PRELIMINARY HYDROLOGY REPORT
FOR

TTM 37909

Moreno Valley, CA

Prepared for:

Passco Pacifica, LLC
333 City Boulevard West, 17th Floor
Orange, CA 92866

Initial Report: April 4, 2020

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Preliminary Drainage Report

Saturday, April 04, 2020

INTRODUCTION

The following report and calculations were prepared to analyze the 2, 10 & 100-year storm runoff from the development of the TTM 37909 at the east of Perris Boulevard on the south side of Iris Boulevard in the City of Moreno Valley, Ca. An infiltration basin is proposed for both mitigation of increased runoff from the site and for onsite BMPs for treatment of site runoff.

SITE BACKGROUND

The proposed project is located on the south side Iris Boulevard east of Perris Boulevard. The property is vacant and undeveloped and slopes from northwest to southeast.

There is no offsite areas draining onto the property.

The soil type for the area is Type B per Plate C-1.17 "Hydrologic Soils Group Map for Sunnymead" from the Riverside County Hydrology Manual.

METHODOLOGY

Subareas were determined based on the proposed grading of the site. A link-node model was created for each subarea, with flow path length and elevations shown for the upstream and downstream nodes for the subarea. Peak flowrates were determined for each subarea using the CivilDesign Corporation "RIV" rational method hydrology software. The results of those calculations are shown on the site hydrology map included with this report. Separate maps for the existing and developed condition are included with this report.

ANALYSES/DISCUSSION

Rational method hydrology calculations have been prepared for 2, 10 & 100-year existing and proposed condition for the project site. In the existing condition site drainage sheet flows across the property to southeast towards where it flows offsite across the existing MWD and EMWD easements.

In the proposed condition the site will be a several sub-areas where storm flows will flow to the internal street section and be conveyed to the southeast corner of the property where they will be directed into an infiltration basin system. The infiltration basin will be located in the proposed landscape area onsite adjacent to the WMD and EMWD easement areas along the westerly portion of the property and will discharge to the existing point of discharge.

The drainage areas and peak 2, 10 & 100-year discharges are summarized below:

Rational Method Calculations

Existing Condition

Description	Area (Ac.)	2-year discharge (cfs)	10-year discharge (cfs)	100-year discharge (cfs)	Tc mim.
Area 1	7.25	1.98	5.19	10.0	28.27
Area 2	2.32	0.57	1.56	3.09	34.25
Area 3	0.61	0.15	0.42	0.82	34.82
Area 4	0.64	0.14	0.39	0.77	36.40

Proposed Condition

Description	Area (Ac.)	2-year discharge (cfs)	10-year discharge (cfs)	100-year discharge (cfs)	Tc mim.
Area 1	3.04	2.56	4.11	6.40	14.58
Area 2	4.08	3.54	5.69	8.85	13.77
Area 3 – confluenced	7.70	6.36	10.25	15.97	14.07
Area 4	2.32	0.57	1.56	3.09	34.25
Area 5	0.61	0.15	0.42	0.82	34.82

PROPOSED PROJECT BMP's

Based on soil infiltration test results we have selected an infiltration basin onsite as the method for treatment of onsite flows. The details of the proposed infiltration basin system are described in detail in the Preliminary Water Quality Management Plan prepared for this project.

CONCLUSION

Based on the calculations and proposed improvements, onsite flows can be conveyed to suitable points of disposal, and the proposed site development will not impact offsite properties.

Appendix A
Existing Condition Rational Method Calculations

2-year
10-year
100-year

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex2a.out

TTM 37909 - Iris Avenue
Existing Condition - Area 1
2 year flow rates
RMBB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

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Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =   501.200(Ft.)
Bottom (of initial area) elevation =   491.200(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.01000  s(percent)=       1.00
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   28.266 min.
Rainfall intensity =      0.808(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.338
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.978(CFS)
Total initial stream area =        7.250(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.25 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

TTM37909ex2b

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex2b.out

TTM 37909 - Iris Avenue
Area 2 - undeveloped
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      0.858(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.351
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.271(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.453(CFS)
Depth of flow =   0.184(Ft.), Average velocity =   0.893(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.453(CFS)
  '     '        flow top width =      5.517(Ft.)
  '     '    velocity=    0.893(Ft/s)
  '     '        area =      0.507(Sq.Ft)
  '     '        Froude number =     0.519

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =   13.77 min.
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```
Time of concentration =   38.80 min.
Depth of flow =   0.184(Ft.)
Average velocity =   0.893(Ft/s)
Total irregular channel flow =     0.453(CFS)
Irregular channel normal depth above invert elev. =   0.184(Ft.)
Average velocity of channel(s) =   0.893(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.305
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.689(In/Hr) for a     2.0 year storm
Subarea runoff =      0.299(CFS) for      1.420(Ac.)
Total runoff =      0.570(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.200(Ft.), Average velocity =   0.946(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex2c.out

TTM 37909 - Iris Avenue
Existing Condition - Area 3
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

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Process from Point/Station 200.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      0.861(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.351
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.082(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.133(CFS)
Depth of flow =   0.185(Ft.), Average velocity =   0.774(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.133(CFS)
  '     '        flow top width =      1.854(Ft.)
  '     '    velocity=    0.774(Ft/s)
  '     '        area =      0.172(Sq.Ft)
  '     '        Froude number =     0.448

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =   14.77 min.
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Time of concentration =   39.66 min.
Depth of flow =   0.185(Ft.)
Average velocity =   0.774(Ft/s)
Total irregular channel flow =     0.133(CFS)
Irregular channel normal depth above invert elev. =   0.185(Ft.)
Average velocity of channel(s) =   0.774(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.303
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.682(In/Hr) for a     2.0 year storm
Subarea runoff =      0.070(CFS) for      0.340(Ac.)
Total runoff =      0.152(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.195(Ft.), Average velocity =   0.800(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex2d.out

TTM 37909 - Iris AVenue
Existing Condition - Area 4
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

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Process from Point/Station 200.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   772.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    98.000(Ft.)
Difference in elevation =     1.300(Ft.)
Slope =    0.00168  s(percent)=       0.17
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   36.395 min.
Rainfall intensity =      0.712(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.312
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.142(CFS)
Total initial stream area =        0.640(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            0.64 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex10a.out

TTM 37909 - Iris Avenue
Existing Condition - Area 1
10 year flow rates
RMBB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =   501.200(Ft.)
Bottom (of initial area) elevation =   491.200(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.01000  s(percent)=       1.00
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   28.266 min.
Rainfall intensity =      1.195(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.599
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.192(CFS)
Total initial stream area =        7.250(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.25 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex10b.out

TTM 37909 - Iris Avenue
Area 2 - undeveloped
10 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      1.270(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.612
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.699(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.162(CFS)
Depth of flow =   0.262(Ft.), Average velocity =   1.130(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      1.162(CFS)
  '     '        flow top width =      7.854(Ft.)
  '     '    velocity=    1.130(Ft/s)
  '     '        area =      1.028(Sq.Ft)
  '     '        Froude number =     0.551

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =   10.88 min.
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Time of concentration =   35.91 min.
Depth of flow =   0.262(Ft.)
Average velocity =   1.130(Ft/s)
Total irregular channel flow =     1.162(CFS)
Irregular channel normal depth above invert elev. =   0.262(Ft.)
Average velocity of channel(s) =   1.130(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.575
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.060(In/Hr) for a    10.0 year storm
Subarea runoff =      0.866(CFS) for      1.420(Ac.)
Total runoff =      1.564(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.293(Ft.), Average velocity =   1.217(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
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Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex10c.out

TTM 37909 - Iris Avenue
Existing Condition - Area 3
10 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

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Process from Point/Station 200.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      1.273(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.612
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.210(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.343(CFS)
Depth of flow =   0.264(Ft.), Average velocity =   0.981(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.343(CFS)
  '     '        flow top width =      2.644(Ft.)
  '     '    velocity=    0.981(Ft/s)
  '     '        area =      0.350(Sq.Ft)
  '     '        Froude number =     0.475

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =   11.66 min.
```

```
Time of concentration =   36.55 min.
Depth of flow =   0.264(Ft.)
Average velocity =   0.981(Ft/s)
Total irregular channel flow =     0.343(CFS)
Irregular channel normal depth above invert elev. =   0.264(Ft.)
Average velocity of channel(s) =   0.981(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.573
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.051(In/Hr) for a    10.0 year storm
Subarea runoff =      0.205(CFS) for      0.340(Ac.)
Total runoff =      0.415(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.284(Ft.), Average velocity =   1.029(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex10d.out

TTM 37909 - Iris AVenue
Existing Condition - Area 4
10 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   772.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    98.000(Ft.)
Difference in elevation =     1.300(Ft.)
Slope =    0.00168  s(percent)=       0.17
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   36.395 min.
Rainfall intensity =      1.053(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.574
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.387(CFS)
Total initial stream area =        0.640(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            0.64 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex100a.out

TTM 37909 - Iris Avenue
Existing Condition - Area 1
100 year flow rates
RMBB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =  1000.000(Ft.)
Top (of initial area) elevation =   501.200(Ft.)
Bottom (of initial area) elevation =   491.200(Ft.)
Difference in elevation =    10.000(Ft.)
Slope =    0.01000  s(percent)=       1.00
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   28.266 min.
Rainfall intensity =      1.748(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.789
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.999(CFS)
Total initial stream area =        7.250(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            7.25 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex100b.out

TTM 37909 - Iris Avenue
Area 2 - undeveloped
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      1.858(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.329(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      202.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.251(CFS)
Depth of flow =   0.335(Ft.), Average velocity =   1.333(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      2.251(CFS)
  '     '        flow top width =     10.064(Ft.)
  '     '    velocity=    1.333(Ft/s)
  '     '        area =      1.688(Sq.Ft)
  '     '        Froude number =     0.574

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =    9.23 min.
```

```
Time of concentration =   34.25 min.
Depth of flow =   0.335(Ft.)
Average velocity =   1.333(Ft/s)
Total irregular channel flow =     2.251(CFS)
Irregular channel normal depth above invert elev. =   0.335(Ft.)
Average velocity of channel(s) =   1.333(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.779
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.588(In/Hr) for a   100.0 year storm
Subarea runoff =      1.757(CFS) for      1.420(Ac.)
Total runoff =      3.086(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.378(Ft.), Average velocity =   1.443(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex100c.out

TTM 37909 - Iris Avenue
Existing Condition - Area 3
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 301.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      1.863(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.400(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      301.000 to Point/Station      302.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.652(CFS)
Depth of flow =   0.336(Ft.), Average velocity =   1.152(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.652(CFS)
  '     '        flow top width =      3.364(Ft.)
  '     '    velocity=    1.152(Ft/s)
  '     '        area =      0.566(Sq.Ft)
  '     '        Froude number =     0.495

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =    9.93 min.
```

```
Time of concentration =   34.82 min.
Depth of flow =   0.336(Ft.)
Average velocity =   1.152(Ft/s)
Total irregular channel flow =     0.652(CFS)
Irregular channel normal depth above invert elev. =   0.336(Ft.)
Average velocity of channel(s) =   1.152(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.778
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.575(In/Hr) for a   100.0 year storm
Subarea runoff =      0.417(CFS) for      0.340(Ac.)
Total runoff =      0.817(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.366(Ft.), Average velocity =   1.219(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909ex100d.out

TTM 37909 - Iris AVenue
Existing Condition - Area 4
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 200.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   772.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    98.000(Ft.)
Difference in elevation =     1.300(Ft.)
Slope =    0.00168  s(percent)=       0.17
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   36.395 min.
Rainfall intensity =      1.541(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.776
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.765(CFS)
Total initial stream area =        0.640(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            0.64 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Appendix B
Proposed Condition Rational Method Calculations

2-year
10-year
100-year

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/03/20
File:TTM37909dev2.out

TTM 37909 - Iris Avenue
Developed Condition
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   957.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    93.600(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00596  s(percent)=       0.60
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.578 min.
Rainfall intensity =      1.125(In/Hr) for a     2.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.747
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  36.00
Pervious area fraction =  0.250; Impervious fraction =  0.750
Initial subarea runoff =      2.555(CFS)
Total initial stream area =        3.040(Ac.)
Pervious area fraction = 0.250


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    89.600(Ft.)
Downstream point/station elevation =    88.800(Ft.)
Pipe length  =   129.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     2.555(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     2.555(CFS)
Normal flow depth in pipe =    6.14(In.)
Flow top width inside pipe =   20.94(In.)
Critical Depth =    6.68(In.)
Pipe flow velocity =      4.03(Ft/s)
Travel time through pipe =    0.53 min.
Time of concentration (TC) =    15.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.040(Ac.)
Runoff from this stream =      2.555(CFS)
Time of concentration =   15.11 min.
Rainfall intensity =     1.105(In/Hr)
```

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 870.000(Ft.)
Top (of initial area) elevation = 98.500(Ft.)
Bottom (of initial area) elevation = 92.800(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.00655 s(percent)= 0.66
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.768 min.
Rainfall intensity = 1.157(In/Hr) for a 2.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.749
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1) = 36.00
Pervious area fraction = 0.250; Impervious fraction = 0.750
Initial subarea runoff = 3.536(CFS)
Total initial stream area = 4.080(Ac.)
Pervious area fraction = 0.250

++
Process from Point/Station 200.000 to Point/Station 201.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 4.080(Ac.)
Runoff from this stream = 3.536(CFS)
Time of concentration = 13.77 min.
Rainfall intensity = 1.157(In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	2.555	15.11	1.105
2	3.536	13.77	1.157

Largest stream flow has longer or shorter time of concentration
Qp = 3.536 + sum of

Qa	Tb/Ta	
2.555 *	0.911 =	2.328

```
Qp =      5.864

Total of 2 streams to confluence:
Flow rates before confluence point:
       2.555       3.536
Area of streams before confluence:
        3.040        4.080
Results of confluence:
Total flow rate =      5.864(CFS)
Time of concentration =    13.768 min.
Effective stream area after confluence =      7.120(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    88.800(Ft.)
Downstream point/station elevation =    85.000(Ft.)
Pipe length  =   182.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.864(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     5.864(CFS)
Normal flow depth in pipe =    6.88(In.)
Flow top width inside pipe =   21.70(In.)
Critical Depth =   10.26(In.)
Pipe flow velocity =      7.87(Ft/s)
Travel time through pipe =    0.39 min.
Time of concentration (TC) =    14.15 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.748
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  36.00
Pervious area fraction =  0.250; Impervious fraction =  0.750
Time of concentration =    14.15 min.
Rainfall intensity =      1.141(In/Hr) for a     2.0 year storm
Subarea runoff =      0.495(CFS) for      0.580(Ac.)
Total runoff =      6.359(CFS)  Total area =       7.700(Ac.)
End of computations, total study area =            7.70 (Ac.)
```

The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.250
Area averaged RI index number = 56.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909dev2b.out

TTM 37909 - Iris Avenue
Area 4 - undeveloped
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      0.858(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.351
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.271(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.453(CFS)
Depth of flow =   0.184(Ft.), Average velocity =   0.893(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.453(CFS)
  '     '        flow top width =      5.517(Ft.)
  '     '    velocity=    0.893(Ft/s)
  '     '        area =      0.507(Sq.Ft)
  '     '        Froude number =     0.519

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =   13.77 min.
```

```
Time of concentration =   38.80 min.
Depth of flow =   0.184(Ft.)
Average velocity =   0.893(Ft/s)
Total irregular channel flow =     0.453(CFS)
Irregular channel normal depth above invert elev. =   0.184(Ft.)
Average velocity of channel(s) =   0.893(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.305
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.689(In/Hr) for a     2.0 year storm
Subarea runoff =      0.299(CFS) for      1.420(Ac.)
Total runoff =      0.570(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.200(Ft.), Average velocity =   0.946(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:TTM37909dev2c.out

TTM 37909 - Iris Avenue
Developed Condition - Area 5
2 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 2.00 Antecedent Moisture Condition = 1

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 2.0
Calculated rainfall intensity data:
1 hour intensity = 0.554(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 501.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      0.861(In/Hr) for a     2.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.351
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.082(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.133(CFS)
Depth of flow =   0.185(Ft.), Average velocity =   0.774(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.133(CFS)
  '     '        flow top width =      1.854(Ft.)
  '     '    velocity=    0.774(Ft/s)
  '     '        area =      0.172(Sq.Ft)
  '     '        Froude number =     0.448

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =   14.77 min.
```

```
Time of concentration =   39.66 min.
Depth of flow =   0.185(Ft.)
Average velocity =   0.774(Ft/s)
Total irregular channel flow =     0.133(CFS)
Irregular channel normal depth above invert elev. =   0.185(Ft.)
Average velocity of channel(s) =   0.774(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.303
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 1)  =  49.80
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      0.682(In/Hr) for a     2.0 year storm
Subarea runoff =      0.070(CFS) for      0.340(Ac.)
Total runoff =      0.152(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.195(Ft.), Average velocity =   0.800(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/03/20
File:TTM37909dev10.out

TTM 37909 - Iris Avenue
Developed Condition Areas 1 - 2 & 3
10 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   957.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    93.600(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00596  s(percent)=       0.60
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.578 min.
Rainfall intensity =      1.664(In/Hr) for a    10.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.813
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.250; Impervious fraction =  0.750
Initial subarea runoff =      4.112(CFS)
Total initial stream area =        3.040(Ac.)
Pervious area fraction = 0.250


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    89.600(Ft.)
Downstream point/station elevation =    88.800(Ft.)
Pipe length  =   129.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     4.112(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     4.112(CFS)
Normal flow depth in pipe =    7.84(In.)
Flow top width inside pipe =   22.51(In.)
Critical Depth =    8.53(In.)
Pipe flow velocity =      4.61(Ft/s)
Travel time through pipe =    0.47 min.
Time of concentration (TC) =    15.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.040(Ac.)
Runoff from this stream =      4.112(CFS)
Time of concentration =   15.04 min.
Rainfall intensity =     1.638(In/Hr)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________________
Initial area flow distance =   870.000(Ft.)
Top (of initial area) elevation =    98.500(Ft.)
Bottom (of initial area) elevation =    92.800(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00655  s(percent)=       0.66
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   13.768 min.
Rainfall intensity =      1.712(In/Hr) for a    10.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.815
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.250; Impervious fraction =  0.750
Initial subarea runoff =      5.689(CFS)
Total initial stream area =        4.080(Ac.)
Pervious area fraction = 0.250


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** CONFLUENCE OF MINOR STREAMS ****
_____________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =      4.080(Ac.)
Runoff from this stream =      5.689(CFS)
Time of concentration =   13.77 min.
Rainfall intensity =     1.712(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1        4.112     15.04                1.638
2        5.689     13.77                1.712
Largest stream flow has longer or shorter time of concentration
Qp =      5.689 + sum of
          Qa          Tb/Ta
           4.112 *    0.915 =      3.763
```

```
Qp =      9.452

Total of 2 streams to confluence:
Flow rates before confluence point:
       4.112       5.689
Area of streams before confluence:
        3.040        4.080
Results of confluence:
Total flow rate =      9.452(CFS)
Time of concentration =    13.768 min.
Effective stream area after confluence =      7.120(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    88.800(Ft.)
Downstream point/station elevation =    85.000(Ft.)
Pipe length  =   182.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.452(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     9.452(CFS)
Normal flow depth in pipe =    8.84(In.)
Flow top width inside pipe =   23.15(In.)
Critical Depth =   13.18(In.)
Pipe flow velocity =      9.00(Ft/s)
Travel time through pipe =    0.34 min.
Time of concentration (TC) =    14.11 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.814
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  56.00
Pervious area fraction =  0.250; Impervious fraction =  0.750
Time of concentration =    14.11 min.
Rainfall intensity =      1.691(In/Hr) for a    10.0 year storm
Subarea runoff =      0.798(CFS) for      0.580(Ac.)
Total runoff =     10.250(CFS)  Total area =       7.700(Ac.)
End of computations, total study area =            7.70 (Ac.)
```

The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.250
Area averaged RI index number = 56.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:ttm37909dev10b.out

TTM 37909 - Iris Avenue
Area 4 - undeveloped
10 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.820(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      1.270(In/Hr) for a    10.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.612
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.699(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      1.162(CFS)
Depth of flow =   0.262(Ft.), Average velocity =   1.130(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      1.162(CFS)
  '     '        flow top width =      7.854(Ft.)
  '     '    velocity=    1.130(Ft/s)
  '     '        area =      1.028(Sq.Ft)
  '     '        Froude number =     0.551

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =   10.88 min.
```

```
Time of concentration =   35.91 min.
Depth of flow =   0.262(Ft.)
Average velocity =   1.130(Ft/s)
Total irregular channel flow =     1.162(CFS)
Irregular channel normal depth above invert elev. =   0.262(Ft.)
Average velocity of channel(s) =   1.130(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.575
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.060(In/Hr) for a    10.0 year storm
Subarea runoff =      0.866(CFS) for      1.420(Ac.)
Total runoff =      1.564(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.293(Ft.), Average velocity =   1.217(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:ttm37909dev100c.out

TTM 37909 - Iris Avenue
Developed Condition - Area 5
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 501.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      1.863(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.400(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.652(CFS)
Depth of flow =   0.336(Ft.), Average velocity =   1.152(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.652(CFS)
  '     '        flow top width =      3.364(Ft.)
  '     '    velocity=    1.152(Ft/s)
  '     '        area =      0.566(Sq.Ft)
  '     '        Froude number =     0.495

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =    9.93 min.
```

```
Time of concentration =   34.82 min.
Depth of flow =   0.336(Ft.)
Average velocity =   1.152(Ft/s)
Total irregular channel flow =     0.652(CFS)
Irregular channel normal depth above invert elev. =   0.336(Ft.)
Average velocity of channel(s) =   1.152(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.778
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.575(In/Hr) for a   100.0 year storm
Subarea runoff =      0.417(CFS) for      0.340(Ac.)
Total runoff =      0.817(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.366(Ft.), Average velocity =   1.219(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

TTM37909deva100

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/03/20
File:TTM37909deva100.out

TTM 37909 - Iris Avenue
Developed Condition Areas 1 - 2 & 3
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   957.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    93.600(Ft.)
Difference in elevation =     5.700(Ft.)
Slope =    0.00596  s(percent)=       0.60
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   14.578 min.
Rainfall intensity =      2.434(In/Hr) for a   100.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.865
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  74.80
Pervious area fraction =  0.250; Impervious fraction =  0.750
Initial subarea runoff =      6.401(CFS)
Total initial stream area =        3.040(Ac.)
Pervious area fraction = 0.250


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    89.600(Ft.)
Downstream point/station elevation =    88.800(Ft.)
Pipe length  =   129.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.401(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =     6.401(CFS)
Normal flow depth in pipe =    9.95(In.)
Flow top width inside pipe =   23.65(In.)
Critical Depth =   10.74(In.)
Pipe flow velocity =      5.21(Ft/s)
Travel time through pipe =    0.41 min.
Time of concentration (TC) =    14.99 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.500 to Point/Station      201.500
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      3.040(Ac.)
Runoff from this stream =      6.401(CFS)
Time of concentration =   14.99 min.
Rainfall intensity =     2.401(In/Hr)
```

++
Process from Point/Station 200.000 to Point/Station 201.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 870.000(Ft.)
Top (of initial area) elevation = 98.500(Ft.)
Bottom (of initial area) elevation = 92.800(Ft.)
Difference in elevation = 5.700(Ft.)
Slope = 0.00655 s(percent)= 0.66
TC = k(0.336)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 13.768 min.
Rainfall intensity = 2.505(In/Hr) for a 100.0 year storm
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.866
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3) = 74.80
Pervious area fraction = 0.250; Impervious fraction = 0.750
Initial subarea runoff = 8.849(CFS)
Total initial stream area = 4.080(Ac.)
Pervious area fraction = 0.250

++
Process from Point/Station 200.000 to Point/Station 201.000
**** CONFLUENCE OF MINOR STREAMS ****

Along Main Stream number: 1 in normal stream number 2
Stream flow area = 4.080(Ac.)
Runoff from this stream = 8.849(CFS)
Time of concentration = 13.77 min.
Rainfall intensity = 2.505(In/Hr)
Summary of stream data:

Stream No.	Flow rate (CFS)	TC (min)	Rainfall Intensity (In/Hr)
1	6.401	14.99	2.401
2	8.849	13.77	2.505

Largest stream flow has longer or shorter time of concentration
Qp = 8.849 + sum of

Qa	Tb/Ta	
6.401 *	0.918 =	5.879

```
Qp =     14.728

Total of 2 streams to confluence:
Flow rates before confluence point:
       6.401       8.849
Area of streams before confluence:
        3.040        4.080
Results of confluence:
Total flow rate =     14.728(CFS)
Time of concentration =    13.768 min.
Effective stream area after confluence =      7.120(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** PIPEFLOW TRAVEL TIME (User specified size) ****
________________________________________________________________________
Upstream point/station elevation =    88.800(Ft.)
Downstream point/station elevation =    85.000(Ft.)
Pipe length  =   182.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.728(CFS)
Given pipe size =     24.00(In.)
Calculated individual pipe flow  =    14.728(CFS)
Normal flow depth in pipe =   11.30(In.)
Flow top width inside pipe =   23.96(In.)
Critical Depth =   16.59(In.)
Pipe flow velocity =     10.13(Ft/s)
Travel time through pipe =    0.30 min.
Time of concentration (TC) =    14.07 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.500 to Point/Station      202.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
MOBILE HOME PARK subarea type
Runoff Coefficient = 0.865
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  74.80
Pervious area fraction =  0.250; Impervious fraction =  0.750
Time of concentration =    14.07 min.
Rainfall intensity =      2.478(In/Hr) for a   100.0 year storm
Subarea runoff =      1.244(CFS) for      0.580(Ac.)
Total runoff =     15.972(CFS)  Total area =       7.700(Ac.)
End of computations, total study area =            7.70 (Ac.)
```

The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.250
Area averaged RI index number = 56.0

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:ttm37909dev100b.out

TTM 37909 - Iris Avenue
Area 4 - undeveloped
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 401.000
**** INITIAL AREA EVALUATION ****

```
Initial area flow distance =   564.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00585  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   25.022 min.
Rainfall intensity =      1.858(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      1.329(CFS)
Total initial stream area =        0.900(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      401.000 to Point/Station      402.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      2.251(CFS)
Depth of flow =   0.335(Ft.), Average velocity =   1.333(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              2.00
        2             10.00              1.00
        3             20.00              0.00
        4             40.00              1.00
        5             50.00              2.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      2.251(CFS)
  '     '        flow top width =     10.064(Ft.)
  '     '    velocity=    1.333(Ft/s)
  '     '        area =      1.688(Sq.Ft)
  '     '        Froude number =     0.574

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    90.200(Ft.)
Flow length =   738.000(Ft.)
Travel time  =    9.23 min.
```

```
Time of concentration =   34.25 min.
Depth of flow =   0.335(Ft.)
Average velocity =   1.333(Ft/s)
Total irregular channel flow =     2.251(CFS)
Irregular channel normal depth above invert elev. =   0.335(Ft.)
Average velocity of channel(s) =   1.333(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.779
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.588(In/Hr) for a   100.0 year storm
Subarea runoff =      1.757(CFS) for      1.420(Ac.)
Total runoff =      3.086(CFS)  Total area =       2.320(Ac.)
Depth of flow =   0.378(Ft.), Average velocity =   1.443(Ft/s)
End of computations, total study area =            2.32 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2014 Version 9.0
Rational Hydrology Study Date: 04/04/20
File:ttm37909dev100c.out

TTM 37909 - Iris Avenue
Developed Condition - Area 5
100 year flow rates
RMB

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6288

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Sunnymead-Moreno] area used.
10 year storm 10 minute intensity = 2.010(In/Hr)
10 year storm 60 minute intensity = 0.820(In/Hr)
100 year storm 10 minute intensity = 2.940(In/Hr)
100 year storm 60 minute intensity = 1.200(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.200(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 400.000 to Point/Station 501.000
**** INITIAL AREA EVALUATION ****

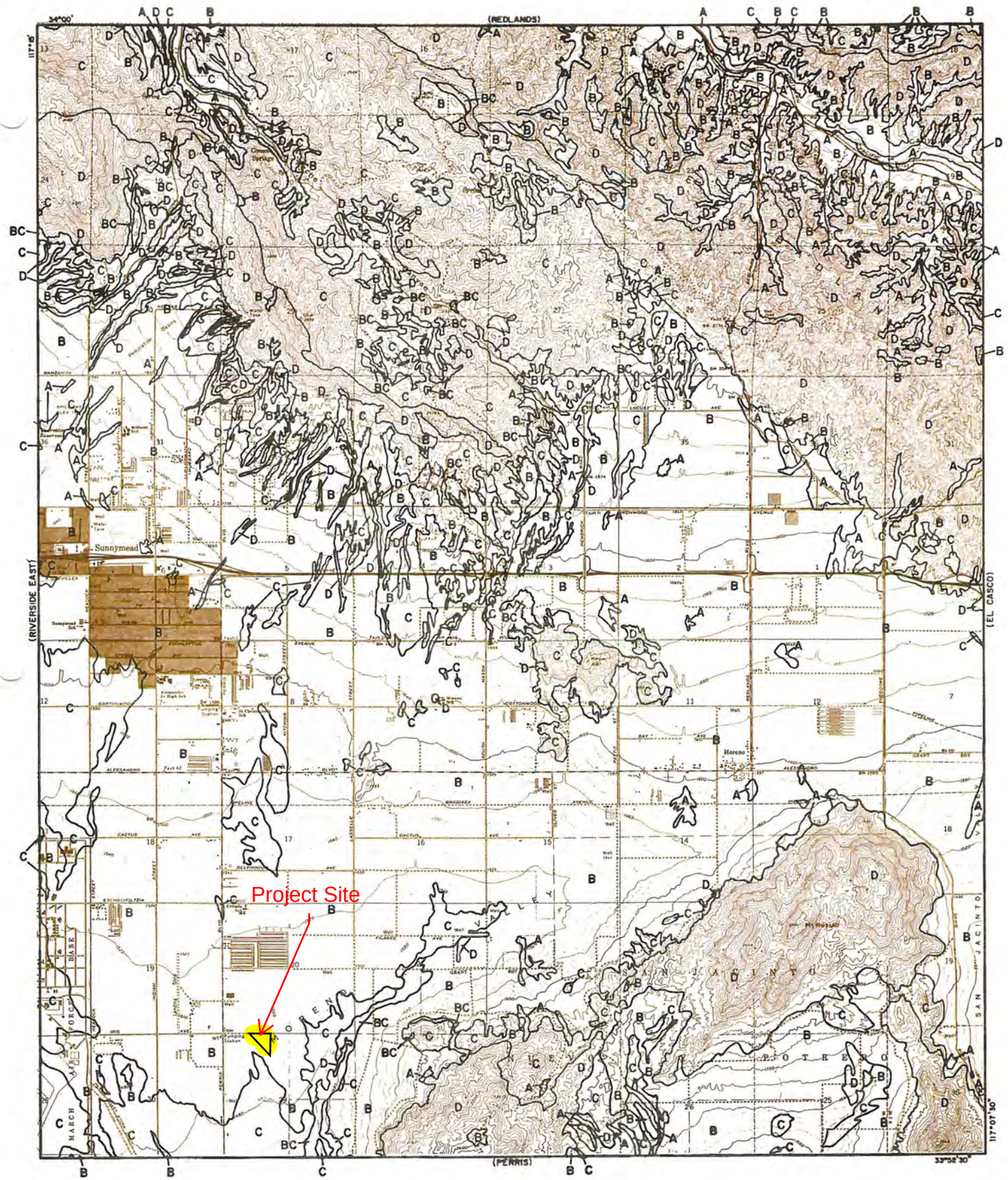
```
Initial area flow distance =   559.000(Ft.)
Top (of initial area) elevation =    99.300(Ft.)
Bottom (of initial area) elevation =    96.000(Ft.)
Difference in elevation =     3.300(Ft.)
Slope =    0.00590  s(percent)=       0.59
TC = k(0.710)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.889 min.
Rainfall intensity =      1.863(In/Hr) for a   100.0 year storm
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.795
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      0.400(CFS)
Total initial stream area =        0.270(Ac.)
Pervious area fraction = 1.000


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      501.000 to Point/Station      502.000
**** IRREGULAR CHANNEL FLOW TRAVEL TIME ****
________________________________________________________________________
Estimated mean flow rate at midpoint of channel =      0.652(CFS)
Depth of flow =   0.336(Ft.), Average velocity =   1.152(Ft/s)
        ******* Irregular Channel Data ***********
------------------------------------------------------------------
Information entered for subchannel number 1 :
Point number      'X' coordinate     'Y' coordinate
        1              0.00              1.00
        2              2.50              0.50
        3              5.00              0.00
        4              7.50              0.50
        5             10.00              1.00
Manning's 'N' friction factor =   0.030
------------------------------------------------------------------
Sub-Channel flow  =      0.652(CFS)
  '     '        flow top width =      3.364(Ft.)
  '     '    velocity=    1.152(Ft/s)
  '     '        area =      0.566(Sq.Ft)
  '     '        Froude number =     0.495

Upstream point elevation =    96.000(Ft.)
Downstream point elevation =    91.900(Ft.)
Flow length =   686.000(Ft.)
Travel time  =    9.93 min.
```

```
Time of concentration =   34.82 min.
Depth of flow =   0.336(Ft.)
Average velocity =   1.152(Ft/s)
Total irregular channel flow =     0.652(CFS)
Irregular channel normal depth above invert elev. =   0.336(Ft.)
Average velocity of channel(s) =   1.152(Ft/s)
 Adding area flow to channel
UNDEVELOPED (fair cover) subarea
Runoff Coefficient = 0.778
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 1.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 3)  =  84.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Rainfall intensity =      1.575(In/Hr) for a   100.0 year storm
Subarea runoff =      0.417(CFS) for      0.340(Ac.)
Total runoff =      0.817(CFS)  Total area =       0.610(Ac.)
Depth of flow =   0.366(Ft.), Average velocity =   1.219(Ft/s)
End of computations, total study area =            0.61 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  69.0
```



LEGEND

—— SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

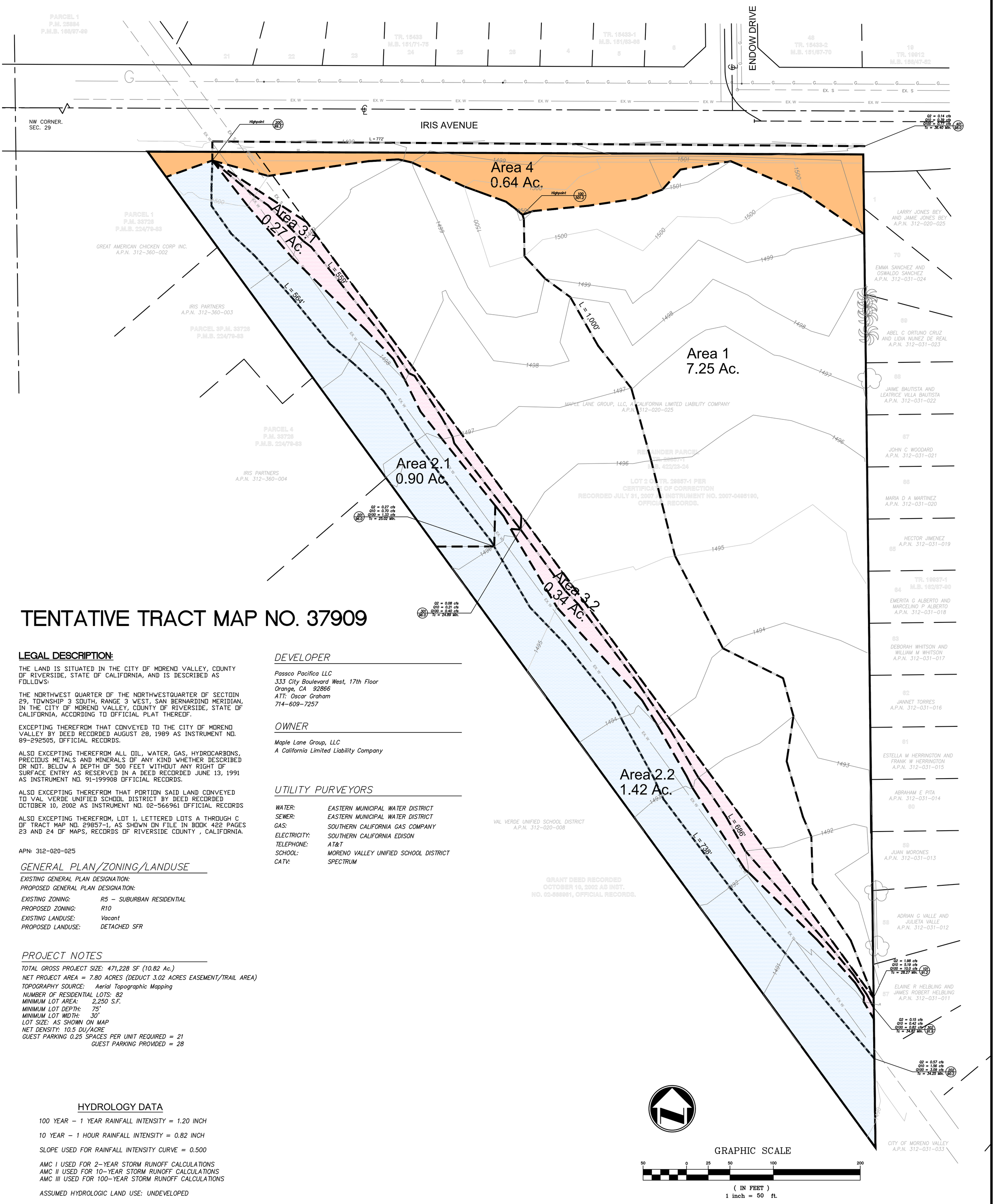
N

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR SUNNYMEAD

PLATE C-1.17

Tentative Tract Map No. 37909



TENTATIVE TRACT MAP NO. 37909

LEGAL DESCRIPTION:

THE LAND IS SITUATED IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

THE NORTHWEST QUARTER OF THE NORTHWESTQUARTER OF SECTOIN 29, TOWNSHIP 3 SOUTH, RANGE 3 WEST, SAN BERNARDINO MERIDIAN, IN THE CITY OF MORENO VALLEY, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, ACCORDING TO OFFICIAL PLAT THEREOF.

EXCEPTING THEREFROM THAT CONVEYED TO THE CITY OF MORENO VALLEY BY DEED RECORDED AUGUST 28, 1989 AS INSTRUMENT NO. 89-292505, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM ALL OIL, WATER, GAS, HYDROCARBONS, PRECIOUS METALS AND MINERALS OF ANY KIND WHETHER DESCRIBED OR NOT. BELOW A DEPTH OF 500 FEET WITHOUT ANY RIGHT OF SURFACE ENTRY AS RESERVED IN A DEED RECORDED JUNE 13, 1991 AS INSTRUMENT NO. 91-199908 OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION SAID LAND CONVEYED TO VAL VERDE UNIFIED SCHOOL DISTRICT BY DEED RECORDED OCTOBER 10, 2002 AS INSTRUMENT NO. 02-566961 OFFICIAL RECORDS

ALSO EXCEPTING THEREFROM, LOT 1, LETTERED LOTS A THROUGH C OF TRACT MAP NO. 29857-1, AS SHOWN ON FILE IN BOOK 422 PAGES 23 AND 24 OF MAPS, RECORDS OF RIVERSIDE COUNTY , CALIFORNIA.

APN: 312-020-025

GENERAL PLAN/ZONING/LANDUSE

EXISTING GENERAL PLAN DESIGNATION:
PROPOSED GENERAL PLAN DESIGNATION:

EXISTING ZONING:	*R5 – SUBURBAN RESIDENTIAL*
PROPOSED ZONING:	*R10*
EXISTING LANDUSE:	*Vacant*
PROPOSED LANDUSE:	*DETACHED SFR*

PROJECT NOTES

TOTAL GROSS PROJECT SIZE: 471,228 SF (10.82 Ac.)
NET PROJECT AREA = 7.80 ACRES (DEDUCT 3.02 ACRES EASEMENT/TRAIL AREA)
TOPOGRAPHY SOURCE: Aerial Topographic Mapping
NUMBER OF RESIDENTIAL LOTS: 82
MINIMUM LOT AREA: 2,250 S.F.
MINIMUM LOT DEPTH: 75'
MINIMUM LOT WIDTH: 30'
LOT SIZE: AS SHOWN ON MAP
NET DENSITY: 10.5 DU/ACRE
GUEST PARKING 0.25 SPACES PER UNIT REQUIRED = 21
GUEST PARKING PROVIDED = 28

DEVELOPER

Passco Pacifica LLC
333 City Boulevard West, 17th Floor
Orange, CA 92866
ATT: Oscar Graham
714-609-7257

OWNER

Maple Lane Group, LLC
A California Limited Liability Company

UTILITY PURVEYORS

WATER:	*EASTERN MUNICIPAL WATER DISTRICT*
SEWER:	*EASTERN MUNICIPAL WATER DISTRICT*
GAS:	*SOUTHERN CALIFORNIA GAS COMPANY*
ELECTRICITY:	*SOUTHERN CALIFORNIA EDISON*
TELEPHONE:	*AT&T*
SCHOOL:	*MORENO VALLEY UNIFIED SCHOOL DISTRICT*
CATV:	*SPECTRUM*

HYDROLOGY DATA

100 YEAR – 1 YEAR RAINFALL INTENSITY = 1.20 INCH

10 YEAR – 1 HOUR RAINFALL INTENSITY = 0.82 INCH

SLOPE USED FOR RAINFALL INTENSITY CURVE = 0.500

AMC I USED FOR 2-YEAR STORM RUNOFF CALCULATIONS
AMC II USED FOR 10-YEAR STORM RUNOFF CALCULATIONS
AMC III USED FOR 100-YEAR STORM RUNOFF CALCULATIONS

ASSUMED HYDROLOGIC LAND USE: UNDEVELOPED

SOIL TYPE B

HYDROLOGY LEGEND

Q100 = 100-YEAR FLOW RATE

Q10 = 10-YEAR FLOW RATE

Q2 = 2-YEAR FLOW RATE

Tc = TIME OF CONCENTRATION – MINUTES

L = FLOW PATH LENGTH IN FEET

101 / 54.8 — *NODE NUMBER / ELEVATION*

DRAINAGE AREA BOUNDARY

DRAINAGE FLOW PATH

- AREA 1 - 7.25 ACRES
- AREA 2 - 2.32 ACRES
- AREA 3 - 0.61 ACRES
- AREA 4 - 0.64 ACRES

REGISTERED PROFESSIONAL ENGINEER — ROBERT MARK BEERS — No. 39405 Exp. 12-31-21 — CIVIL — STATE OF CALIFORNIA

ROBERT BEERS
8175 Limonite Avenue, Suite E
Jurupa Valley, CA 92509
Ph. (951) 317-2041 Fax (909) 360-2070

Date _____ Robert M. Beers R.C.E. 39405 Expires 12-31-21

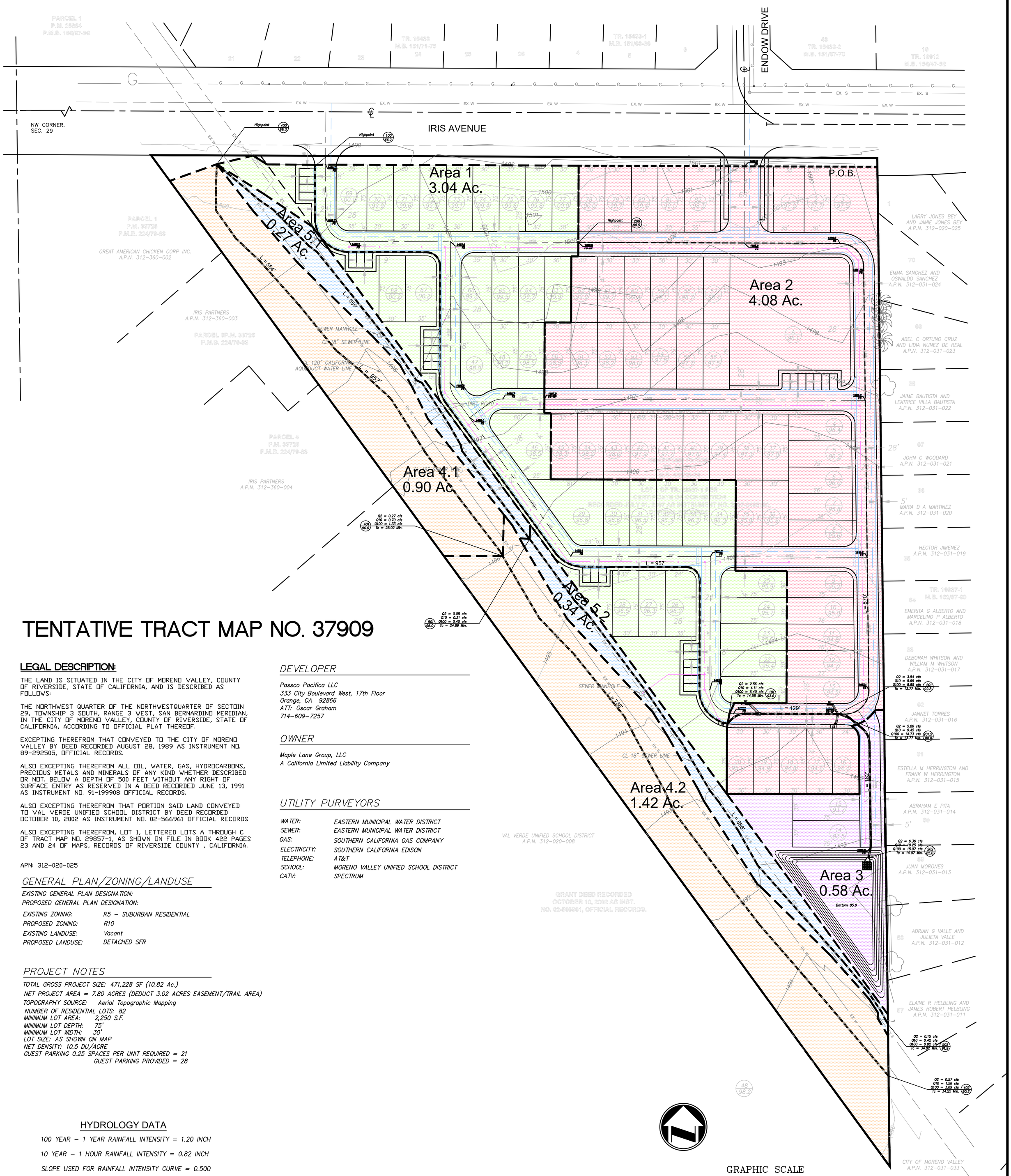
PREPARED FOR:

Passco Pacifica LLC
333 City Boulevard West
17th Floor
Orange, CA 92866
PHONE: (714) 609-7257

TTM 37909
Existing Condition
City of Moreno Valley
CALIFORNIA

DATE April 4, 2020
JOB NO.
DRAWN BY R.A.H.
CHECKED BY R.M.B.
SHEET 1 OF 1

Tentative Tract Map No. 37909



TENTATIVE TRACT MAP NO. 37909

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EXCEPTING THEREFROM THAT CONVEYED TO THE CITY OF MORENO VALLEY BY DEED RECORDED AUGUST 28, 1989 AS INSTRUMENT NO. 89-292505, OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM ALL OIL, WATER, GAS, HYDROCARBONS, PRECIOUS METALS AND MINERALS OF ANY KIND WHETHER DESCRIBED OR NOT. BELOW A DEPTH OF 500 FEET WITHOUT ANY RIGHT OF SURFACE ENTRY AS RESERVED IN A DEED RECORDED JUNE 13, 1991 AS INSTRUMENT NO. 91-199908 OFFICIAL RECORDS.

ALSO EXCEPTING THEREFROM THAT PORTION SAID LAND CONVEYED TO VAL VERDE UNIFIED SCHOOL DISTRICT BY DEED RECORDED OCTOBER 10, 2002 AS INSTRUMENT NO. 02-566961 OFFICIAL RECORDS

ALSO EXCEPTING THEREFROM, LOT 1, LETTERED LOTS A THROUGH C OF TRACT MAP NO. 29857-1, AS SHOWN ON FILE IN BOOK 422 PAGES 23 AND 24 OF MAPS, RECORDS OF RIVERSIDE COUNTY , CALIFORNIA.

APN: 312-020-025

GENERAL PLAN/ZONING/LANDUSE

EXISTING GENERAL PLAN DESIGNATION:
PROPOSED GENERAL PLAN DESIGNATION:

EXISTING ZONING:	*R5 – SUBURBAN RESIDENTIAL*
PROPOSED ZONING:	*R10*
EXISTING LANDUSE:	*Vacant*
PROPOSED LANDUSE:	*DETACHED SFR*

PROJECT NOTES

TOTAL GROSS PROJECT SIZE: 471,228 SF (10.82 Ac.)
NET PROJECT AREA = 7.80 ACRES (DEDUCT 3.02 ACRES EASEMENT/TRAIL AREA)
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NUMBER OF RESIDENTIAL LOTS: 82
MINIMUM LOT AREA: 2,250 S.F.
MINIMUM LOT DEPTH: 75'
MINIMUM LOT WIDTH: 30'
LOT SIZE: AS SHOWN ON MAP
NET DENSITY: 10.5 DU/ACRE
GUEST PARKING 0.25 SPACES PER UNIT REQUIRED = 21
GUEST PARKING PROVIDED = 28

DEVELOPER

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UTILITY PURVEYORS

WATER:	*EASTERN MUNICIPAL WATER DISTRICT*
SEWER:	*EASTERN MUNICIPAL WATER DISTRICT*
GAS:	*SOUTHERN CALIFORNIA GAS COMPANY*
ELECTRICITY:	*SOUTHERN CALIFORNIA EDISON*
TELEPHONE:	*AT&T*
SCHOOL:	*MORENO VALLEY UNIFIED SCHOOL DISTRICT*
CATV:	*SPECTRUM*

HYDROLOGY DATA

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10 YEAR – 1 HOUR RAINFALL INTENSITY = 0.82 INCH

SLOPE USED FOR RAINFALL INTENSITY CURVE = 0.500

AMC I USED FOR 2-YEAR STORM RUNOFF CALCULATIONS
AMC II USED FOR 10-YEAR STORM RUNOFF CALCULATIONS
AMC III USED FOR 100-YEAR STORM RUNOFF CALCULATIONS

ASSUMED HYDROLOGIC LAND USE: UNDEVELOPED AND MOBILE HOME PARK FOR SFR

SOIL TYPE B

HYDROLOGY LEGEND

Q100 = 100-YEAR FLOW RATE
Q10 = 10-YEAR FLOW RATE
Q2 = 2-YEAR FLOW RATE
Tc = TIME OF CONCENTRATION – MINUTES
L = FLOW PATH LENGTH IN FEET
101 / 54.8 — NODE NUMBER / ELEVATION
DRAINAGE AREA BOUNDARY
DRAINAGE FLOW PATH

- AREA 1 - 3.04 ACRES
- AREA 2 - 4.08 ACRES
- AREA 3 - 0.58 ACRES
- AREA 4 - 2.32 ACRES
- AREA 5 - 0.61 ACRES

REGISTERED PROFESSIONAL ENGINEER — ROBERT MARK BEERS — No. 39405 Exp. 12-31-21 — CIVIL — STATE OF CALIFORNIA

ROBERT BEERS
8175 Limonite Avenue, Suite E
Jurupa Valley, CA 92509
Ph. (951) 317-2041 Fax (909) 360-2070

Date _____ Robert M. Beers R.C.E. 39405 Expires 12-31-21

PREPARED FOR:
Passco Pacifica LLC
333 City Boulevard West
17th Floor
Orange, CA 92866
PHONE: (714) 609-7257

TTM 37909
Developed Condition
City of Moreno Valley
CALIFORNIA

DATE April 4, 2020
JOB NO.
DRAWN BY R.A.H.
CHECKED BY R.M.B.
SHEET 1 OF 1