REVISED
Hydrology Analysis
&
Drainage Management Area (DMA)
Sizing Calculations

33 & 41 Clayton Street
San Rafael, California

Job No. 8922

January 25, 2017
REVISED 5/7/2020

C67386
EXP. 12·31·2020

CIVIL

Hydrology Narrative

In our study, we analyzed basic hydrology using the Marin County Rational Method Computation Forms and we have sized bioretention planters using MCSTOPPP sizing criteria.

Hydrology Study
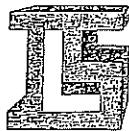
We have analyzed 100 year pre and post development hydrology as the most conservative approach for the two main watersheds northerly and southerly of the high point on Ross Street Terrace at approximately station 2+74.

- Lot 41, shown as watershed 'C' on the attached Marin Maps Map Report, has a pre-project peak discharge of 0.35 cfs and a post project peak discharge of 0.38 cfs, an increase of 0.03 cfs. Post project roof and upper driveway discharge equals 0.19 cfs. Detention will be provided by the bioretention planter with an overflow weir with 4" of storage height. The bioretention planter will reduce the roof and driveway peak discharge from 0.19 cfs to 0.11 cfs, a reduction of 0.08 cfs.
- Lot 33, shown as watershed 'D' has a pre-project peak discharge of 0.32 cfs and a post project peak discharge of 0.34 cfs, an increase of 0.02 cfs. Post project roof discharge equals 0.14 cfs. Detention will be provided by the bioretention planter with an overflow weir with 4" of storage height. The bioretention planter will reduce the roof peak discharge from 0.14 cfs to 0.04 cfs, a reduction of 0.1 cfs.
- The area of Clayton Street frontage below the two lots and northerly to the high point on Ross Street Terrace shown as watershed 'A' has a pre-project peak flow of 0.58 cfs and a post-project peak flow of 0.63 cfs. This increase is more than mitigated by the decreases in peak flow on lots 33 and 41. Total increase equals 0.03+0.02+0.05=0.10 cfs. Total decrease equals 0.18 which represents a reduction of 0.08 cfs in peak flow for watersheds 'A', 'C' and 'D'.
- The proposed access from Ross Street on Ross Street Terrace to the highpoint at station 2+74 shown as watershed 'B' has a pre-project peak flow of 0.50 cfs and a post-project peak discharge of 0.58 cfs, an increase of 0.08 cfs. This area will be treated with a new Bioretetntion pla nter on Ross Street and the increase will be mitigated with retention in the bioretention planter.

Drainage Management Areas (DMA's)

Using MCSTOPPP criteria we have sized two bioretention areas and an area of pervious paving;

- The bioretention area for lot 41 will treat and retain the runoff from the proposed lot 41 building roof and a portion of the driveway. The lower portion of the driveway will be treated with a bioretetntion ploanter between the two walls as shown on the attached DMA maps.
- The bioretention area for lot 33 will treat and retain the runoff from the proposed lot 33 building roof.
- The driveway for lot 33 and the Clayton Street paving will sheet flow to a new drop inlet and into a bioretention planter. Both lots will have some pervious paving to reduce off flow.

ILS ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING

BY: **A J S**   JOB NO. **8922**

DATE: **1/6/17**   SHEET NO: **1**

RATIONAL METHOD COMPUTATION FORM

(From Cal-Trans Rainfall Intensity-Duration-Frequency Analysis

PRE & POST- PROJECT CONDITION FOR SOUTHERLY PORTION OF ROSS ST. Terrace

$$Q = C \times I \times A$$

PNT ①

* Watershed **'A'**   At Point **Ross St. Gutter**

Area = **10,600 +/-** sq. ft. = **0.24** acres.

Time of Concentration (+C)

PRE-DEV.

$$t_c = \frac{1.8\,(1.1-C)\sqrt{L}}{[S(100)]^{1/3}} \; +5 \text{ Min.} = \frac{1.8(1.1-0.8)\sqrt{274}}{[0.15(100)]^{1/3}} + 5 = 8.6$$

POST DEV.

$$\frac{1.8\,(1.1-.86)\sqrt{274}}{[0.15(100)]^{1/3}} + 5 = 7.0$$

C = Runoff Coefficient* *See below*

L = Longest run in feet **274**

S = Average Slope in ft/ft = $\dfrac{\Delta H}{L}$ $\dfrac{284-242}{274} = 0.15$

Intensity

P_{60} (chart I) = **1.2**   zone (chart V) = **C**   subzone (chart v) **2**

Pre = 3.0

I_{100} (chart k) = **post = 3.1** Rd_{10} (chart k) _____

$I_{10} = I_{100}$ _____ x Rd_{10} (chart k) _____ = _____ in/hr.

I **25** = Rd _____ (from Chart R) x I_{100} _____ = _____ in/hr.
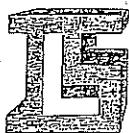
Coefficient of Runoff (C)

		PRE-DEV	POST-DEV
Relief	=	0.3	0.3
Soil infiltration	=	0.15	.46(.2)+54(.15)=.17
Vegetal cover	=	0.15	.46(.2)+54(.15)=.17
Surface storage	=	0.20	0.2
C	=	0.80	0.84

POST-PROJECT

Ross St. Terr = 4,875 S.F.
Road Surface

$$\frac{4,875}{10,600} = 0.46$$

Peak Discharge Q = C x I x A

Pre Q **100** = **0.8** x **3.0** x **0.24** = **0.58** c.f.s. $\Delta = 0.06$ cfs

Post Q **100** = **0.84** x **3.1** x **0.24** = **0.63** c.f.s.

N:\GEN\CORRESPO.OFF\RationalMethodComputationForm_100305.DOC

BY: __AJS__ JOB NO. __8922__

DATE: __1/12/17__ SHEET NO: __2__

RATIONAL METHOD COMPUTATION FORM

(From Cal-Trans Rainfall Intensity-Duration-Frequency Analysis

PRE & POST-PROJECT CONDITION FOR NORTHERN PORTION OF ROSS St. Terrace.

$$Q = C \times I \times A \quad Pnt. ②$$

* Watershed __B'__ At Point __Northeast Cor. of Ross St.__

Area = __8,969__ sq. ft. = __0.21__ acres.

Time of Concentration (+C)

Pre-Dev T_c

$$t_c = \frac{1.8(1.1-C)\sqrt{L}}{[S(100)]^{1/3}} +5 \text{ Min.} = \frac{1.8(1.1-0.8)\sqrt{218}}{[0.12(100)]^{1/3}} +5 = 8.5$$

Post Dev T_c

$$\frac{1.8(1.1-0.86)\sqrt{218}}{[0.12(100)]^{1/3}} +5 = 7.8$$

C = Runoff Coefficient*

L = Longest run in feet __218__

S = Average Slope in ft/ft = $\frac{\Delta H}{L}$ $\frac{284-258}{218} = 0.12$

Intensity

P_{60} (chart I) = __1.2__ zone (chart V) = __C__ subzone (chart v) __2__

Pre 3.0

I_{100} (chart k) = Post 3.2 Rd_{10} (chart k) _____

$I_{10} = I_{100}$ _____ x Rd_{10} (chart k) _____ = _____ in/hr.

I _____ = Rd _____ (from Chart R) x I_{100} _____ = _____ in/hr.

Coefficient of Runoff (C)

		Pre-Dev	Post Dev
Relief	=	0.3	.3
Soil infiltration	=	0.15	.15 x .46 + .2(.54) = .18
Vegetal cover	=	0.15	.15 x (.46) + .2(.54) = .18
Surface storage	=	0.20	.2
C	=	0.80	0.86

4,907 S.F. Road Surface

$\frac{4907}{8969} = 0.54$

Peak Discharge Q = C x I x A

Pre Q __100__ = __0.8__ x __3.0__ x __0.21__ = __0.50__ c.f.s.

Post Q __100__ = __0.86__ x __3.2__ x __0.21__ = __0.58__ c.f.s.

RATIONAL METHOD COMPUTATION FORM

(From Cal-Trans Rainfall Intensity-Duration-Frequency Analysis

PRE & Post - PROJECT CONDITION   FOR 41 CLAYTON St

$$Q = C \times I \times A$$

Watershed __'C'__   At Point __3__

Area = __5851__   sq. ft. = __0.13__   acres.

Time of Concentration (+C)

$t_c = \dfrac{1.8(1.1-C)\sqrt{L}}{[S(100)]^{1/3}}$ +5 Min.

PRE-DEV
$$= \frac{1.8(1.1-0.8)\sqrt{135}}{[.24(100)]^{1/3}} + 5$$
$$= 7.1$$

POST DEV
$$\frac{1.8(1.1-.86)\sqrt{135}}{[.24(100)]^{1/3}} + 5$$
$$= 6.7$$

C = Runoff Coefficient* See below

L = Longest run in feet 135

S = Average Slope in ft/ft = $\dfrac{\Delta H}{L}$ $\dfrac{304 - 271}{135} = 0.24$

Intensity

P_{60} (chart I) = __1.2__   zone (chart V) = __C__   subzone (chart v) __2__

Pre = 3.3

I_{100} (chart k) = __Post = 3.4__ Rd_{10} (chart k) _____

$I_{10} = I_{100}$ _____ x Rd_{10} (chart k) _____ = _____ in/hr.

I _____ = Rd _____ (from Chart R) x I_{100} _____ = _____ in/hr.

Coefficient of Runoff
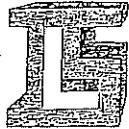
		Pre-DEV	Post Dev
Relief	=	0.30	0.3
Soil infiltration	=	0.15	0.15×(.46)+0.2(.54)=.18
Vegetal cover	=	0.15	0.15(.46)+0.2(.54)=.18
Surface storage	=	0.2	0.2
C	=	0.8	0.86

Post-Dev hardscape
$1130 + 594 + 1451 = 3175$

$$\frac{3175}{5851} = 0.54$$

Peak Discharge Q = C x I x A

Pre Q 100 = 0.8 x 3.3 x 0.13 = 0.35 c.f.s.

Post Q 100 = 0.86 x 3.4 x 0.13 = 0.38 c.f.s.

BY: __AJS__ JOB NO. __8922__

DATE: __1/24/17__ SHEET NO: __4__

RATIONAL METHOD COMPUTATION FORM

(From Cal-Trans Rainfall Intensity-Duration-Frequency Analysis

PRE & POST-PROJECT CONDITIONS FOR 33 CLAYTO Street

$$Q = C \times I \times A$$

Watershed __'D'__   At Point __4__

Area = __5,028__ sq. ft. = __0.12__ acres.

Time of Concentration (+C)

Pre - Proj

Post - Proj

$t_c = \dfrac{1.8(1.1-C)\sqrt{L}}{[S(100)]^{1/3}}$ +5 Min. $= \dfrac{1.8(1.1-.8)\sqrt{110}}{[.18(100)]^{1/3}} + 5$ = 7.2

$\dfrac{1.8(1.1-.84)\sqrt{110}}{[.18(100)]^{1/3}} + 5$ = 6.9

C = Runoff Coefficient*

L = Longest run in feet 110

S = Average Slope in ft/ft = $\dfrac{\Delta H}{L} = \dfrac{286 - 266}{110} = 0.18$

Intensity

P_{60} (chart I) = __1.2__ zone (chart V) = __C__ subzone (chart v) __2__

Pre = 3.3

I_{100} (chart k) = Post = 3.4 Rd_{10} (chart k) _____

174
471
1501
2146

$I_{10} = I_{100}$ _____ x Rd_{10} (chart k) _____ = _____ in/hr.

I _____ = Rd _____ (from Chart R) x I_{100} _____ = _____ in/hr.

Coefficient of Runoff
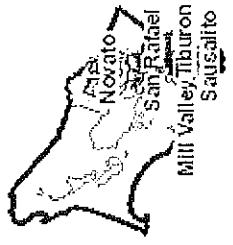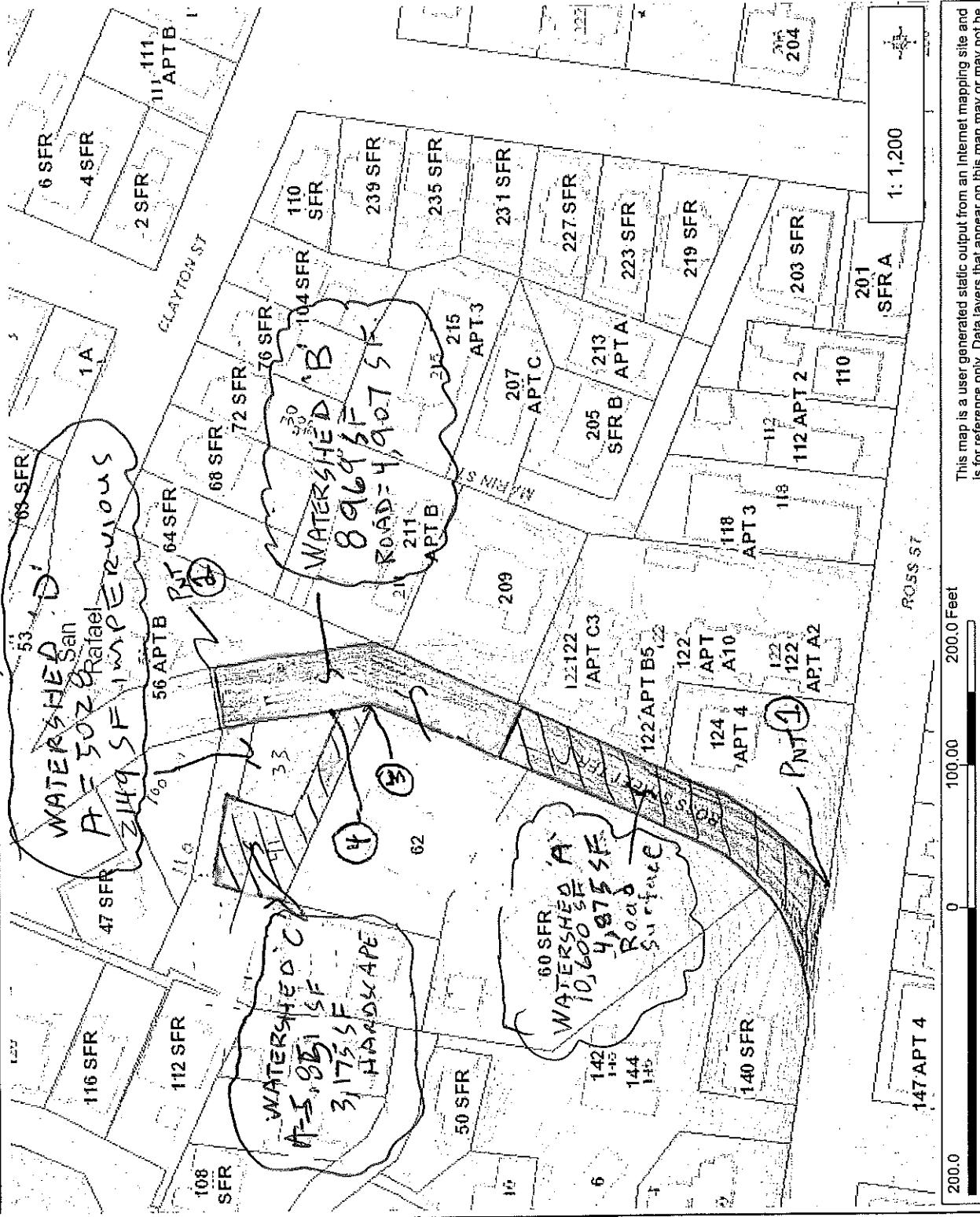
	Pre-Proj	Post-Proj	POST-PROJ.
Relief	= 0.30	0.3	
Soil infiltration	= 0.15	0.43(.2)+.57(.15)=.17	$\dfrac{2146}{5028}$ = 0.43
Vegetal cover	= 0.15	0.43(.2)+.57.15=.17	
Surface storage	= 0.2	0.2	
C	= 0.8	0.86	

Peak Discharge Q = C x I x A

Pre Q $\dfrac{100}{100}$ = 0.8 x 3.3 x 0.12 = 0.32 c.f.s.

Post Q $\dfrac{100}{100}$ = 0.84 x 3.4 x 0.12 = 0.34 c.f.s

Marin Map

Watershed Map Report

Watershed (Drainage Area)

1: 1,200

200.0   100.00   0   200.0 Feet
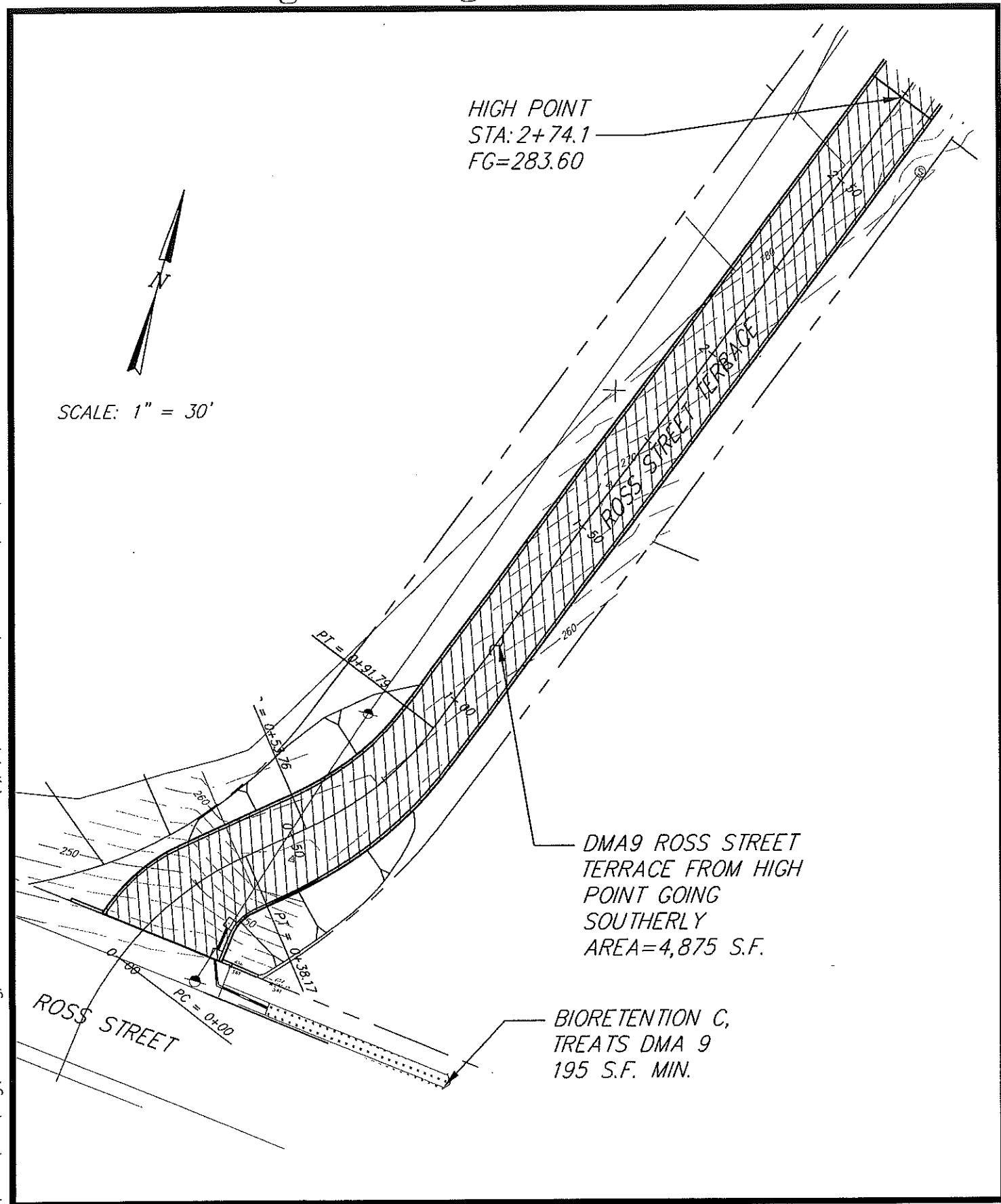
NAD_1983_HARN_StatePlane_California_III_FIPS_0403_Feet
© Latitude Geographics Group Ltd.

Legend

Parcel Note
- easement
- centerline

Address
Parcel
Condominium Common Area
Mobile Home Pad
City
Community
Marin County Legal Boundary
Other Bay Area County

Watershed 'A'
Watershed 'B'
Watershed 'C'
Watershed 'D'

Notes

WATERSHED 'D'
A = 502 SF San Rafael
2,149 SF IMPERVIOUS

WATERSHED 'B'
896 SF
ROAD = 4,907 SF

WATERSHED 'C'
A = 5,951 SF
3,175 SF HARDSCAPE

WATERSHED 'A'
10,600 SF
4,875 SF Road Surface

PNT 1
PNT 2

CLAYTON ST
MARIN ST
ROSS ST

108 SFR
116 SFR
112 SFR
50 SFR
147 APT 4
142
144
140 SFR
6
63 SFR
53
47 SFR
56 APT B
64 SFR
68 SFR
72 SFR
76 SFR
104 SFR
110 SFR
6 SFR
4 SFR
2 SFR
1 A
211 APT B
209
207 APT C
205 SFR B
203 SFR
201 SFR A
213 APT A
215 APT 3
219 SFR
223 SFR
227 SFR
231 SFR
235 SFR
239 SFR
110
110 APT 2
112
112 APT 2
118 APT 3
118
122 APT C3
122 APT B5
122 APT A4
122 APT A10
124 APT 4
122 APT A2
204
111 APT B
62
33
60 SFR

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JOB: 33 & 41 CLAYTON STREET
      DRAINAGE MANAGEMENT AREAS
JOB NO.: 8922   SHEET NO.: 2 OF 2
DRAWN BY: AJS   DATE: MAY 4, 2020
SCALE: 1" = 30'

Drainage Management Areas (DMA'S)

HIGH POINT
STA: 2+74.1
FG=283.60

N

SCALE: 1" = 30'

ROSS STREET TERRACE

PT = 0+91.79

= 0+53.76

260

250

PT = 0+38.17

PC = 0+00

ROSS STREET

DMA9 ROSS STREET
TERRACE FROM HIGH
POINT GOING
SOUTHERLY
AREA=4,875 S.F.

BIORETENTION C,
TREATS DMA 9
195 S.F. MIN.

Drainage Management Areas (DMA'S)

SCALE: 1" = 30'

DMA1 41 CLAYTON STREET ROOF AREA=1,451 S.F.
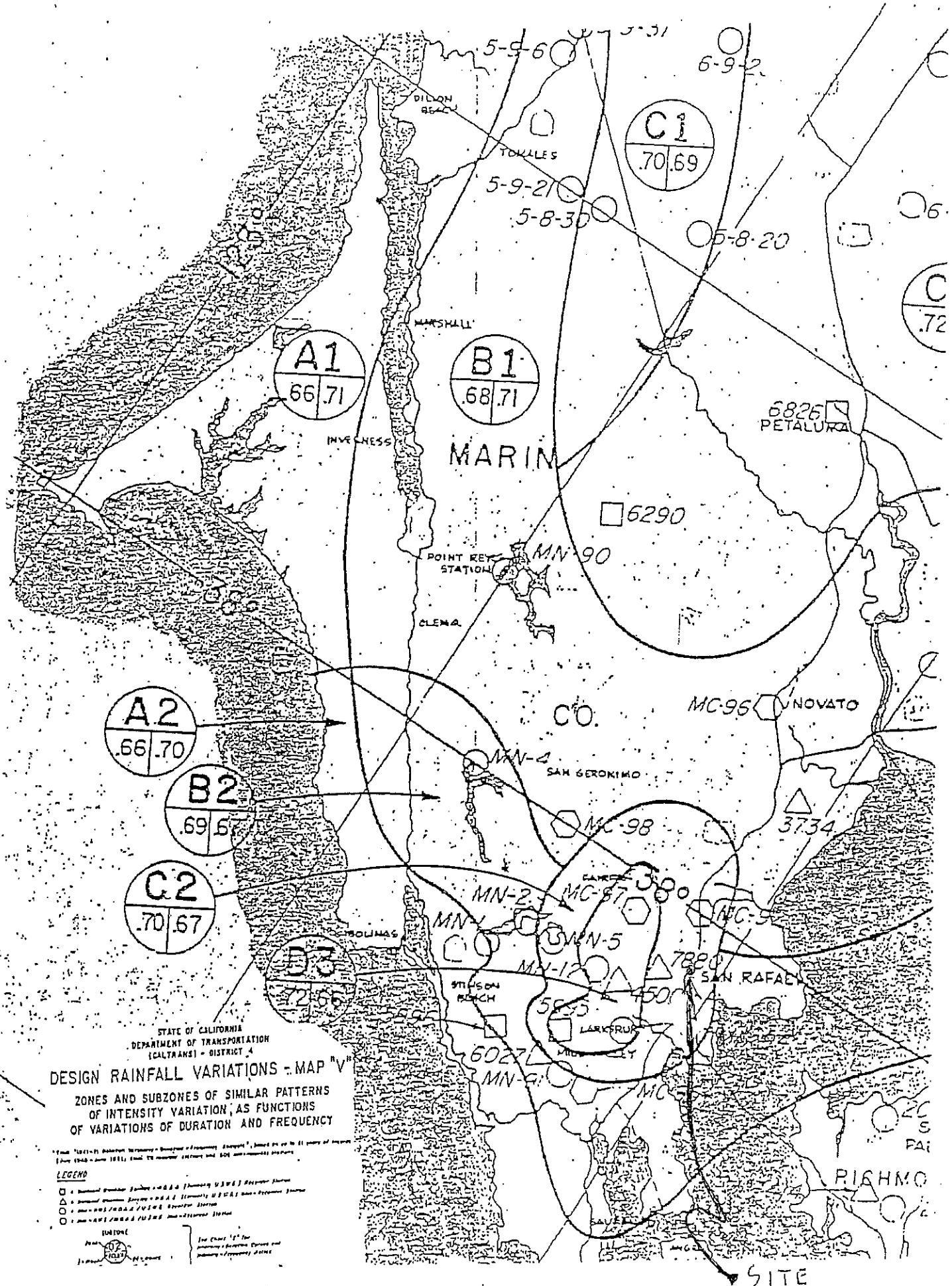
DMA2 41 CLAYTON PERVIOUS PAVING=385 S.F. SELF TREATING

DMA3 41 CLAYTON STREET UPPER DRIVEWAY AREA=594 S.F.
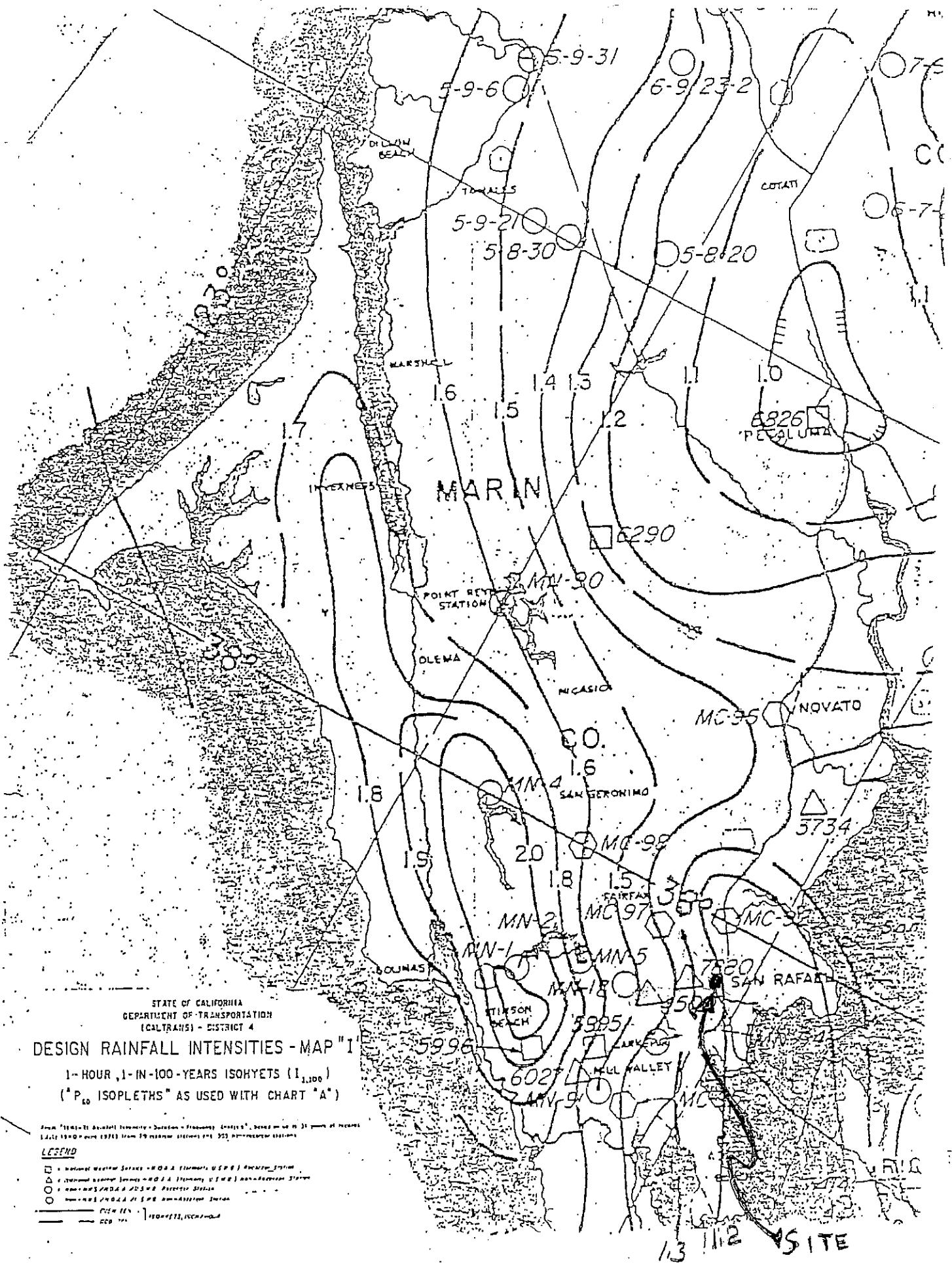
BIORETENTION AREA A TREATS DMA 1 58 S.F. MIN.

DMA4 41 CLAYTON STREET LOWER DRIVEWAY AREA=1,882 S.F.

BIORETENTION AREA B TREATS DMA 5 60 S.F. MIN.

DMA5 33 CLAYTON STREET ROOF AREA=1,501 S.F.

HIGH POINT STA: 2+74.1 FG=283.60

#41
APN 012-141-59
5,921
#33
APN 012-141-60
5,057 sq. ft.

CLAYTON STREET
ROSS ST. TERRACE
BASELINE

DMA7 33 CLAYTON STREET PERVIOUS PAVING=385 S.F. SELF TREATING

DMA8 CLAYTON AND ROSS STREET TERRACE FROM HIGH POINT GOING NORTHERLY AREA=4,907 S.F.

BIORETENTION AREA C TREATS DMA 3, 4, 6 & 8 314 S.F. MIN.

DMA6 33 CLAYTON STREET DRIVEWAY AREA=471 S.F.

N:\P8500\8922\dwg\8922DR8.dwg, 8.5X11EXH DMA-LOT 33-41 (1), 5/5/2020 1:18:01 PM, ILS Associates, Inc.-, A.S.

DILLON BEACH

TOMALES

5-9-21

5-8-30

5-9-6

6-9-2

5-8-20

C1
.70 | .69

C
.72

MARSHALL

A1
.66 | .71

B1
.68 | .71

MARIN

6826
PETALUMA

INVERNESS

6290

POINT REYES STATION

MN-90

OLEMA

CO.

MC-96 NOVATO

A2
.66 | .70

MN-4

SAN GERONIMO

3734

B2
.69 | .67

MC-98

C2
.70 | .67

MN-2

MC-87

MN-1

MN-5

MC-

BOLINAS

7880

SAN RAFAEL

MN-12

D3

450

STINSON BEACH

5-6-5

LARKSPUR

6027

MILL VALLEY

MN-6

MC-

DESIGN RAINFALL VARIATIONS - MAP "V"

ZONES AND SUBZONES OF SIMILAR PATTERNS
OF INTENSITY VARIATION, AS FUNCTIONS
OF VARIATIONS OF DURATION AND FREQUENCY

LEGEND

RICHMOND

SITE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
(CALTRANS) - DISTRICT 4

DESIGN RAINFALL INTENSITIES - MAP "I"

1 - HOUR , 1 - IN -100 - YEARS ISOHYETS ($I_{1,100}$)

(" P_{60} ISOPLETHS" AS USED WITH CHART "A")

LEGEND

CHART I

RUNOFF COEFFICIENTS FOR AGRICULTURAL AND OPEN AREAS *

	WATERSHED CHARACTERISTICS			
	A RELIEF	B SOIL INFILTRATION	C VEGETAL COVER	D SURFACE STORAGE
EXTREME	0.40 Steep rugged terrain average slopes greater than 30%	0.20 No effective soil cover; either rock or thin soil mantle negligible infiltration capacity	0.20 No effective plant cover; bare or very sparse soil cover	0.20 Negligible; surface depression few and shallow; drainage ways steep and small, no ponds or marshes
HIGH	0.30 Hilly with average slopes of 10 to 30%	0.15 Slow to take up water; clay or other soil of low infiltration capacity such as heavy gumbo	0.15 Poor to fair; clean cultivated crops or poor natural cover; less than 10% of area under good cover	0.15 Low; well defined system of small drainage ways; no ponds or marshes
NORMAL	0.20 Rolling with average slopes of 5 to 10%	0.10 Normal, deep loam	0.10 Fair to good; about 50% of area in good grass land, woodland or equivalent cover	0.10 Normal; considerable surface depression storage; typical of prairie lands; lakes, ponds and marshes less than 20% of area
LOW	0.10 Relatively flat land average slopes 0 to 5%	0.05 High; deep sand or other soil that takes up water readily and rapidly	0.05 Good to excellent; about 90% of area in good grass land, woodland or equivalent cover	0.05 High; surface depression storage high; drainage system not sharply defined. Lg. flood plain storage; large number of ponds and marshes

(left margin: CHARACTERISTICS — RUNOFF PRODUCING)

NOTE: Runoff coefficient is equal to sum of coefficients from the appropriate block in Rows A, B, C and D.

* After H. L. Cook, as published in Engineering for Agricultural Drainage, by Harry B Roe and Quincy C. Ayres, McGraw-Hill Book Co., Inc., New York, 1954, p. 105.

LOT 33   CLAYTON

Roof area = 1600 S.F. = 0.037 acres

$$t_c = 5 \text{ min}$$

$$I_{100} = 3.9 \text{ in/hr}$$

$$Q = 0.95 \times 3.9 \times 0.037 = 0.14 \text{ cfs}$$

LOT 41   CLAYTON

Roof area = 1623
Upper Dwy = $\underline{638}$
2261 SF = 0.052 acres

$$t_c = 5 \text{ min}$$

$$I_{100} = 3.9$$

$$Q = 0.95 \times 3.9 \times .052 = 0.19 \text{ cfs}$$

LOT 41   Lower Dwy
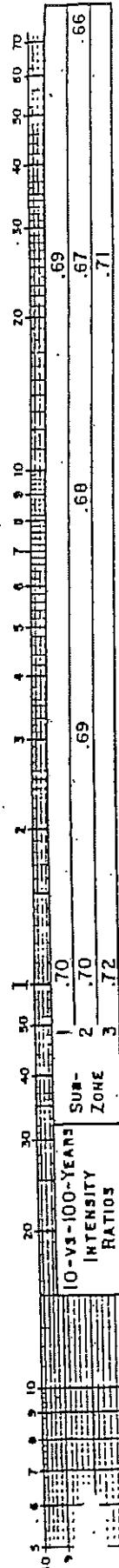
Area = 1370 SF = 0.031 acre

$$t_c = 5 \text{ min}$$
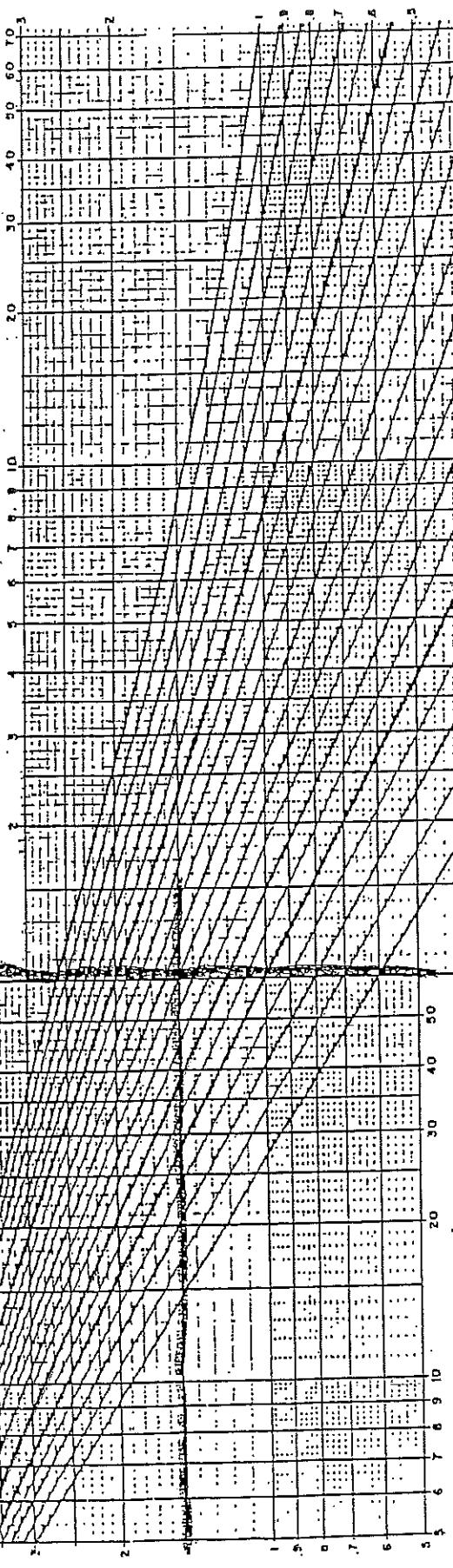
$$I_{100} = 3.9$$

$$Q = .95 \times 3.9 \times .031 = 0.12 \text{ cfs}$$

Q = CIA

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORATION (CALTRANS) - DISTRICT 4
1-in-100-years DESIGN RAINFALL INTENSITY DURATION CURVES,
and 10-vs-100-years DESIGN INTENSITY RATIOS, ZONE C
from: "1941-71 RAINFALL INTENSITY - DURATION - FREQUENCY ANALYSIS"

10-vs-100-YEARS INTENSITY RATIOS		
SUB-ZONE		
1	.70	.66
2	.70	.69	.67
3	.72	.71

10-vs-100-YEARS INTENSITY RATIOS		
SUB-ZONE		
1	.70	.71
2	.70	.72
3	.72	

The 1-to-72-hours portions of the curves are based on interpolation and correlation of values derived from analysis of up to 31 years (7/40-6/71) of records from 79* Recorder Stations and 305* Non-Recorder Stations. (*= zone totals)

The 5-to-60-minute portions of the curves are extrapolated from the 1-to-72-hour portions, supported by limited observation data.
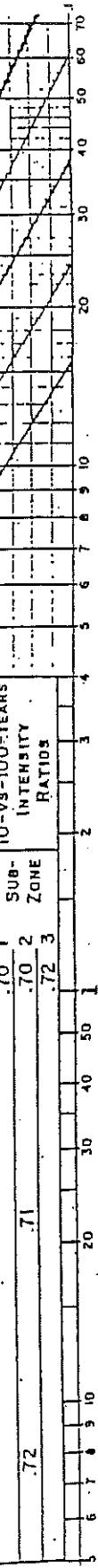
CHART "K" . ZONE C

MINUTES — DURATION — HOURS

EK/ERR 9/74

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Rational	0.32	1	7	136	-----	------	------	lot 33 pre
2	Rational	0.34	1	7	143	----	------	------	lot 33 post
3	Rational	0.14	1	5	41	-----	------	------	lot 33 roof inflow
4	Reservoir	0.04	1	9	9	3	268.38	36	outflow lot 33

Proj. file: 8922b.-lot33.gpw   Return Period: 100 yr   Run date: 03-15-2017

Hydrograph Report

Hyd. No. 1

lot 33 pre

Hydrograph type	= Rational	Peak discharge	= 0.32 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.8
Intensity	= 3.372 in/hr	Time of conc. (Tc)	= 7 min
IDF Curve	= clayton.idf	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 136 cuft
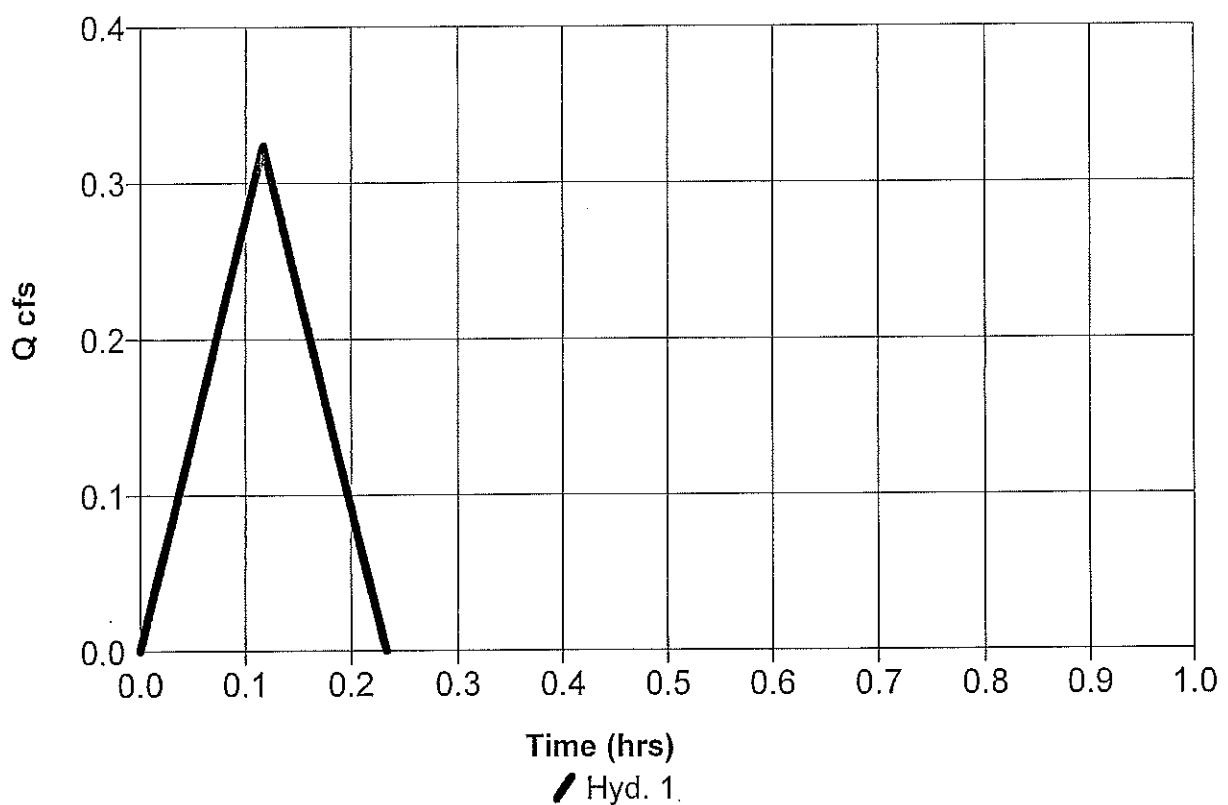
Hydrograph Discharge Table

Time -- Outflow
(hrs   cfs)

0.02	0.05
0.03	0.09
0.05	0.14
0.07	0.18
0.08	0.23
0.10	0.28
0.12	0.32 <<
0.13	0.28
0.15	0.23
0.17	0.18
0.18	0.14
0.20	0.09
0.22	0.05

...End

Hyd. No. 1 - Rational - 100 Yr - Qp = 0.32 cfs - lot 33 pre

Time (hrs)

Hyd. 1

Hydrograph Report

Hyd. No. 2

lot 33 post

Hydrograph type	= Rational	Peak discharge	= 0.34 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.84
Intensity	= 3.372 in/hr	Time of conc. (Tc)	= 7 min
IDF Curve	= clayton.idf	Asc/Rec limb fact	= 1/1
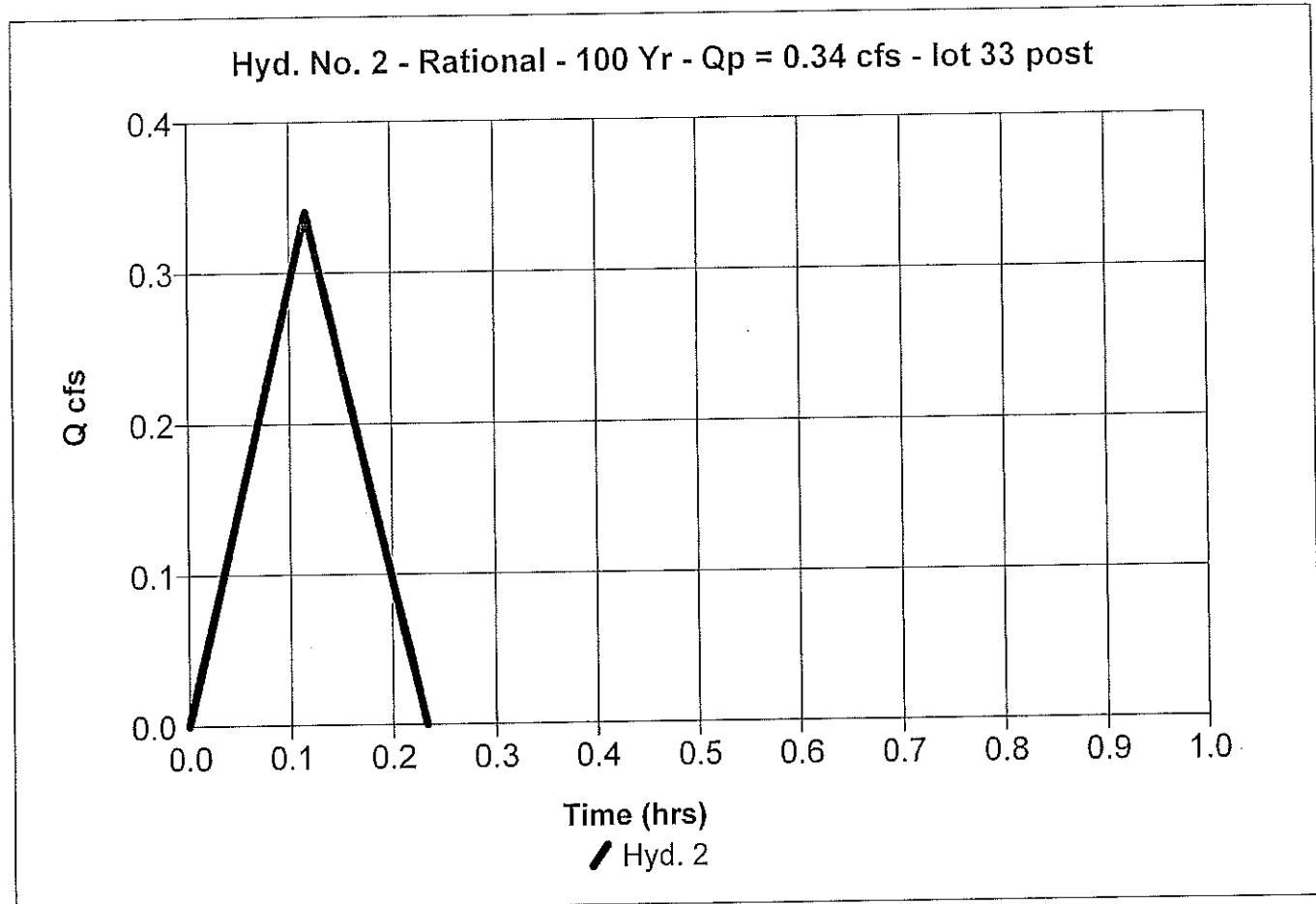
Hydrograph Volume = 143 cuft

Hydrograph Discharge Table

Time -- Outflow
(hrs   cfs)

0.02	0.05
0.03	0.10
0.05	0.15
0.07	0.19
0.08	0.24
0.10	0.29
0.12	0.34 <<
0.13	0.29
0.15	0.24
0.17	0.19
0.18	0.15
0.20	0.10
0.22	0.05

...End

Hyd. No. 2 - Rational - 100 Yr - Qp = 0.34 cfs - lot 33 post

Q cfs

Time (hrs)

/ Hyd. 2

Hydrograph Report

Hyd. No. 3

lot 33 roof inflow

Hydrograph type	= Rational	Peak discharge = 0.14 cfs
Storm frequency	= 100 yrs	Time interval = 1 min
Drainage area	= 0.0 ac	Runoff coeff. = 0.95
Intensity	= 3.883 in/hr	Time of conc. (Tc) = 5 min
IDF Curve	= clayton.idf	Asc/Rec limb fact = 1/1

Hydrograph Volume = 41 cuft
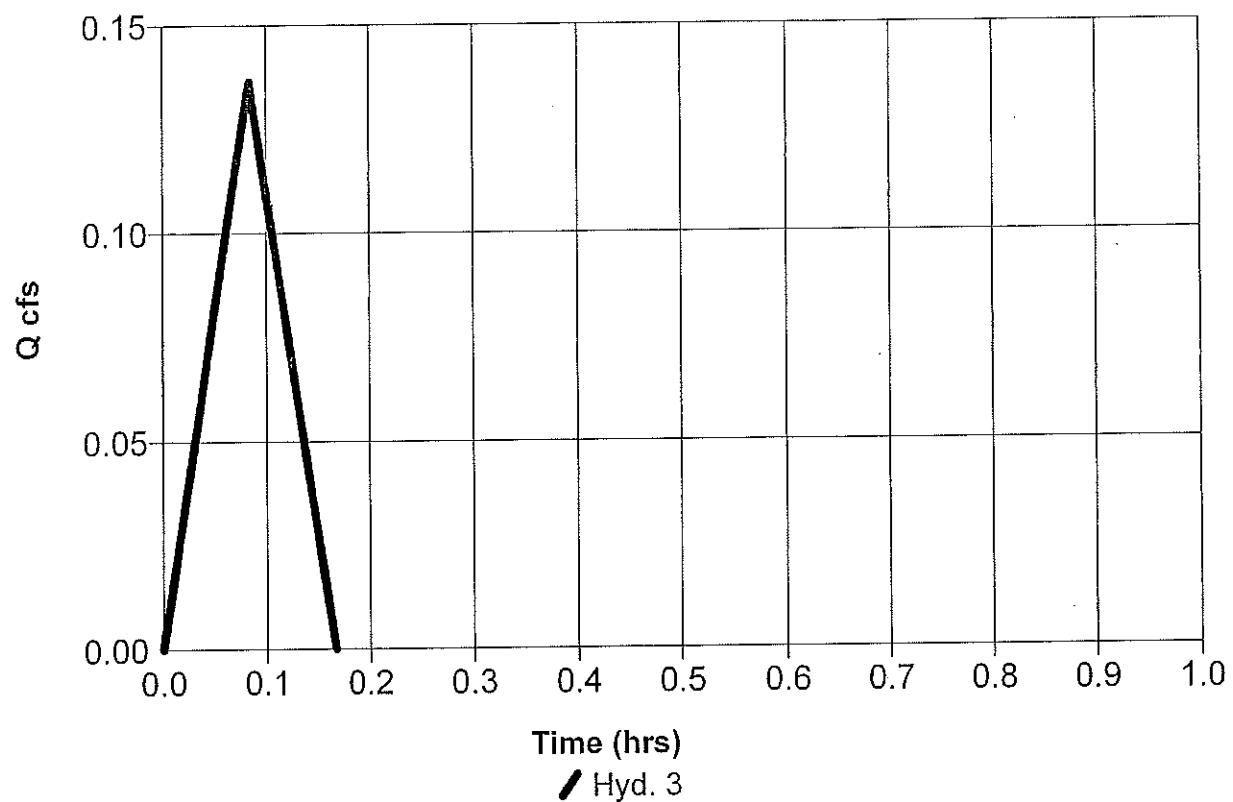
Hydrograph Discharge Table

Time -- Outflow
(hrs   cfs)

0.02	0.03
0.03	0.05
0.05	0.08
0.07	0.11
0.08	0.14 <<
0.10	0.11
0.12	0.08
0.13	0.05
0.15	0.03

...End

Hyd. No. 3 - Rational - 100 Yr - Qp = 0.14 cfs - lot 33 roof inflow

Hydrograph Report

Hyd. No. 4

outflow lot 33

Hydrograph type	= Reservoir	Peak discharge	= 0.04 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 3	Reservoir name	= Bioretention lot
Max. Elevation	= 268.38 ft	Max. Storage	= 36 cuft

Storage Indication method used.
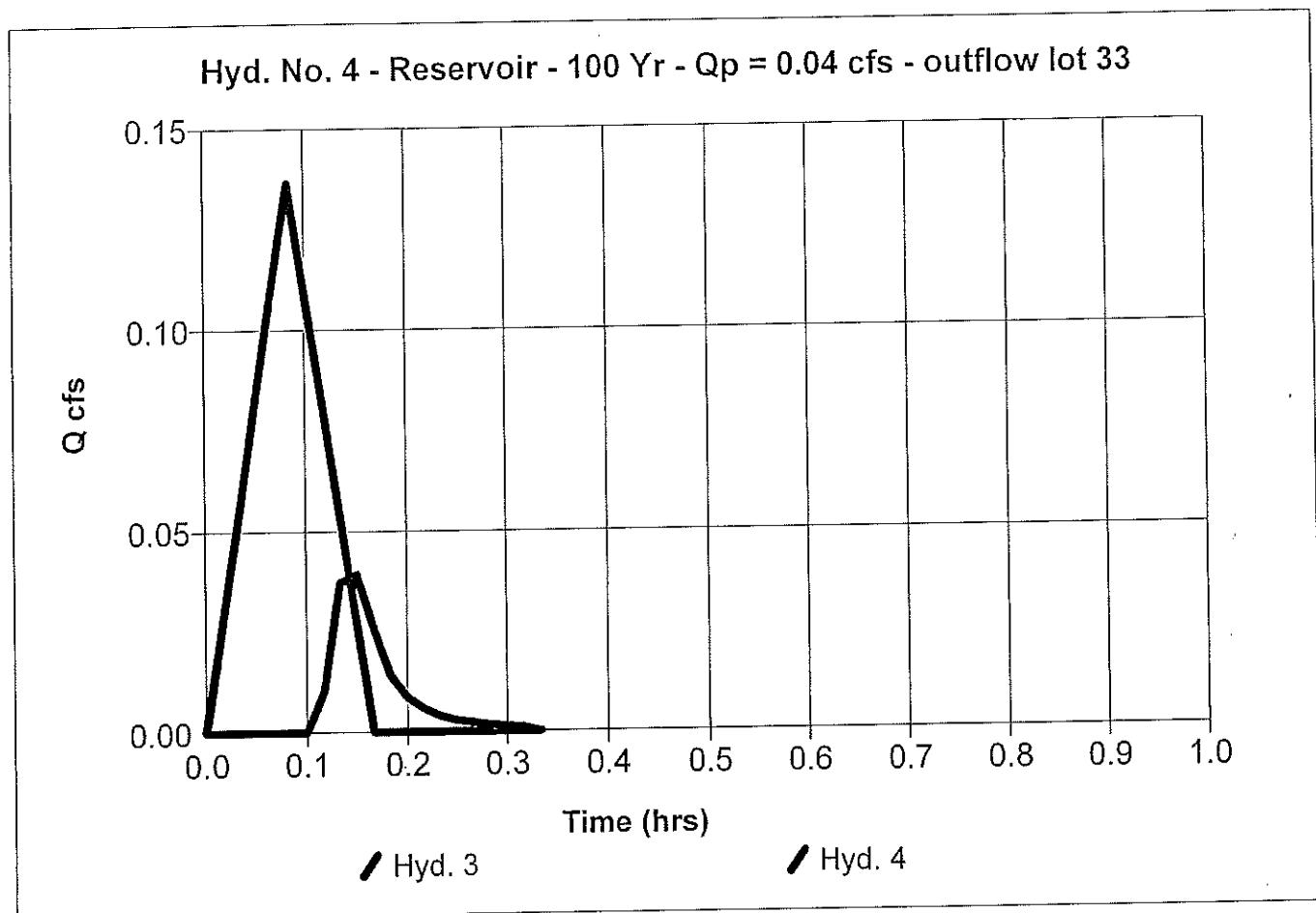
Outflow hydrograph volume = 9 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
0.12	0.08	268.35	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.13	0.05	268.38	-----	-----	-----	-----	0.04	-----	-----	-----	-----	0.04
0.15	0.03	268.38 <<	-----	-----	-----	-----	0.04	-----	-----	-----	-----	0.04 <<
0.17	0.00	268.37	-----	-----	-----	-----	0.03	-----	-----	-----	-----	0.03
0.18	0.00	268.36	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.20	0.00	268.35	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.22	0.00	268.34	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.23	0.00	268.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.25	0.00	268.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.27	0.00	268.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.28	0.00	268.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.30	0.00	268.33	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.32	0.00	268.33	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00

...End

Hyd. No. 4 - Reservoir - 100 Yr - Qp = 0.04 cfs - outflow lot 33

Hydrograph Summary Report

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Maximum storage (cuft)	Hydrograph description
1	Rational	0.35	1	7	147	----	------	------	lot 41 pre
2	Rational	0.38	1	7	158	----	------	------	lot 41 post
3	Rational	0.19	1	5	58	----	------	------	lot 41 upper dwy and roof inflow
4	Reservoir	0.11	1	7	26	3	284.43	41	outflow lot 41

Proj. file: 8922a-lot41.gpw   Return Period: 100 yr   Run date: 03-15-2017

Hydrograph Report

Hyd. No. 1

lot 41 pre

Hydrograph type	= Rational	Peak discharge	= 0.35 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.8
Intensity	= 3.372 in/hr	Time of conc. (Tc)	= 7 min
IDF Curve	= clayton.idf	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 147 cuft
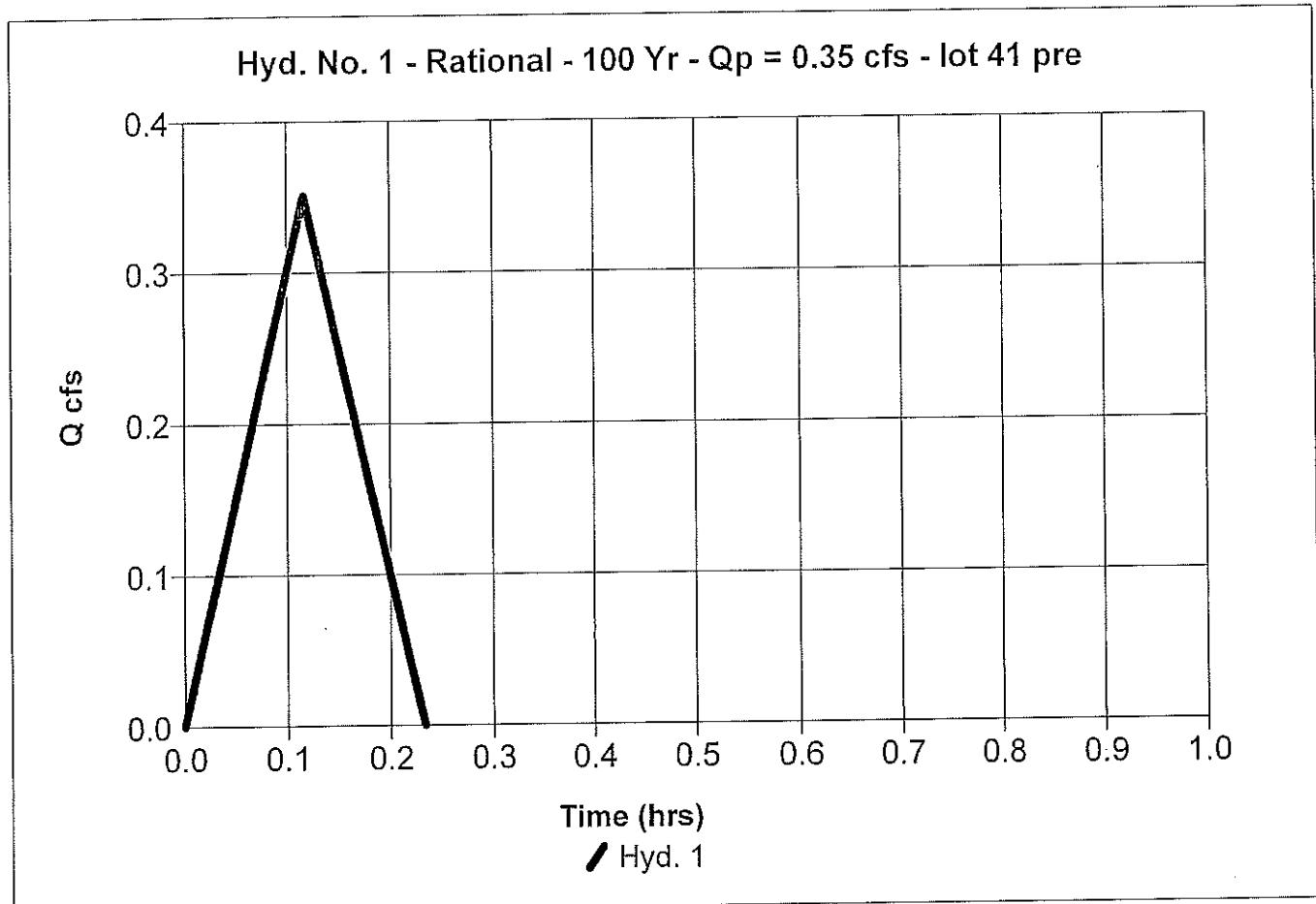
Hydrograph Discharge Table

Time -- Outflow
(hrs   cfs)

0.02	0.05
0.03	0.10
0.05	0.15
0.07	0.20
0.08	0.25
0.10	0.30
0.12	0.35 <<
0.13	0.30
0.15	0.25
0.17	0.20
0.18	0.15
0.20	0.10
0.22	0.05

...End

Hyd. No. 1 - Rational - 100 Yr - Qp = 0.35 cfs - lot 41 pre

Time (hrs)

Hyd. 1

Hydrograph Report

Hyd. No. 2

lot 41 post

Hydrograph type	= Rational	Peak discharge	= 0.38 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Drainage area	= 0.1 ac	Runoff coeff.	= 0.86
Intensity	= 3.372 in/hr	Time of conc. (Tc)	= 7 min
IDF Curve	= clayton.idf	Asc/Rec limb fact	= 1/1

Hydrograph Volume = 158 cuft

Hydrograph Discharge Table
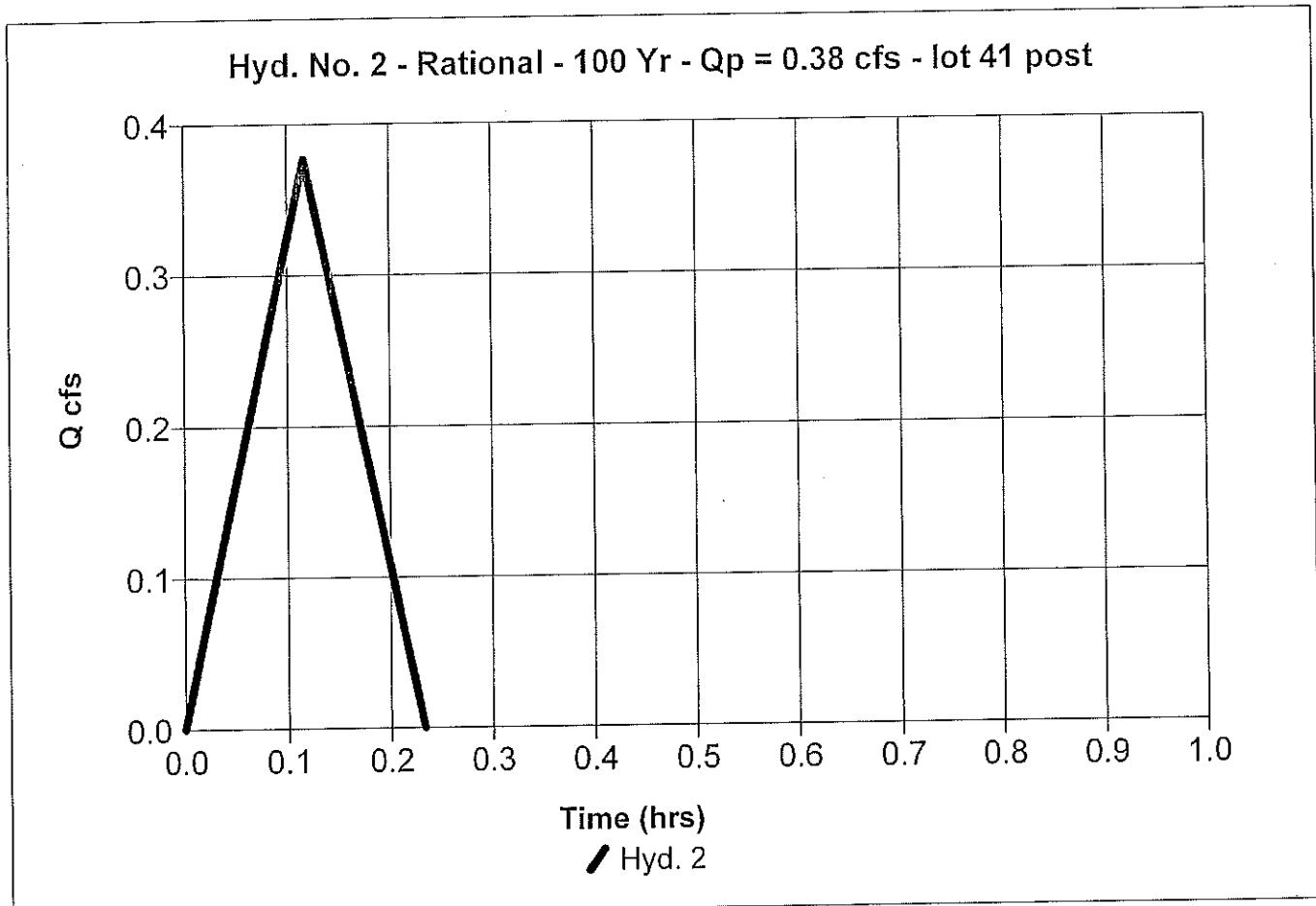
Time -- Outflow
(hrs   cfs)

Time (hrs)	Outflow (cfs)
0.02	0.05
0.03	0.11
0.05	0.16
0.07	0.22
0.08	0.27
0.10	0.32
0.12	0.38 <<
0.13	0.32
0.15	0.27
0.17	0.22
0.18	0.16
0.20	0.11
0.22	0.05

...End

Hyd. No. 2 - Rational - 100 Yr - Qp = 0.38 cfs - lot 41 post

Hyd. 2

Hydrograph Report

Hyd. No. 3

lot 41 upper dwy and roof inflow

Hydrograph type	= Rational	Peak discharge	=	0.19 cfs
Storm frequency	= 100 yrs	Time interval	=	1 min
Drainage area	= 0.1 ac	Runoff coeff.	=	0.95
Intensity	= 3.883 in/hr	Time of conc. (Tc)	=	5 min
IDF Curve	= clayton.idf	Asc/Rec limb fact	=	1/1

Hydrograph Volume = 58 cuft
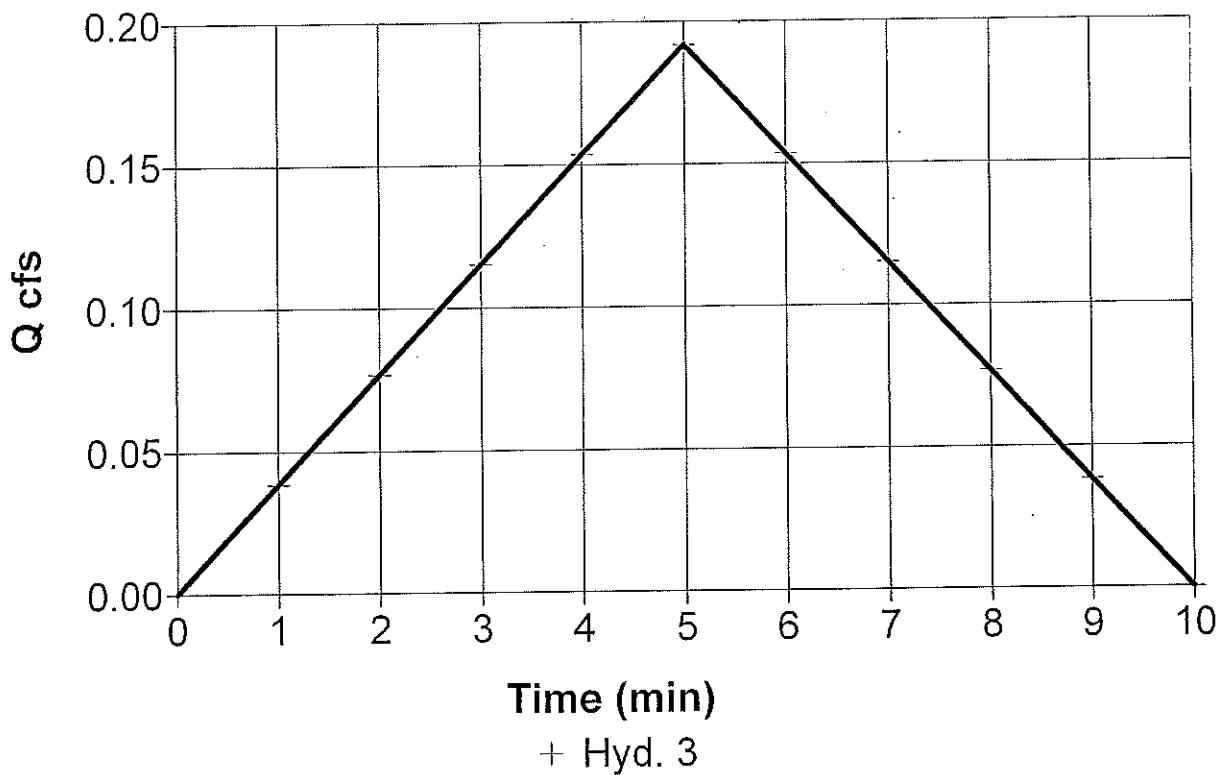
Hydrograph Discharge Table

Time -- Outflow
(hrs   cfs)

0.02	0.04
0.03	0.08
0.05	0.12
0.07	0.15
0.08	0.19 <<
0.10	0.15
0.12	0.12
0.13	0.08
0.15	0.04

...End

3 - Rational - 100 Yr - Qp = 0.19 cfs

Time (min)
+ Hyd. 3

Hydrograph Report

Hyd. No. 4

outflow lot 41

Hydrograph type	= Reservoir	Peak discharge	= 0.11 cfs
Storm frequency	= 100 yrs	Time interval	= 1 min
Inflow hyd. No.	= 3	Reservoir name	= outflow lot 41
Max. Elevation	= 284.43 ft	Max. Storage	= 41 cuft

Storage Indication method used.

Outflow hydrograph volume = 26 cuft

Hydrograph Discharge Table

Time (hrs)	Inflow cfs	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Outflow cfs
0.10	0.15	284.39	-----	-----	-----	-----	0.06	-----	-----	-----	-----	0.06
0.12	0.12	284.43 <<	-----	-----	-----	-----	0.11	-----	-----	-----	-----	0.11 <<
0.13	0.08	284.42	-----	-----	-----	-----	0.10	-----	-----	-----	-----	0.10
0.15	0.04	284.41	-----	-----	-----	-----	0.07	-----	-----	-----	-----	0.07
0.17	0.00	284.38	-----	-----	-----	-----	0.04	-----	-----	-----	-----	0.04
0.18	0.00	284.36	-----	-----	-----	-----	0.02	-----	-----	-----	-----	0.02
0.20	0.00	284.35	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.22	0.00	284.35	-----	-----	-----	-----	0.01	-----	-----	-----	-----	0.01
0.23	0.00	284.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.25	0.00	284.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.27	0.00	284.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.28	0.00	284.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.30	0.00	284.34	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00
0.32	0.00	284.33	-----	-----	-----	-----	0.00	-----	-----	-----	-----	0.00

...End

Reservoir Report

Reservoir No. 1 - outflow lot 41

Pond Data

Bottom LxW = 9.5 x 10.0 ft   Side slope = 0.0:1   Bottom elev. = 284.00 ft   Depth = 1.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	284.00	95	0	0
0.05	284.05	95	5	5
0.10	284.10	95	5	10
0.15	284.15	95	5	14
0.20	284.20	95	5	19
0.25	284.25	95	5	24
0.30	284.30	95	5	29
0.35	284.35	95	5	33
0.40	284.40	95	5	38
0.45	284.45	95	5	43
0.50	284.50	95	5	48
0.55	284.55	95	5	52
0.60	284.60	95	5	57
0.65	284.65	95	5	62
0.70	284.70	95	5	67
0.75	284.75	95	5	71
0.80	284.80	95	5	76
0.85	284.85	95	5	81
0.90	284.90	95	5	86
0.95	284.95	95	5	90
1.00	285.00	95	5	95

Culvert / Orifice Structures

	[A]	[B]	[C]	[D]
Rise in	= 0.0	0.0	0.0	0.0
Span in	= 0.0	0.0	0.0	0.0
No. Barrels	= 0	0	0	0
Invert El. ft	= 0.00	0.00	0.00	0.00
Length ft	= 0.0	0.0	0.0	0.0
Slope %	= 0.00	0.00	0.00	0.00
N-Value	= .013	.013	.000	.000
Orif. Coeff.	= 0.60	0.60	0.00	0.00
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len ft	= 1.05	0.00	0.00	0.00
Crest El. ft	= 284.33	0.00	0.00	0.00
Weir Coeff.	= 3.33	0.00	0.00	0.00
Weir Type	= Riser	---	---	---
Multi-Stage	= No	No	No	No

Exfiltration Rate = 0.00 in/hr/sqft Tailwater Elev. = 0.00 ft

Note: All outflows have been analyzed under inlet and outlet control.

Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.00	0	284.00	---	---	---	---	0.00	---	---	---	---	0.00
0.01	0	284.01	---	---	---	---	0.00	---	---	---	---	0.00
0.01	1	284.01	---	---	---	---	0.00	---	---	---	---	0.00
0.02	1	284.02	---	---	---	---	0.00	---	---	---	---	0.00
0.02	2	284.02	---	---	---	---	0.00	---	---	---	---	0.00
0.03	2	284.03	---	---	---	---	0.00	---	---	---	---	0.00
0.03	3	284.03	---	---	---	---	0.00	---	---	---	---	0.00
0.04	3	284.04	---	---	---	---	0.00	---	---	---	---	0.00
0.04	4	284.04	---	---	---	---	0.00	---	---	---	---	0.00
0.04	4	284.05	---	---	---	---	0.00	---	---	---	---	0.00
0.05	5	284.05	---	---	---	---	0.00	---	---	---	---	0.00
0.06	5	284.06	---	---	---	---	0.00	---	---	---	---	0.00
0.06	6	284.06	---	---	---	---	0.00	---	---	---	---	0.00
0.07	6	284.07	---	---	---	---	0.00	---	---	---	---	0.00
0.07	7	284.07	---	---	---	---	0.00	---	---	---	---	0.00
0.08	7	284.08	---	---	---	---	0.00	---	---	---	---	0.00
0.08	8	284.08	---	---	---	---	0.00	---	---	---	---	

outflow lot '41
Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.09	8	284.09	---	---	---	---	0.00	---	---	---	---	0.00
0.09	9	284.09	---	---	---	---	0.00	---	---	---	---	0.00
0.10	9	284.10	---	---	---	---	0.00	---	---	---	---	0.00
0.10	10	284.10	---	---	---	---	0.00	---	---	---	---	0.00
0.11	10	284.11	---	---	---	---	0.00	---	---	---	---	0.00
0.11	10	284.11	---	---	---	---	0.00	---	---	---	---	0.00
0.12	11	284.12	---	---	---	---	0.00	---	---	---	---	0.00
0.12	11	284.12	---	---	---	---	0.00	---	---	---	---	0.00
0.13	12	284.13	---	---	---	---	0.00	---	---	---	---	0.00
0.13	12	284.13	---	---	---	---	0.00	---	---	---	---	0.00
0.14	13	284.14	---	---	---	---	0.00	---	---	---	---	0.00
0.14	13	284.14	---	---	---	---	0.00	---	---	---	---	0.00
0.15	14	284.15	---	---	---	---	0.00	---	---	---	---	0.00
0.15	14	284.15	---	---	---	---	0.00	---	---	---	---	0.00
0.16	15	284.16	---	---	---	---	0.00	---	---	---	---	0.00
0.16	15	284.16	---	---	---	---	0.00	---	---	---	---	0.00
0.17	16	284.17	---	---	---	---	0.00	---	---	---	---	0.00
0.17	16	284.17	---	---	---	---	0.00	---	---	---	---	0.00
0.18	17	284.18	---	---	---	---	0.00	---	---	---	---	0.00
0.18	17	284.18	---	---	---	---	0.00	---	---	---	---	0.00
0.19	18	284.19	---	---	---	---	0.00	---	---	---	---	0.00
0.19	18	284.19	---	---	---	---	0.00	---	---	---	---	0.00
0.20	19	284.20	---	---	---	---	0.00	---	---	---	---	0.00
0.20	19	284.20	---	---	---	---	0.00	---	---	---	---	0.00
0.21	19	284.21	---	---	---	---	0.00	---	---	---	---	0.00
0.21	20	284.21	---	---	---	---	0.00	---	---	---	---	0.00
0.22	20	284.22	---	---	---	---	0.00	---	---	---	---	0.00
0.22	21	284.22	---	---	---	---	0.00	---	---	---	---	0.00
0.23	21	284.23	---	---	---	---	0.00	---	---	---	---	0.00
0.23	22	284.23	---	---	---	---	0.00	---	---	---	---	0.00
0.24	22	284.24	---	---	---	---	0.00	---	---	---	---	0.00
0.24	23	284.24	---	---	---	---	0.00	---	---	---	---	0.00
0.25	23	284.25	---	---	---	---	0.00	---	---	---	---	0.00
0.25	24	284.25	---	---	---	---	0.00	---	---	---	---	0.00
0.26	24	284.26	---	---	---	---	0.00	---	---	---	---	0.00
0.26	25	284.26	---	---	---	---	0.00	---	---	---	---	0.00
0.27	25	284.27	---	---	---	---	0.00	---	---	---	---	0.00
0.27	26	284.27	---	---	---	---	0.00	---	---	---	---	0.00
0.28	26	284.28	---	---	---	---	0.00	---	---	---	---	0.00
0.28	27	284.28	---	---	---	---	0.00	---	---	---	---	0.00
0.29	27	284.29	---	---	---	---	0.00	---	---	---	---	0.00
0.29	28	284.29	---	---	---	---	0.00	---	---	---	---	0.00
0.30	28	284.30	---	---	---	---	0.00	---	---	---	---	0.00
0.30	29	284.30	---	---	---	---	0.00	---	---	---	---	0.00
0.31	29	284.31	---	---	---	---	0.00	---	---	---	---	0.00
0.31	29	284.31	---	---	---	---	0.00	---	---	---	---	0.00
0.32	30	284.32	---	---	---	---	0.00	---	---	---	---	0.00
0.32	30	284.32	---	---	---	---	0.00	---	---	---	---	0.00
0.33	31	284.33	---	---	---	---	0.00	---	---	---	---	0.00
0.33	31	284.33	---	---	---	---	0.00	---	---	---	---	0.00
0.34	32	284.34	---	---	---	---	0.00	---	---	---	---	0.00
0.34	32	284.34	---	---	---	---	0.00	---	---	---	---	0.01
0.35	33	284.35	---	---	---	---	0.01	---	---	---	---	0.01
0.35	33	284.35	---	---	---	---	0.01	---	---	---	---	0.01
0.36	34	284.36	---	---	---	---	0.01	---	---	---	---	0.02
0.36	34	284.36	---	---	---	---	0.02	---	---	---	---	0.02
0.37	35	284.37	---	---	---	---	0.02	---	---	---	---	0.03
0.37	35	284.37	---	---	---	---	0.03	---	---	---	---	0.03
0.38	36	284.38	---	---	---	---	0.03	---	---	---	---	0.04
0.38	36	284.38	---	---	---	---	0.04	---	---	---	---	0.05
0.39	37	284.39	---	---	---	---	0.05	---	---	---	---	0.05
0.39	37	284.39	---	---	---	---	0.05	---	---	---	---	0.06
0.40	38	284.40	---	---	---	---	0.06	---	---	---	---	0.06
0.40	38	284.40	---	---	---	---	0.06	---	---	---	---	0.07
0.41	38	284.41	---	---	---	---	0.07	---	---	---	---	0.08
0.41	39	284.41	---	---	---	---	0.08	---	---	---	---	0.09
0.42	39	284.42	---	---	---	---	0.09	---	---	---	---	0.09
0.42	40	284.42	---	---	---	---	0.09	---	---	---	---	0.10
0.43	40	284.43	---	---	---	---	0.10	---	---	---	---	0.11
0.43	41	284.43	---	---	---	---	0.11	---	---	---	---	

outflow lot 41
Stage / Storage / Discharge Table

| Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.44	41	284.44	---	---	---	---	0.12	---	---	---	---	0.12
0.44	42	284.44	---	---	---	---	0.13	---	---	---	---	0.13
0.45	42	284.45	---	---	---	---	0.14	---	---	---	---	0.14
0.45	43	284.45	---	---	---	---	0.15	---	---	---	---	0.15
0.46	43	284.46	---	---	---	---	0.15	---	---	---	---	0.15
0.46	44	284.46	---	---	---	---	0.16	---	---	---	---	0.16
0.47	44	284.47	---	---	---	---	0.17	---	---	---	---	0.17
0.47	45	284.47	---	---	---	---	0.18	---	---	---	---	0.18
0.48	45	284.48	---	---	---	---	0.19	---	---	---	---	0.19
0.48	46	284.48	---	---	---	---	0.20	---	---	---	---	0.20
0.49	46	284.49	---	---	---	---	0.21	---	---	---	---	0.21
0.49	47	284.49	---	---	---	---	0.22	---	---	---	---	0.22
0.50	47	284.50	---	---	---	---	0.23	---	---	---	---	0.23
0.50	48	284.50	---	---	---	---	0.25	---	---	---	---	0.25
0.51	48	284.51	---	---	---	---	0.26	---	---	---	---	0.26
0.51	48	284.51	---	---	---	---	0.27	---	---	---	---	0.27
0.52	49	284.52	---	---	---	---	0.28	---	---	---	---	0.28
0.52	49	284.52	---	---	---	---	0.29	---	---	---	---	0.29
0.53	50	284.53	---	---	---	---	0.30	---	---	---	---	0.30
0.53	50	284.53	---	---	---	---	0.31	---	---	---	---	0.31
0.54	51	284.54	---	---	---	---	0.32	---	---	---	---	0.32
0.54	51	284.54	---	---	---	---	0.34	---	---	---	---	0.34
0.55	52	284.55	---	---	---	---	0.35	---	---	---	---	0.35
0.55	52	284.55	---	---	---	---	0.36	---	---	---	---	0.36
0.56	53	284.56	---	---	---	---	0.37	---	---	---	---	0.37
0.56	53	284.56	---	---	---	---	0.39	---	---	---	---	0.39
0.57	54	284.57	---	---	---	---	0.40	---	---	---	---	0.40
0.57	54	284.57	---	---	---	---	0.41	---	---	---	---	0.41
0.58	55	284.58	---	---	---	---	0.42	---	---	---	---	0.42
0.58	55	284.58	---	---	---	---	0.44	---	---	---	---	0.44
0.59	56	284.59	---	---	---	---	0.45	---	---	---	---	0.45
0.59	56	284.59	---	---	---	---	0.46	---	---	---	---	0.46
0.60	57	284.60	---	---	---	---	0.48	---	---	---	---	0.48
0.60	57	284.60	---	---	---	---	0.49	---	---	---	---	0.49
0.61	57	284.61	---	---	---	---	0.50	---	---	---	---	0.50
0.61	58	284.61	---	---	---	---	0.52	---	---	---	---	0.52
0.62	58	284.62	---	---	---	---	0.53	---	---	---	---	0.53
0.62	59	284.62	---	---	---	---	0.55	---	---	---	---	0.55
0.63	59	284.63	---	---	---	---	0.56	---	---	---	---	0.56
0.63	60	284.63	---	---	---	---	0.57	---	---	---	---	0.57
0.64	60	284.64	---	---	---	---	0.59	---	---	---	---	0.59
0.64	61	284.64	---	---	---	---	0.60	---	---	---	---	0.60
0.65	61	284.65	---	---	---	---	0.62	---	---	---	---	0.62
0.65	62	284.65	---	---	---	---	0.63	---	---	---	---	0.63
0.66	62	284.66	---	---	---	---	0.65	---	---	---	---	0.65
0.66	63	284.66	---	---	---	---	0.66	---	---	---	---	0.66
0.67	63	284.67	---	---	---	---	0.68	---	---	---	---	0.68
0.67	64	284.67	---	---	---	---	0.69	---	---	---	---	0.69
0.68	64	284.68	---	---	---	---	0.71	---	---	---	---	0.71
0.68	65	284.68	---	---	---	---	0.72	---	---	---	---	0.72
0.69	65	284.69	---	---	---	---	0.74	---	---	---	---	0.74
0.69	66	284.69	---	---	---	---	0.76	---	---	---	---	0.76
0.70	66	284.70	---	---	---	---	0.77	---	---	---	---	0.77
0.70	67	284.70	---	---	---	---	0.79	---	---	---	---	0.79
0.71	67	284.71	---	---	---	---	0.80	---	---	---	---	0.80
0.71	67	284.71	---	---	---	---	0.82	---	---	---	---	0.82
0.72	68	284.72	---	---	---	---	0.84	---	---	---	---	0.84
0.72	68	284.72	---	---	---	---	0.85	---	---	---	---	0.85
0.73	69	284.73	---	---	---	---	0.87	---	---	---	---	0.87
0.73	69	284.73	---	---	---	---	0.88	---	---	---	---	0.88
0.74	70	284.74	---	---	---	---	0.90	---	---	---	---	0.90
0.74	70	284.74	---	---	---	---	0.92	---	---	---	---	0.92
0.75	71	284.75	---	---	---	---	0.94	---	---	---	---	0.94
0.75	71	284.75	---	---	---	---	0.95	---	---	---	---	0.95
0.76	72	284.76	---	---	---	---	0.97	---	---	---	---	0.97
0.76	72	284.76	---	---	---	---	0.99	---	---	---	---	0.99
0.77	73	284.77	---	---	---	---	1.00	---	---	---	---	1.00
0.77	73	284.77	---	---	---	---	1.02	---	---	---	---	1.02
0.78	74	284.78	---	---	---	---	1.04	---	---	---	---	1.04
0.78	74	284.78	---	---	---	---	1.06	---	---	---	---	1.06

outflow lot 41
Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	Clv D cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	Total cfs
0.79	75	284.79	---	---	---	---	1.07	---	---	---	---	1.07
0.79	75	284.79	---	---	---	---	1.09	---	---	---	---	1.09
0.80	76	284.80	---	---	---	---	1.11	---	---	---	---	1.11
0.80	76	284.80	---	---	---	---	1.13	---	---	---	---	1.13
0.81	76	284.81	---	---	---	---	1.14	---	---	---	---	1.14
0.81	77	284.81	---	---	---	---	1.16	---	---	---	---	1.16
0.82	77	284.82	---	---	---	---	1.18	---	---	---	---	1.18
0.82	78	284.82	---	---	---	---	1.20	---	---	---	---	1.20
0.83	78	284.83	---	---	---	---	1.22	---	---	---	---	1.22
0.83	79	284.83	---	---	---	---	1.24	---	---	---	---	1.24
0.84	79	284.84	---	---	---	---	1.25	---	---	---	---	1.25
0.84	80	284.84	---	---	---	---	1.27	---	---	---	---	1.27
0.85	80	284.85	---	---	---	---	1.29	---	---	---	---	1.29
0.85	81	284.85	---	---	---	---	1.31	---	---	---	---	1.31
0.86	81	284.86	---	---	---	---	1.33	---	---	---	---	1.33
0.86	82	284.86	---	---	---	---	1.35	---	---	---	---	1.35
0.87	82	284.87	---	---	---	---	1.37	---	---	---	---	1.37
0.87	83	284.87	---	---	---	---	1.39	---	---	---	---	1.39
0.88	83	284.88	---	---	---	---	1.41	---	---	---	---	1.41
0.88	84	284.88	---	---	---	---	1.43	---	---	---	---	1.43
0.89	84	284.89	---	---	---	---	1.45	---	---	---	---	1.45
0.89	85	284.89	---	---	---	---	1.47	---	---	---	---	1.47
0.90	85	284.90	---	---	---	---	1.49	---	---	---	---	1.49
0.90	86	284.90	---	---	---	---	1.50	---	---	---	---	1.50
0.91	86	284.91	---	---	---	---	1.52	---	---	---	---	1.52
0.91	86	284.91	---	---	---	---	1.54	---	---	---	---	1.54
0.92	87	284.92	---	---	---	---	1.56	---	---	---	---	1.56
0.92	87	284.92	---	---	---	---	1.58	---	---	---	---	1.58
0.93	88	284.93	---	---	---	---	1.60	---	---	---	---	1.60
0.93	88	284.93	---	---	---	---	1.63	---	---	---	---	1.63
0.94	89	284.94	---	---	---	---	1.65	---	---	---	---	1.65
0.94	89	284.94	---	---	---	---	1.67	---	---	---	---	1.67
0.95	90	284.95	---	---	---	---	1.69	---	---	---	---	1.69
0.95	90	284.95	---	---	---	---	1.71	---	---	---	---	1.71
0.96	91	284.96	---	---	---	---	1.73	---	---	---	---	1.73
0.96	91	284.96	---	---	---	---	1.75	---	---	---	---	1.75
0.97	92	284.97	---	---	---	---	1.77	---	---	---	---	1.77
0.97	92	284.97	---	---	---	---	1.79	---	---	---	---	1.79
0.98	93	284.98	---	---	---	---	1.81	---	---	---	---	1.81
0.98	93	284.98	---	---	---	---	1.83	---	---	---	---	1.83
0.99	94	284.99	---	---	---	---	1.85	---	---	---	---	1.85
0.99	94	284.99	---	---	---	---	1.88	---	---	---	---	1.88
1.00	95	285.00	---	---	---	---	1.90	---	---	---	---	1.90
1.00	95	285.00	---	---	---	---	1.92	---	---	---	---	1.92

...End

Hyd. No. 4 - Reservoir - 100 Yr - Qp = 0.11 cfs - outflow lot 41

*Self treating areas

Areas South of Ross St Terrace High Pnt *(handwritten)*

DMA Name	DMA Area (square feet)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor			
DMA 4	1,741	roof	1	1741			
DMA 5	168	concrete	1	168			
DMA 6	4,759	asphalt	1	4759			
DMA 8	372	concrete	1	372			
DMA 7	590	pavers	0.1	59			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			Proposed Pervious Pavers
				0	IMP		
				0	Sizing	Minimum	IMP Size
				0	Factor	IMP Size	
TOTAL	7630			7099	0.04	284	335

IMP Name: Bioswale 1

Areas North of Ross St Terrace High Pnt *(handwritten)*

DMA Name	DMA Area (square feet)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor			
DMA 9	5,613	asphalt	1	5613			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0	IMP		
				0	Sizing	Minimum	Proposed
				0	Factor	IMP Size	IMP Size
TOTAL	5613			5613	0.04	225	

DMA Name	DMA Area (square feet)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	*Self treating areas		
					41 Clayton Street		
DMA 1	1,624	roof	1	1624			
DMA 3	547	concrete	1	547			
			1	0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0	IMP		
				0	Sizing	Minimum	Proposed
				0	Factor	IMP Size	IMP Size
TOTAL	2171			2171	0.04	87	95

DMA Name	DMA Area (square feet)	Post-Project Surface Type	DMA Runoff Factor	DMA Area x Runoff Factor	IMP Name: Bioswale 1		
					33 Clayton Street		
DMA 2	1,651	roof	1	1651			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0			
				0	IMP		
				0	Sizing	Minimum	Proposed
				0	Factor	IMP Size	IMP Size
TOTAL	1651			1651	0.04	66	95