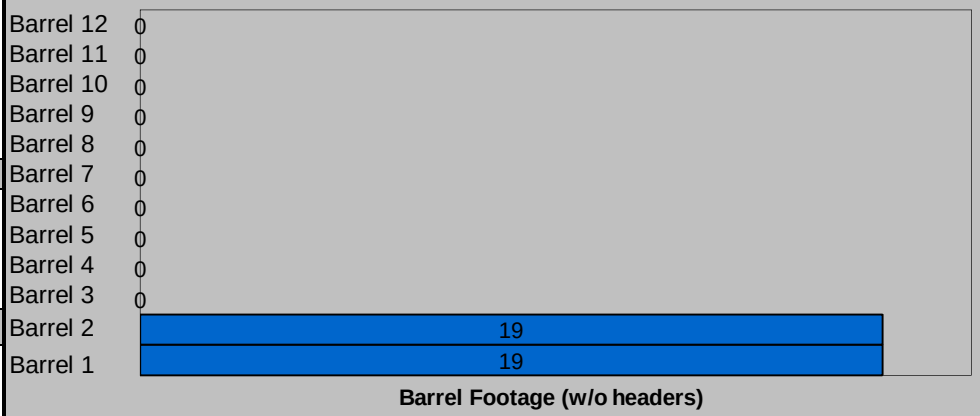
Total DuroMaxx Footage:	38	ft
Approximate Total Pieces:	2	pcs
Approximate Coupling Bands:	0	bands
Approximate Truckloads:	1	trucks

Construction Quantities**

Total Excavation:	292	cy
Porous Stone Backfill For Storage:	0	cy stone
Backfill to Grade Excluding Stone:	185	cy fill

**Assumes 22' pipe lengths*
***Construction quantities are approximate and should be verified upon final design*

System Layout



Appendix F

```
                                        detention chamber.HYD
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8 10 500.       2. 600.      2. 700.      2. 800.      2. 900.      2.
8 151000.      2.1050.      2.1100.      2.1110.      2.1120.      2.
8 201130.      2.1131.      2.1132.      2.1133.      2.1134.      2.
8 251135.      2.1136.      2.1137.      2.1138.      2.1139.      2.
8 301140.      2.1141.      2.1142.      2.1143.      2.1144.      2.
8 351145.      2.1146.      2.1147.      2.1148.      2.1149.      2.
8 401150.      2.1151.      3.1152.      3.1153.      3.1154.      4.
8 451155.      4.1156.      4.1157.      4.1158.      3.1159.      3.
8 501160.      3.1161.      2.1162.      2.1163.      2.1164.      2.
8 551165.      2.1166.      2.1167.      2.1168.      2.1169.      2.
8 601170.      2.1171.      2.1172.      2.1173.      2.1174.      2.
8 651175.      2.1176.      2.1177.      2.1178.      2.1179.      2.
8 701180.      2.1181.      2.1182.      2.1183.      2.1184.      2.
8 751185.      2.1186.      2.1187.      2.1188.      2.1189.      2.
8 801190.      2.1191.      2.1192.      2.1193.      2.1194.      2.
8 851195.      2.1196.      2.1197.      2.1198.      2.1199.      2.
8 901200.      2.1201.      2.1202.      2.1203.      2.1204.      2.
8 951205.      2.1206.      2.1207.      2.1208.      2.1209.      2.
81001210.      2.1211.      2.1212.      2.1213.      2.1214.      2.
81051215.      2.1216.      2.1217.      2.1218.      2.1219.      2.
81101220.      2.1221.      2.1222.      2.1223.      2.1224.      2.
81151225.      2.1226.      2.1227.      2.1228.      2.1229.      2.
81201230.      2.1231.      2.1232.      2.1233.      2.1234.      2.
81251235.      2.1236.      2.1237.      2.1238.      2.1239.      2.
81301240.      2.1241.      2.1242.      2.1243.      2.1244.      2.
81351245.      2.1246.      2.1247.      2.1248.      2.1249.      2.
81401250.      2.1251.      2.1252.      2.1253.      2.1254.      2.
81451255.      2.1256.      2.1257.      2.1258.      2.1259.      2.
81501260.      2.1261.      2.1262.      2.1263.      2.1264.      2.
81551265.      2.1266.      2.1267.      2.1268.      2.1269.      2.
81601270.      2.1271.      2.1272.      2.1273.      2.1274.      2.
81651275.      2.1276.      2.1277.      2.1278.      2.1279.      2.
81701280.      2.1281.      2.1282.      2.1283.      2.1284.      2.
81751285.      2.1286.      2.1287.      2.1288.      2.1289.      2.
81801290.      2.1291.      2.1292.      2.1293.      2.1294.      2.
81851295.      2.1296.      2.1297.      2.1298.      2.1299.      2.
81901300.      2.1310.      2.1320.      2.1330.      2.1340.      2.
81951350.      2.1360.      2.1370.      2.1380.      2.1390.      2.
82001400.      2.1420.      2.1440.      2.1460.      2.1500.      2.
```

CIVILCADD/CIVILDESIGN Engineering Software, (c) 1997-2004 Version 6.4

Study Date : 08/19/15 Input hydrograph file name : bsn50cc.hyd
Output hydrograph file name: bsn50cc.hin

Program computation of outflow v. depth

****
CALCULATED OUTFLOW DATA AT DEPTH = 0.03(Ft.)
****
Pipe length = 280.00(Ft.) Elevation difference = 6.50(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 8.00(In.)
Calculated individual pipe flow = 0.005(CFS)
Normal flow depth in pipe = 0.26(In.)
Flow top width inside pipe = 2.85(In.)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) = 0.005(CFS)

Total outflow at this depth = 0.00(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 1.00(Ft.)
****
Pipe length = 280.00(Ft.) Elevation difference = 6.50(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 8.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 7.500(Ft.)
Pipe friction loss = 6.826(Ft.)
Minor friction loss = 0.681(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) = 1.887(CFS)

Total outflow at this depth = 1.89(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 3.00(Ft.)
****
Pipe length = 280.00(Ft.) Elevation difference = 6.50(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 8.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 9.500(Ft.)
Pipe friction loss = 8.646(Ft.)
Minor friction loss = 0.862(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)

Critical depth could not be calculated.
Calculated flow rate through pipe(s) = 2.124(CFS)

Total outflow at this depth = 2.12(CFS)

****
CALCULATED OUTFLOW DATA AT DEPTH = 4.00(Ft.)
****
Pipe length = 280.00(Ft.) Elevation difference = 6.50(Ft.)
Manning's N = 0.013 No. of pipes = 1
Given pipe size = 8.00(In.)
NOTE: Assuming free outlet flow.
NOTE: Normal flow is pressure flow.
The total friction loss through the pipe is 10.500(Ft.)
Pipe friction loss = 9.557(Ft.)
Minor friction loss = 0.953(Ft.) K-factor = 1.50
Maximum capacity of pipe(s) = 0.00(CFS)
Critical depth could not be calculated.
Calculated flow rate through pipe(s) = 2.232(CFS)

Total outflow at this depth = 2.23(CFS)

Hydrograph time unit varies
Initial depth in storage basin = 0.00(Ft.)

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

Depth vs. Storage and Depth vs. Discharge data @ 1 Min. Intervals:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.030	0.001	0.005	0.001	0.001
1.000	0.034	1.887	0.033	0.035
3.000	0.103	2.124	0.102	0.104
4.000	0.138	2.232	0.136	0.140

Hydrograph Detention Basin Routing
Hydrograph at 470 3 A Storm Day: 4 Drainage Area = 1.20
Total flood hydrograph volume this storm day = 4.01 Ac. Ft.

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

Time (Min)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.0 2.0 3.0 4.0	Depth (Ft.)
0	0.0	0.0	0.000	O | | | |	0.0
100	2.0	1.8	0.032	| | O I | |	0.9
200	2.0	1.9	0.045	| | OI | |	1.3
300	2.0	2.0	0.054	| | OI | |	1.6
400	2.0	2.0	0.059	| | OI | |	1.7
500	2.0	2.0	0.062	| | OI | |	1.8
600	2.0	2.0	0.064	| | OI | |	1.9

700	2.0	2.0	0.065	|	|	OI	|	|	1.9
800	2.0	2.0	0.066	|	|	OI	|	|	1.9
900	2.0	2.0	0.066	|	|	OI	|	|	1.9
1000	2.0	2.0	0.067	|	|	OI	|	|	1.9
1050	2.0	2.0	0.067	|	|	OI	|	|	1.9
1100	2.0	2.0	0.067	|	|	OI	|	|	1.9
1110	2.0	2.0	0.067	|	|	OI	|	|	1.9
1120	2.0	2.0	0.067	|	|	OI	|	|	1.9
1130	2.0	2.0	0.067	|	|	OI	|	|	1.9
1131	2.0	2.0	0.067	|	|	OI	|	|	1.9
1132	2.0	2.0	0.067	|	|	OI	|	|	1.9
1133	2.0	2.0	0.067	|	|	OI	|	|	1.9
1134	2.0	2.0	0.067	|	|	OI	|	|	1.9
1135	2.0	2.0	0.067	|	|	OI	|	|	1.9
1136	2.0	2.0	0.067	|	|	OI	|	|	1.9
1137	2.0	2.0	0.067	|	|	OI	|	|	1.9
1138	2.0	2.0	0.067	|	|	OI	|	|	1.9
1139	2.0	2.0	0.067	|	|	OI	|	|	1.9
1140	2.0	2.0	0.067	|	|	OI	|	|	1.9
1141	2.0	2.0	0.067	|	|	OI	|	|	1.9
1142	2.0	2.0	0.067	|	|	OI	|	|	1.9
1143	2.0	2.0	0.067	|	|	OI	|	|	1.9
1144	2.0	2.0	0.067	|	|	OI	|	|	1.9
1145	2.0	2.0	0.067	|	|	OI	|	|	1.9
1146	2.0	2.0	0.067	|	|	OI	|	|	1.9
1147	2.0	2.0	0.067	|	|	OI	|	|	1.9
1148	2.0	2.0	0.067	|	|	OI	|	|	1.9
1149	2.0	2.0	0.067	|	|	OI	|	|	1.9
1150	2.0	2.0	0.067	|	|	OI	|	|	1.9
1151	3.0	2.0	0.068	|	|	O	I	|	2.0
1152	3.0	2.0	0.069	|	|	O	I	|	2.0
1153	3.0	2.0	0.071	|	|	O	I	|	2.1
1154	4.0	2.0	0.074	|	|	O	|	I	2.1
1155	4.0	2.0	0.076	|	|	O	|	I	2.2
1156	4.0	2.0	0.079	|	|	O	|	I	2.3
1157	4.0	2.1	0.082	|	|	O	|	I	2.4
1158	3.0	2.1	0.083	|	|	O	I	|	2.4
1159	3.0	2.1	0.084	|	|	O	I	|	2.5
1160	3.0	2.1	0.086	|	|	O	I	|	2.5
1161	2.0	2.1	0.086	|	|	O	|	|	2.5
1162	2.0	2.1	0.085	|	|	O	|	|	2.5
1163	2.0	2.1	0.085	|	|	O	|	|	2.5
1164	2.0	2.1	0.085	|	|	O	|	|	2.5
1165	2.0	2.1	0.085	|	|	O	|	|	2.5
1166	2.0	2.1	0.085	|	|	O	|	|	2.5
1167	2.0	2.1	0.085	|	|	O	|	|	2.5
1168	2.0	2.1	0.085	|	|	O	|	|	2.5
1169	2.0	2.1	0.085	|	|	O	|	|	2.5
1170	2.0	2.1	0.085	|	|	O	|	|	2.5
1171	2.0	2.1	0.085	|	|	O	|	|	2.5
1172	2.0	2.1	0.085	|	|	O	|	|	2.5
1173	2.0	2.1	0.084	|	|	O	|	|	2.5
1174	2.0	2.1	0.084	|	|	O	|	|	2.5
1175	2.0	2.1	0.084	|	|	O	|	|	2.5
1176	2.0	2.1	0.084	|	|	O	|	|	2.5
1177	2.0	2.1	0.084	|	|	O	|	|	2.5
1178	2.0	2.1	0.084	|	|	O	|	|	2.5
1179	2.0	2.1	0.084	|	|	O	|	|	2.4
1180	2.0	2.1	0.084	|	|	O	|	|	2.4

1181	2.0	2.1	0.084			0		2.4
1182	2.0	2.1	0.084			0		2.4
1183	2.0	2.1	0.084			0		2.4
1184	2.0	2.1	0.084			0		2.4
1185	2.0	2.1	0.084			0		2.4
1186	2.0	2.1	0.083			0		2.4
1187	2.0	2.1	0.083			0		2.4
1188	2.0	2.1	0.083			0		2.4
1189	2.0	2.1	0.083			0		2.4
1190	2.0	2.1	0.083			0		2.4
1191	2.0	2.1	0.083			0		2.4
1192	2.0	2.1	0.083			0		2.4
1193	2.0	2.1	0.083			0		2.4
1194	2.0	2.1	0.083			0		2.4
1195	2.0	2.1	0.083			0		2.4
1196	2.0	2.1	0.083			0		2.4
1197	2.0	2.1	0.083			0		2.4
1198	2.0	2.1	0.083			0		2.4
1199	2.0	2.1	0.082			0		2.4
1200	2.0	2.1	0.082			0		2.4
1201	2.0	2.1	0.082			0		2.4
1202	2.0	2.1	0.082			0		2.4
1203	2.0	2.1	0.082			0		2.4
1204	2.0	2.1	0.082			0		2.4
1205	2.0	2.1	0.082			0		2.4
1206	2.0	2.1	0.082			0		2.4
1207	2.0	2.1	0.082			0		2.4
1208	2.0	2.1	0.082			0		2.4
1209	2.0	2.1	0.082			0		2.4
1210	2.0	2.1	0.082			0		2.4
1211	2.0	2.1	0.082			0		2.4
1212	2.0	2.0	0.082			0		2.4
1213	2.0	2.0	0.081			0		2.4
1214	2.0	2.0	0.081			0		2.4
1215	2.0	2.0	0.081			0		2.4
1216	2.0	2.0	0.081			0		2.4
1217	2.0	2.0	0.081			0		2.4
1218	2.0	2.0	0.081			0		2.4
1219	2.0	2.0	0.081			0		2.4
1220	2.0	2.0	0.081			0		2.4
1221	2.0	2.0	0.081			0		2.4
1222	2.0	2.0	0.081			0		2.4
1223	2.0	2.0	0.081			0		2.4
1224	2.0	2.0	0.081			0		2.4
1225	2.0	2.0	0.081			0		2.4
1226	2.0	2.0	0.081			0		2.4
1227	2.0	2.0	0.081			0		2.3
1228	2.0	2.0	0.080			0		2.3
1229	2.0	2.0	0.080			0		2.3
1230	2.0	2.0	0.080			0		2.3
1231	2.0	2.0	0.080			0		2.3
1232	2.0	2.0	0.080			0		2.3
1233	2.0	2.0	0.080			0		2.3
1234	2.0	2.0	0.080			0		2.3
1235	2.0	2.0	0.080			0		2.3
1236	2.0	2.0	0.080			0		2.3
1237	2.0	2.0	0.080			0		2.3
1238	2.0	2.0	0.080			0		2.3
1239	2.0	2.0	0.080			0		2.3

1240	2.0	2.0	0.080			0		2.3
1241	2.0	2.0	0.080			0		2.3
1242	2.0	2.0	0.080			0		2.3
1243	2.0	2.0	0.080			0		2.3
1244	2.0	2.0	0.080			0		2.3
1245	2.0	2.0	0.079			0		2.3
1246	2.0	2.0	0.079			0		2.3
1247	2.0	2.0	0.079			0		2.3
1248	2.0	2.0	0.079			0		2.3
1249	2.0	2.0	0.079			0		2.3
1250	2.0	2.0	0.079			0		2.3
1251	2.0	2.0	0.079			0		2.3
1252	2.0	2.0	0.079			0		2.3
1253	2.0	2.0	0.079			0		2.3
1254	2.0	2.0	0.079			0		2.3
1255	2.0	2.0	0.079			0		2.3
1256	2.0	2.0	0.079			0		2.3
1257	2.0	2.0	0.079			0		2.3
1258	2.0	2.0	0.079			0		2.3
1259	2.0	2.0	0.079			0		2.3
1260	2.0	2.0	0.079			0		2.3
1261	2.0	2.0	0.079			0		2.3
1262	2.0	2.0	0.078			0		2.3
1263	2.0	2.0	0.078			0		2.3
1264	2.0	2.0	0.078			0		2.3
1265	2.0	2.0	0.078			0		2.3
1266	2.0	2.0	0.078			0		2.3
1267	2.0	2.0	0.078			0		2.3
1268	2.0	2.0	0.078			0		2.3
1269	2.0	2.0	0.078			0		2.3
1270	2.0	2.0	0.078			0		2.3
1271	2.0	2.0	0.078			0		2.3
1272	2.0	2.0	0.078			0		2.3
1273	2.0	2.0	0.078			0		2.3
1274	2.0	2.0	0.078			0		2.3
1275	2.0	2.0	0.078			0		2.3
1276	2.0	2.0	0.078			0		2.3
1277	2.0	2.0	0.078			0		2.3
1278	2.0	2.0	0.078			0		2.3
1279	2.0	2.0	0.078			0		2.3
1280	2.0	2.0	0.078			0		2.3
1281	2.0	2.0	0.077			0		2.3
1282	2.0	2.0	0.077			0		2.3
1283	2.0	2.0	0.077			0		2.3
1284	2.0	2.0	0.077			0		2.3
1285	2.0	2.0	0.077			0		2.3
1286	2.0	2.0	0.077			0		2.3
1287	2.0	2.0	0.077			0		2.3
1288	2.0	2.0	0.077			0		2.3
1289	2.0	2.0	0.077			0		2.2
1290	2.0	2.0	0.077			0		2.2
1291	2.0	2.0	0.077			0		2.2
1292	2.0	2.0	0.077			0		2.2
1293	2.0	2.0	0.077			0		2.2
1294	2.0	2.0	0.077			0		2.2
1295	2.0	2.0	0.077			0		2.2
1296	2.0	2.0	0.077			0		2.2
1297	2.0	2.0	0.077			0		2.2
1298	2.0	2.0	0.077			0		2.2

1299	2.0	2.0	0.077	|	|	O	|	|	2.2
1300	2.0	2.0	0.077	|	|	O	|	|	2.2
1310	2.0	2.0	0.076	|	|	O	|	|	2.2
1320	2.0	2.0	0.076	|	|	O	|	|	2.2
1330	2.0	2.0	0.075	|	|	O	|	|	2.2
1340	2.0	2.0	0.075	|	|	O	|	|	2.2
1350	2.0	2.0	0.075	|	|	O	|	|	2.2
1360	2.0	2.0	0.074	|	|	O	|	|	2.2
1370	2.0	2.0	0.074	|	|	O	|	|	2.2
1380	2.0	2.0	0.074	|	|	O	|	|	2.1
1390	2.0	2.0	0.073	|	|	O	|	|	2.1
1400	2.0	2.0	0.073	|	|	O	|	|	2.1
1420	2.0	2.0	0.072	|	|	O	|	|	2.1
1440	2.0	2.0	0.072	|	|	O	|	|	2.1
1460	2.0	2.0	0.072	|	|	O	|	|	2.1
1500	2.0	2.0	0.068	|	|	O	|	|	2.0

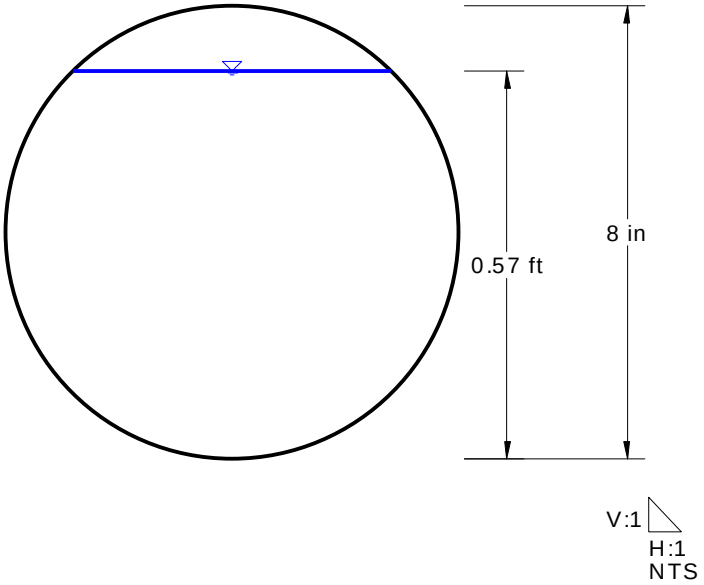
Remaining water in basin = 0.07 (Ac.Ft)
Peak flow out of basin = 2.06(CFS)
Peak flow time = 1160 Min., time interval # = 46
Maximum depth in basin = 2.50(Ft.)

Appendix G

Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.023000	ft/ft
Depth	0.57	ft
Diameter	8	in
Discharge	2.06	cfs



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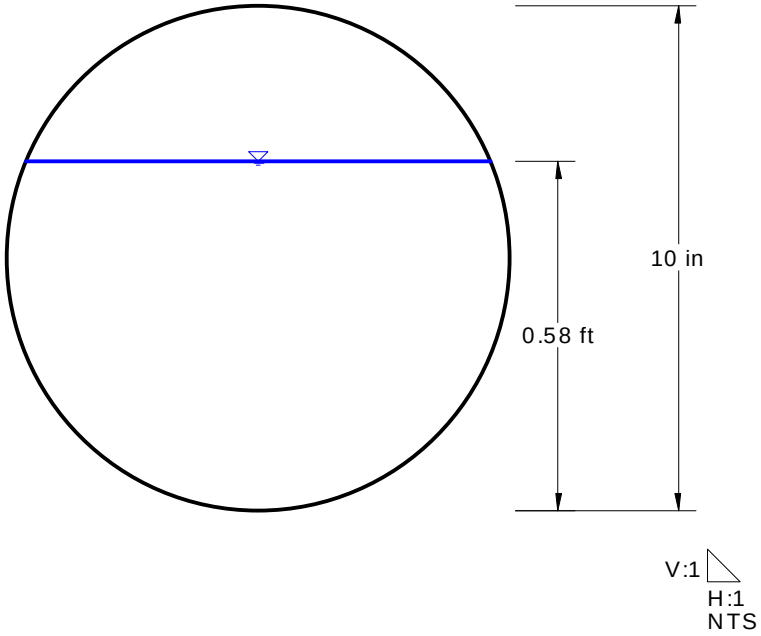
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.015400	ft/ft
Depth	0.58	ft
Diameter	10	in
Discharge	2.43	cfs

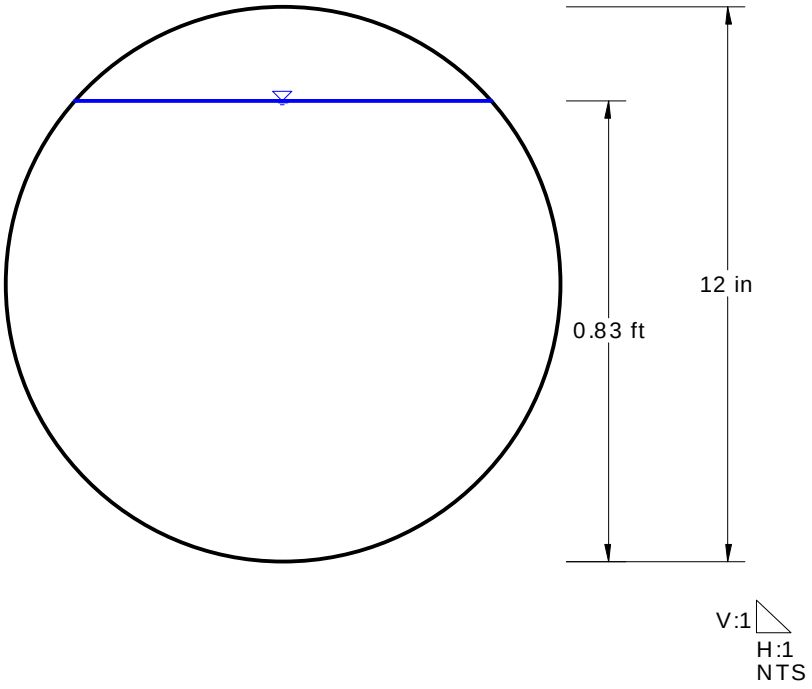


Sikand Engineering
37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666

Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.010700	ft/ft
Depth	0.83	ft
Diameter	12	in
Discharge	4.04	cfs



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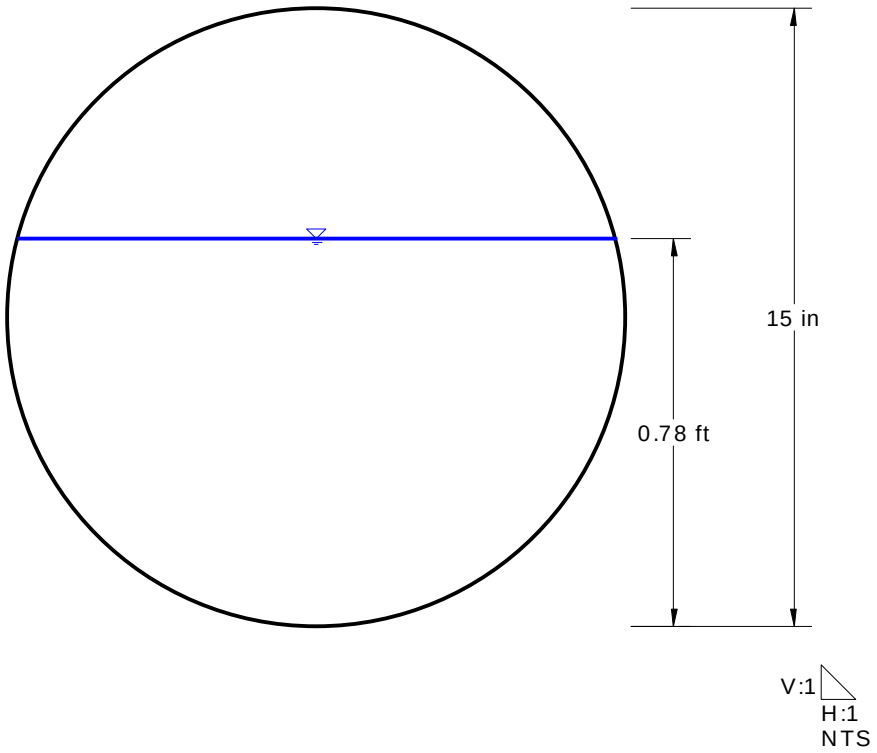
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.014500	ft/ft
Depth	0.78	ft
Diameter	15	in
Discharge	6.05	cfs



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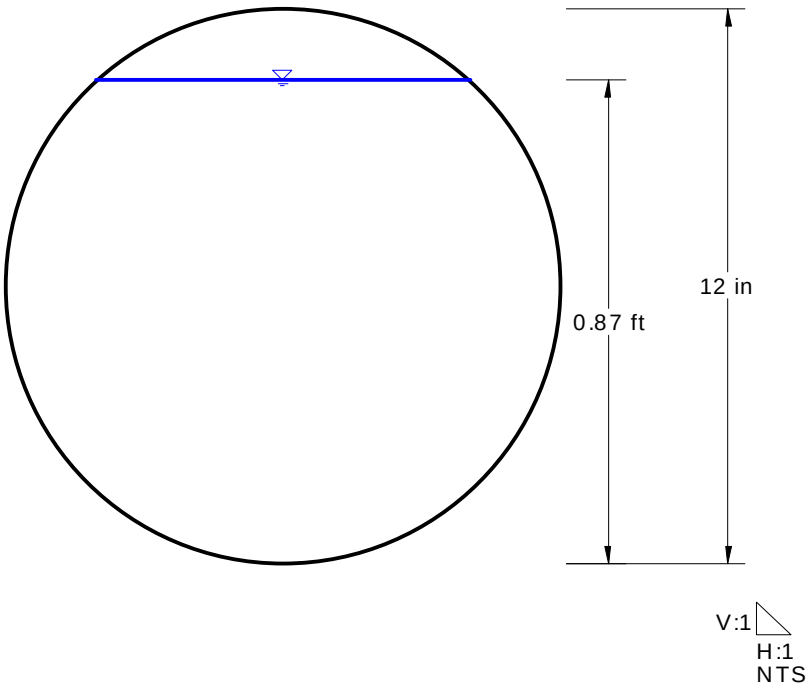
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.040000	ft/ft
Depth	0.87	ft
Diameter	12	in
Discharge	8.08	cfs



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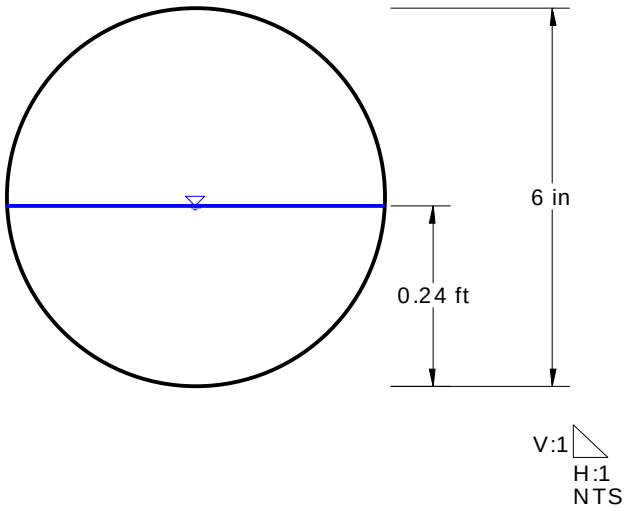
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.037700	ft/ft
Depth	0.24	ft
Diameter	6	in
Discharge	0.55	cfs



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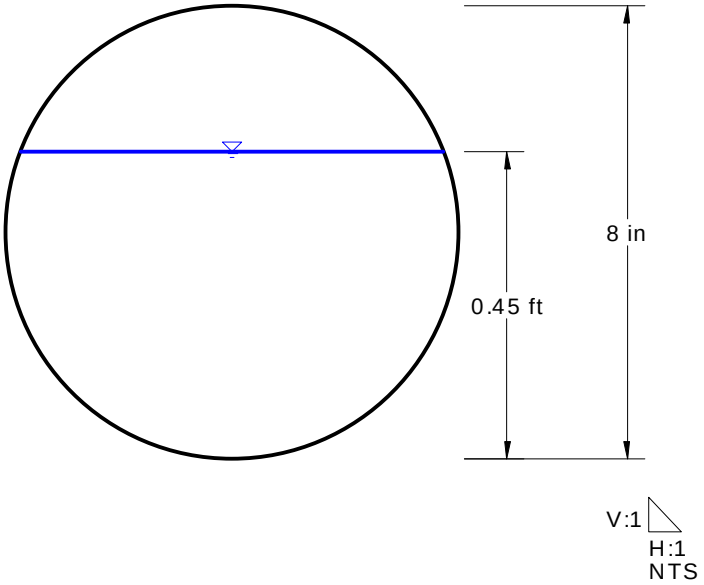
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

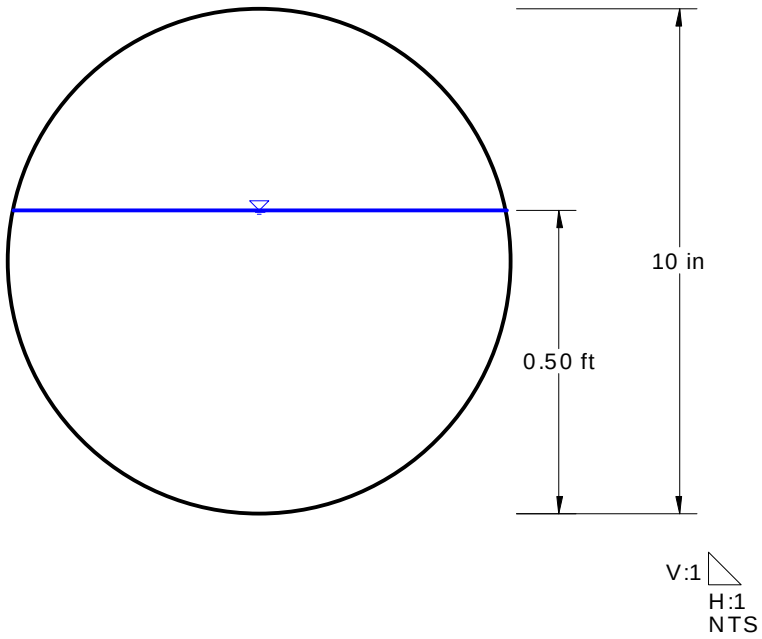
Section Data		
Mannings Coefficient	0.012	
Slope	0.521100	ft/ft
Depth	0.45	ft
Diameter	8	in
Discharge	7.59	cfs



Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.012500	ft/ft
Depth	0.50	ft
Diameter	10	in
Discharge	1.79	cfs



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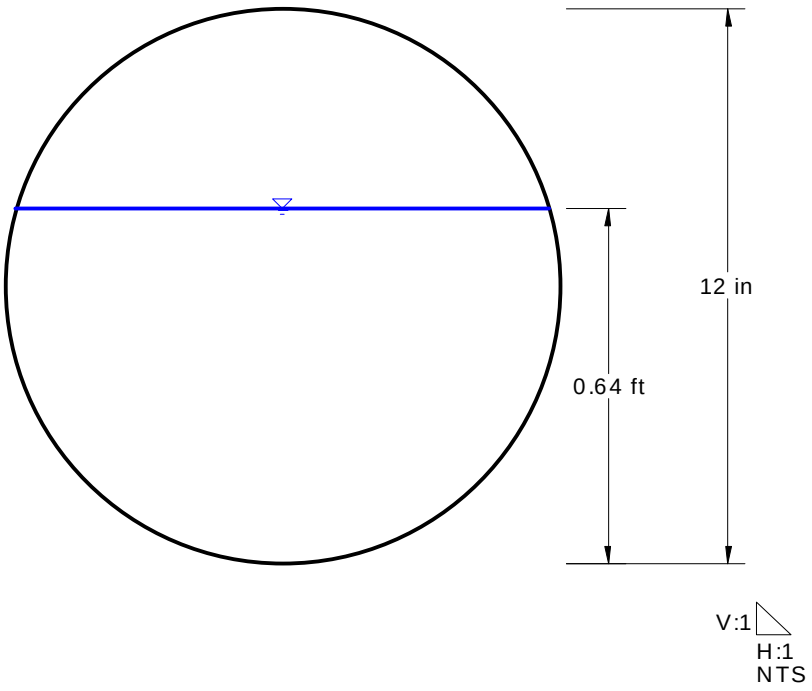
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.013200	ft/ft
Depth	0.64	ft
Diameter	12	in
Discharge	3.27	cfs



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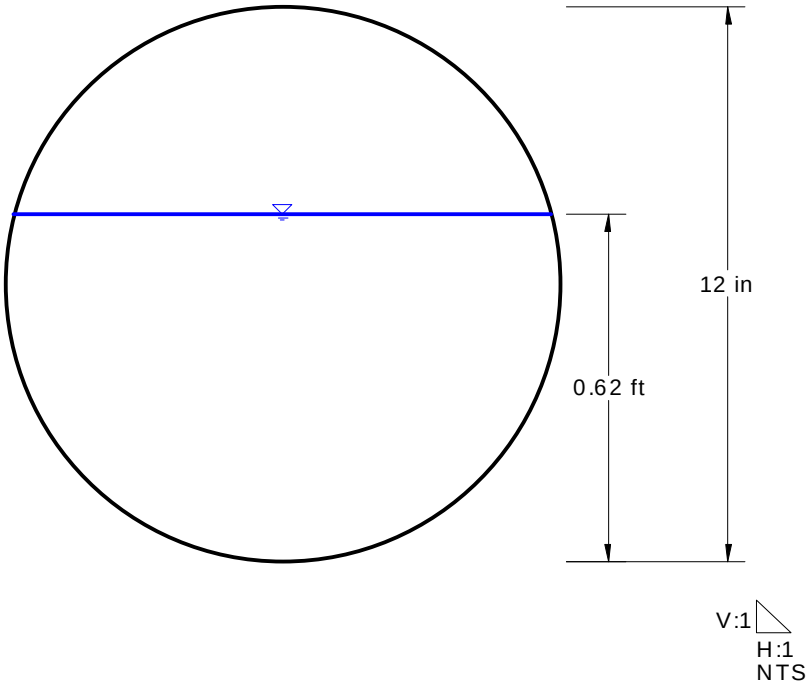
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

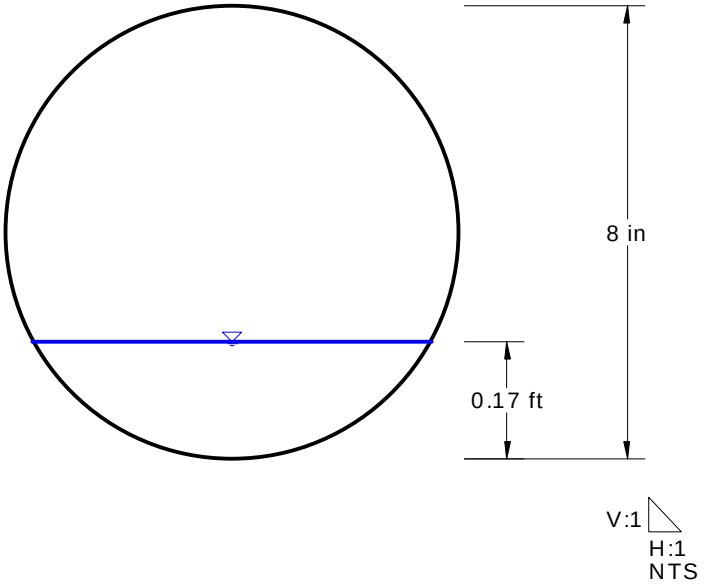
Section Data		
Mannings Coefficient	0.012	
Slope	0.025000	ft/ft
Depth	0.62	ft
Diameter	12	in
Discharge	4.35	cfs



Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	0.025000	ft/ft
Depth	0.17	ft
Diameter	8	in
Discharge	0.31	cfs



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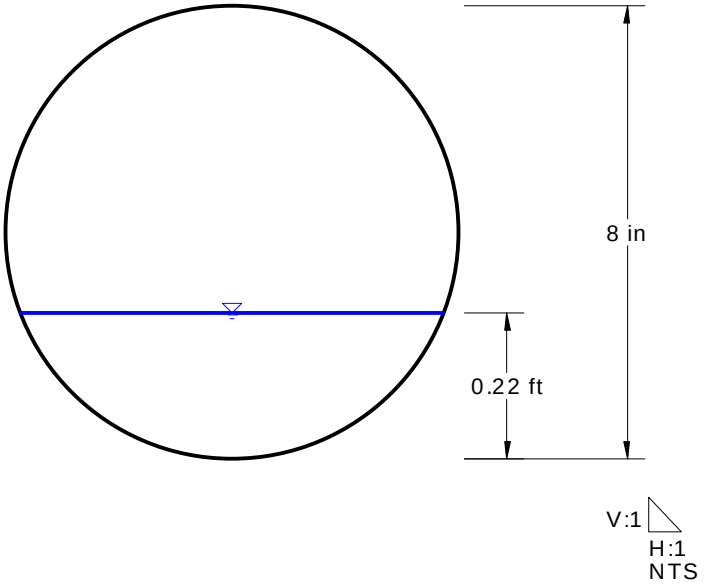
Cross Section
Cross Section for Circular Channel

Project Description	
Worksheet	Circular Channel - 1
Flow Element	Circular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficient	0.012	
Slope	1.875000	ft/ft
Depth	0.22	ft
Diameter	8	in
Discharge	4.04	cfs



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ROAD

AGOURA

VENTURA

FREEWAY

ROADSIDE

ROAD

2

Area = 0.67 ac.
Tc = 5 min.
Q50 = 2.37 cfs.

1

Area = 3.43 ac.
Tc = 7 min.
Q50 = 10.05 cfs.

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)
1 inch = 20 ft.

HYDRO-2A

REVISION #	SYMBOL	DESCRIPTION OF CHANGE		APPROVED	DATE

SHEET: HYD-01

HARDY ENGINEERING

CIVIL ENGINEERS • LAND SURVEYORS • LAND PLANNERS

351 ROLLING OAKS DRIVE, STE 202
THOUSAND OAKS, CA 91361
PHONE 818.222.2606

122 E. ARRELLAGA STREET
SANTA BARBARA, CA 93101
PHONE 805.845.9936

MARK D. HARDY RCE 36538 DATE

SELLECK DEVELOPMENT GROUP, INC.
2660 TOWNSGATE ROAD #250
WESTLAKE VILLAGE, CA 91361
PHONE: (805) 495-5400

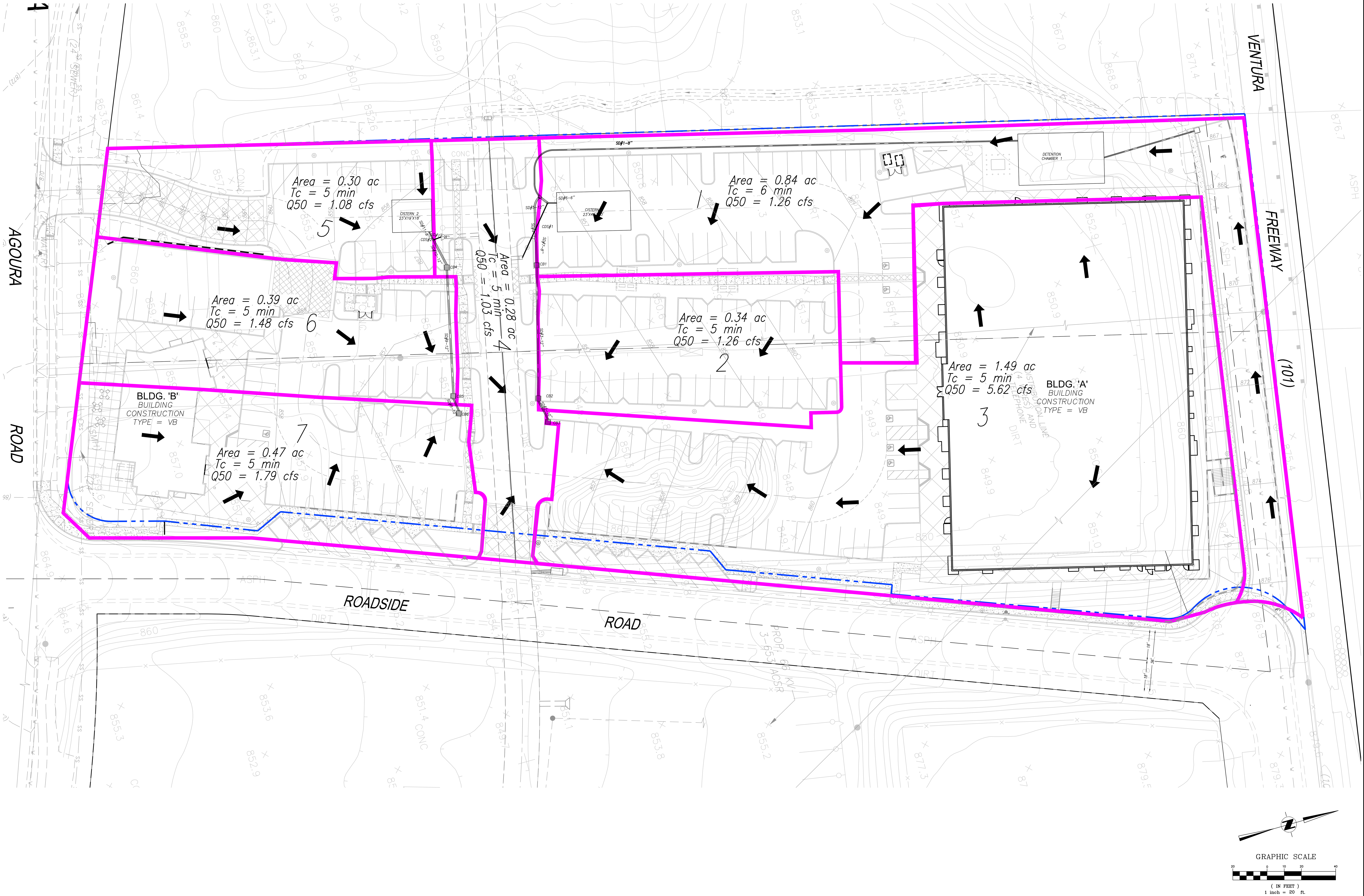
CITY OF AGOURA HILLS

JOB NO: 98-470

AGOURA ROAD EXISTING HYDROLOGY
29431 AND 29439 AGOURA ROAD
AGOURA HILLS, CA 91301

SHEET 1 OF 2

CITY OF AGOURA HILLS DWG. NO. _____



REVISION #	SYMBOL	DESCRIPTION OF CHANGE		APPROVED	DATE

SHEET: HYD-02

HARDY ENGINEERING
CIVIL ENGINEERS • LAND SURVEYORS • LAND PLANNERS
351 ROLLING OAKS DRIVE, STE 202
THOUSAND OAKS, CA 91361
PHONE 818.222.2606
122 E ARRELLAGA STREET
SANTA BARBARA, CA 93101
PHONE 805.845.9936

LICENSED LAND SURVEYOR MARK D. HARDY No. 5440 Expiry 30-SEPT-2016 STATE OF CALIFORNIA

MARK D. HARDY RCE 36538 DATE

SELLECK DEVELOPMENT GROUP, INC.
2660 TOWNSGATE ROAD # 250
WESTLAKE VILLAGE, CA 91361
PHONE: (805) 495-5400

CITY OF AGOURA HILLS

AGOURA ROAD PROPOSED HYDROLOGY
29431 AND 29439 AGOURA ROAD
AGOURA HILLS, CA 91301

SHEET 2 OF 2

CITY OF AGOURA HILLS DWG. NO. ______________