

**Technical Supplement  
Drainage Calculations**

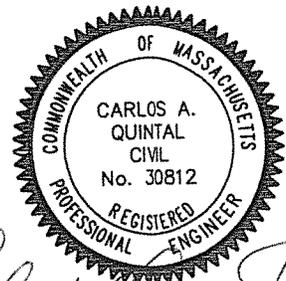
FOR  
**The Preserve at Abbyville**

LOCATED IN  
NORFOLK, MASSACHUSETTS

PREPARED FOR  
**Abbyville Development, LLC  
and  
Abbyville Residential, LLC  
850 Franklin Street  
Wrentham, Massachusetts 02093**

PREPARED BY  
**UNITED CONSULTANTS, INC.  
850 FRANKLIN STREET, SUITE 11D  
WRENTHAM, MA. 02093**

DATE:  
August 30, 2017  
Revised: December 2, 2019



*Carlos A. Quintal*  
02-03-2020

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## **APPENDIX A**

## **BACKGROUND**

Abbyville Development, LLC is hereby has submitted an application to the Town of Norfolk Zoning Board of Appeals for a Comprehensive Permit.

The site now consists of the property owned by S.M. Lorruso and Sons, Inc. which includes Norfolk Tax Assessor's parcels 9, 10, 12 and as shown on Tax Map 6 Block 2.

The site has a mixture of uses which include two single family residences, a former gravel pit area and wooded areas cover the remainder of the site.

The following analysis will show a reduction of both the rate and volume of stormwater runoff when comparing the pre-development analysis to the post-development analysis.

## **DRAINAGE CALCULATIONS**

United Consultants, Inc. has performed a hydrological analysis for the applicant of the project. This report reviews the hydrological impact of the proposed development. The entire site is now composed of The Preserve at Abbyville. Pre-construction calculations were performed which depict the rate and volume of runoff to the north of the proposed developed portion of the site. The post-construction characteristics of the property were analyzed to verify compliance with the MA DEP Stormwater Policy, for site development. The proposed drainage system will contain and control all analyzed storms.

To mitigate any potential adverse impacts due to site work, a stormwater management system (SWM) has been incorporated into the site design. The system will consist of deep sump hooded catch basins which will capture the stormwater. The stormwater will be directed through a closed system and will discharge to a sediment forebay for additional treatment. The first two components to the treatment train will provide for Total Suspended Solid (TSS) removal. After receiving this TSS removal the stormwater will then be directed to the infiltration basin. The 2, 10, 25 and 100 year storm events were analyzed and the pre-development analysis can be found in appendix C while the post-development analysis can be found in appendix D.

In April 2008, DEP adopted a new Stormwater Management Policy to address the non-point pollution discharges. The policy prescribes specific stormwater management standards for the development of projects, including urban pollutant removal criteria for projects that may impact environmental resource areas. Compliance is achieved through the implementation of "Best Management Practices" (BMP's) in the design.

United Consultants, Inc. has incorporated BMP's in the proposed SWM for the applicant of the project. Components that have been included are:

- \* Deep Sump Hooded Catch Basins (DSHCB)
- \* Forebays – sediment capture
- \* Detention/Infiltration Pond – infiltration basin

## ***System Performance***

As demonstrated below, these components, in combination will effectively mitigate post-construction rate of runoff and pollutant loading of stormwater runoff from the site. The system is projected to:

- \* Exceed the minimum pollutant (TSS) removal rate of 80%.
- \* Attenuate peak discharges, while maintaining them within the system.
- \* Prevent downstream flooding.

Two, ten, twenty five, fifty and one hundred year storm events were reviewed. The tables below list the rainfall intensities used for each storm event.

Table 1 – Intensities

| Storm Event    | 24 Hour Rainfall |
|----------------|------------------|
| 2 year event   | 3.20 inches      |
| 10 year event  | 4.80 inches      |
| 25 year event  | 5.50 inches      |
| 50 year event  | 6.20 inches      |
| 100 year event | 6.80 inches      |

Table 2 Discharge Analysis

|                | Sediment Forebay(Pond 12P)<br>Outlet Invert = 170.80 | Infiltration Basin (Pond 1P)<br>Outlet Invert =171.0 |
|----------------|--|--|
| 2 year event   | peak elevation = 170.93                              | peak elevation = 168.02                              |
| 10 year event  | peak elevation = 171.13                              | peak elevation = 168.52                              |
| 25 year event  | peak elevation = 171.24                              | peak elevation = 169.21                              |
| 50 year event  | peak elevation = 171.35                              | peak elevation = 170.01                              |
| 100 year event | peak elevation = 171.44                              | peak elevation = 170.76                              |

For all analyzed storm events the Infiltration Pond will discard in excess of the required, therefore storm discharges will be contained in the site.

**DEP Stormwater Standards**

**Standard Number 1 – No untreated stormwater** – No new stormwater conveyances may discharge untreated stormwater directly to or cause erosion in wetlands or water of the Commonwealth – **Not Applicable** – This project does not have discharges to wetland resource areas.

**Standard Number 2 – Post development peak discharge rates** – Stormwater management systems must be designed so that post-development peak discharge rates do not exceed pre-development peak discharge rates. - The stormwater management **design complies with this standard**, as outlined in the drainage calculations.

**Standard Number 3 – Recharge to groundwater** – Loss to annual recharge to groundwater should be minimized through the use of infiltration measures to maximum extent practicable. – The development portion of the site is designed to infiltrate within the Infiltration Pond – **design complies with standard.**

**Standard Number 4 – Total Suspended Solids (TSS) Removal** – For new development, stormwater management systems must be designed to remove 80% of the annual load of Total Suspended Solids – The combination of DSHCB’s, Sediment Forebays, and an Infiltration Basin provides adequate removal – **design complies with standard.**

***Standard Number 5 – High Potential Pollutant Loads*** – Stormwater discharges from Land Uses with Higher Potential Pollutant Loads require the use of specific stormwater management BMP's – A Stormwater Pollution Prevention Plan (SWPPP) and will be submitted prior to construction, as required under the NPDES program.

***Standard Number 6 – Critical Areas*** – Stormwater discharges to **Critical Areas** must utilize certain stormwater management BMP's approved for Critical Area. – This project does not have discharges to critical areas - **Not Applicable.**

***Standard Number 7 – Redevelopment of previously developed sites must meet Stormwater Management Standards to the maximum extent practicable*** – **Not Applicable.**

***Standard Number 8 – Erosion and Sedimentation Controls*** – Erosion and Sedimentation controls must be implemented to prevent impacts during construction or land disturbance activities – Erosion controls for the project which proposes disturbance greater than one acre of land and requires filing a Notice of Intent (NOI) with EPA and a Stormwater Pollution Prevention Plan (SWPPP). – A SWPPP will be filed prior to construction – **Complies with Standard.**

***Standard Number 9 – Operation and Maintenance Plan*** – A long Term Operation and Maintenance Plan shall be developed and implemented to ensure that stormwater management systems function as designed. – A Long Term Operation and Maintenance Plan is attached - **Complies with Standard.**

***Standard Number 10 – Illicit Discharges*** – All illicit discharges to the stormwater management systems are prohibited – The property developer is charged with preparing and submitting an Illicit Discharge Compliance Statement, verifying that no illicit discharges exist on the site, prior to the start of construction. – **Complies with Standard.**

## **APPENDIX B**

## Pre-Development vs. Post Development Rate and Volume of Runoff

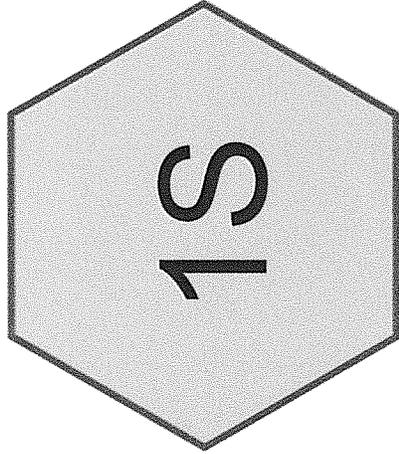
This analysis was prepared to show the pre-development and post development rate and volume of runoff as required by the Town of Norfolk Storm-water Requirements.

The below is the comparison of the watersheds which flow offsite.

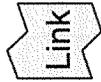
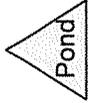
A combination of the hydrographs from pre-development Sub-catchment 1S to post-development Link 74L is as follows:

|                            |    |          |                             |    |          |
|----------------------------|----|----------|-----------------------------|----|----------|
| 2 year storm event (CFS)   |    |          | 2 year storm event (A.F.)   |    |          |
| Pre                        |    | Post     | Pre                         |    | Post     |
| 1S                         | vs | Link 74L | 1S                          | vs | Link 74L |
| 0.03                       |    | 0.01     | 0.014                       |    | 0.004    |
| 10 year storm event (CFS)  |    |          | 10 year storm event (A.F.)  |    |          |
| Pre                        |    | Post     | Pre                         |    | Post     |
| 1S                         | vs | Link 74L | 1S                          | vs | Link 74L |
| 1.07                       |    | 0.18     | 0.434                       |    | 0.083    |
| 25 year storm event (CFS)  |    |          | 100 year storm event (A.F.) |    |          |
| Pre                        |    | Post     | Pre                         |    | Post     |
| 1S                         | vs | Link 74L | 1S                          | vs | Link 74L |
| 3.21                       |    | 0.48     | 0.775                       |    | 0.319    |
| 50 year storm event (CFS)  |    |          | 100 year storm event (A.F.) |    |          |
| Pre                        |    | Post     | Pre                         |    | Post     |
| 1S                         | vs | Link 74L | 1S                          | vs | Link 74L |
| 6.26                       |    | 1.13     | 1.195                       |    | 0.741    |
| 100 year storm event (CFS) |    |          | 100 year storm event (A.F.) |    |          |
| Pre                        |    | Post     | Pre                         |    | Post     |
| 1S                         | vs | Link 74L | 1S                          | vs | Link 74L |
| 9.68                       |    | 2.04     | 1.611                       |    | 1.238    |

## APPENDIX C



1S



Drainage Diagram for uc987-2020PRE

Prepared by CAQ/rrg 1/29/2020

HydroCAD® 8.00 s/n 001535 © 2006 HydroCAD Software Solutions LLC

## **2 YR PRE-DEVELOPMENT**

**Subcatchment 1S: 1S**

Runoff = 0.03 cfs @ 22.85 hrs, Volume= 0.014 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 9.810     | 30 | Woods, Good, HSG A              |
| 13.210    | 49 | Desert shrub range, Good, HSG A |
| 23.020    | 41 | Weighted Average                |
| 23.020    |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.4      | 147           | 0.3670        | 6.06              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.3      | 42            | 0.0476        | 2.18              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 3.8      | 174           | 0.0057        | 0.75              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 16.8     | 570           | Total         |                   |                |  |

## **10 YR PRE-DEVELOPMENT**

**Subcatchment 1S: 1S**

Runoff = 1.07 cfs @ 12.61 hrs, Volume= 0.434 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 9.810     | 30 | Woods, Good, HSG A              |
| 13.210    | 49 | Desert shrub range, Good, HSG A |
| 23.020    | 41 | Weighted Average                |
| 23.020    |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.4      | 147           | 0.3670        | 6.06              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.3      | 42            | 0.0476        | 2.18              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 3.8      | 174           | 0.0057        | 0.75              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 16.8     | 570           | Total         |                   |                |  |

## **25 YR PRE-DEVELOPMENT**

**Subcatchment 1S: 1S**

Runoff = 3.21 cfs @ 12.51 hrs, Volume= 0.775 af, Depth= 0.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 9.810     | 30 | Woods, Good, HSG A              |
| 13.210    | 49 | Desert shrub range, Good, HSG A |
| 23.020    | 41 | Weighted Average                |
| 23.020    |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.4      | 147           | 0.3670        | 6.06              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.3      | 42            | 0.0476        | 2.18              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 3.8      | 174           | 0.0057        | 0.75              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 16.8     | 570           | Total         |                   |                |  |

## **50 YR PRE-DEVELOPMENT**

**Subcatchment 1S: 1S**

Runoff = 6.26 cfs @ 12.44 hrs, Volume= 1.195 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 9.810     | 30 | Woods, Good, HSG A              |
| 13.210    | 49 | Desert shrub range, Good, HSG A |
| 23.020    | 41 | Weighted Average                |
| 23.020    |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.4      | 147           | 0.3670        | 6.06              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.3      | 42            | 0.0476        | 2.18              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 3.8      | 174           | 0.0057        | 0.75              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 16.8     | 570           | Total         |                   |                |  |

## **100 YR PRE-DEVELOPMENT**

**Subcatchment 1S: 1S**

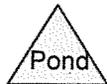
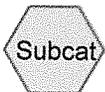
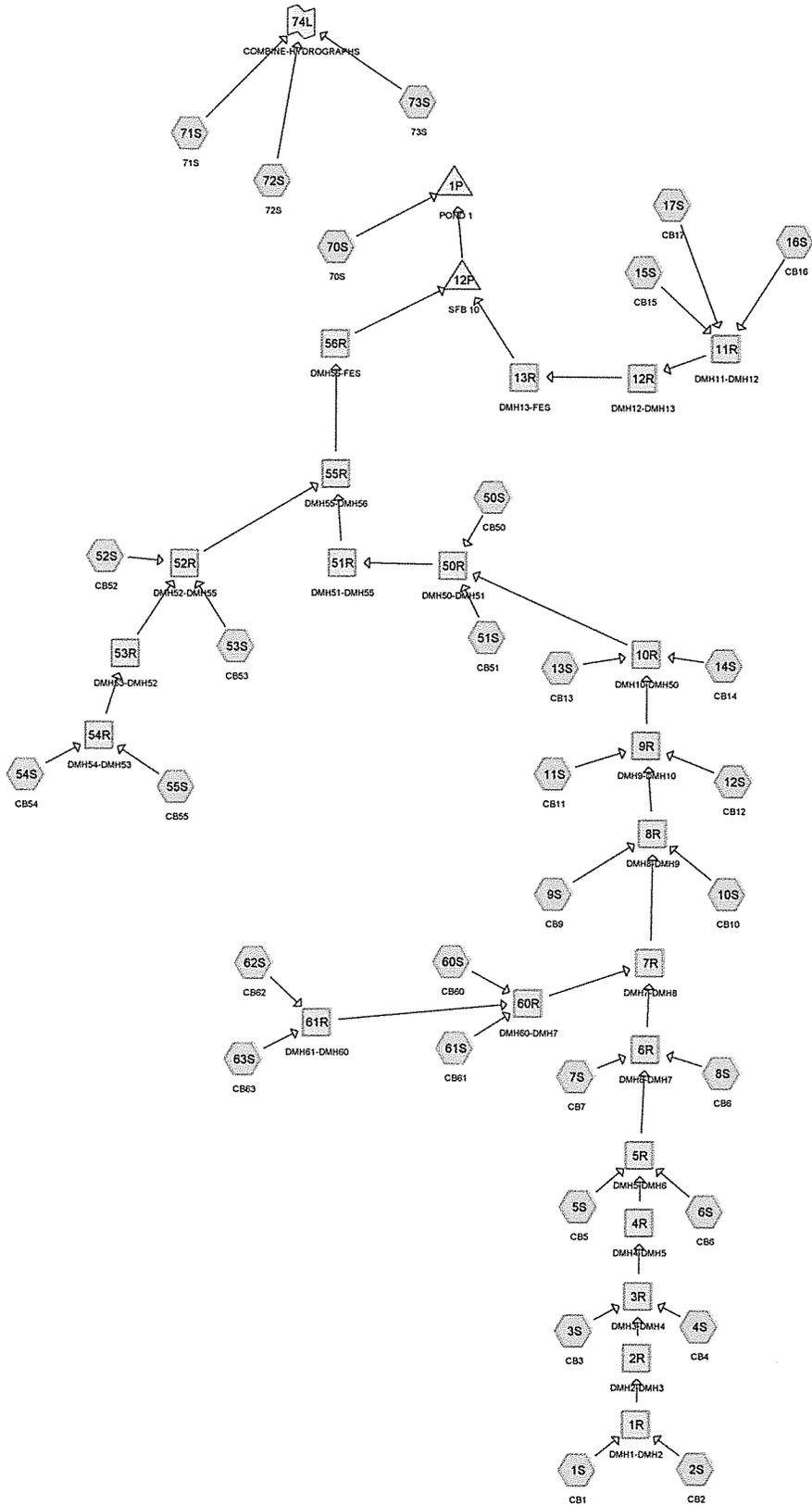
Runoff = 9.68 cfs @ 12.38 hrs, Volume= 1.611 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 9.810     | 30 | Woods, Good, HSG A              |
| 13.210    | 49 | Desert shrub range, Good, HSG A |
| 23.020    | 41 | Weighted Average                |
| 23.020    |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.4      | 147           | 0.3670        | 6.06              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.3      | 42            | 0.0476        | 2.18              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 3.8      | 174           | 0.0057        | 0.75              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 16.8     | 570           | Total         |                   |                |  |

## **APPENDIX D**



**Drainage Diagram for uc987-2020POST**  
 Prepared by CAQ/rrg 1/30/2020  
 HydroCAD® 8.00 s/n 001535 © 2006 HydroCAD Software Solutions LLC

**2 YR POST-DEVELOPMENT**

**Subcatchment 1S: CB1**

Runoff = 0.07 cfs @ 12.12 hrs, Volume= 0.007 af, Depth= 0.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.070     | 98 | Paved parking & roofs         |
| 0.110     | 39 | >75% Grass cover, Good, HSG A |
| 0.180     | 62 | Weighted Average              |
| 0.110     |    | Pervious Area                 |
| 0.070     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC.   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |  |

**Subcatchment 2S: CB2**

Runoff = 0.04 cfs @ 12.43 hrs, Volume= 0.010 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.180     | 98 | Paved parking & roofs         |
| 0.400     | 39 | >75% Grass cover, Good, HSG A |
| 0.140     | 30 | Woods, Good, HSG A            |
| 0.720     | 52 | Weighted Average              |
| 0.540     |    | Pervious Area                 |
| 0.180     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.7         | 26               | 0.0380           | 0.08                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.2         | 49               | 0.4760           | 3.45                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.3         | 48               | 0.1460           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 21               | 0.0470           | 1.52                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6         | 100              | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.3         | 273              | Total            |                      |                   |   |

### Subcatchment 3S: CB3

Runoff = 0.01 cfs @ 12.61 hrs, Volume= 0.007 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.480     | 39 | >75% Grass cover, Good, HSG A |
| 0.070     | 30 | Woods, Good, HSG A            |
| 0.690     | 50 | Weighted Average              |
| 0.550     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 12.3        | 50               | 0.0200           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.6         | 50               | 0.0400           | 1.40                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 11               | 0.0550           | 4.76                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.9         | 236              | 0.0500           | 4.54                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 13.8        | 354              | Total            |                      |                   |   |

**Subcatchment 4S: CB4**

Runoff = 0.00 cfs @ 15.73 hrs, Volume= 0.003 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 0.350     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 30 | Woods, Good, HSG A            |
| 1.040     | 44 | Weighted Average              |
| 0.870     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 4.8      | 26            | 0.0560        | 0.09              |                | Sheet Flow,<br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.4      | 67            | 0.3000        | 2.74              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 0.7      | 72            | 0.1290        | 1.80              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 1.7      | 154           | 0.0455        | 1.49              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 24            | 0.0833        | 5.86              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.6      | 95            | 0.0158        | 2.55              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.4      | 453           | Total         |                   |                |  |

**Subcatchment 5S: CB5**

Runoff = 0.03 cfs @ 12.41 hrs, Volume= 0.008 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.130     | 98 | Paved parking & roofs         |
| 0.450     | 39 | >75% Grass cover, Good, HSG A |
| 0.580     | 52 | Weighted Average              |
| 0.450     |    | Pervious Area                 |
| 0.130     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 6S: CB6**

Runoff = 0.06 cfs @ 12.43 hrs, Volume= 0.018 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.276     | 98 | Paved parking & roofs         |
| 0.940     | 39 | >75% Grass cover, Good, HSG A |
| 1.216     | 52 | Weighted Average              |
| 0.940     |    | Pervious Area                 |
| 0.276     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.8      | 14            | 0.2140        | 0.30              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 34            | 0.0588        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.8      | 104           | 0.0192        | 0.97              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 25            | 0.0800        | 1.98              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 19            | 0.0526        | 1.61              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.1      | 136           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.1      | 361           | Total         |                   |                |   |

**Subcatchment 7S: CB7**

Runoff = 0.01 cfs @ 14.58 hrs, Volume= 0.007 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.790     | 39 | >75% Grass cover, Good, HSG A |
| 0.940     | 48 | Weighted Average              |
| 0.790     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.5      | 13            | 0.0380        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 14            | 0.1430        | 2.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 29            | 0.0690        | 1.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 88            | 0.0227        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 6             | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0225        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.4      | 127           | 0.0157        | 0.88              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 61            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.6      | 434           | Total         |                   |                |   |

**Subcatchment 8S: CB6**

Runoff = 0.02 cfs @ 13.74 hrs, Volume= 0.013 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 1.180     | 39 | >75% Grass cover, Good, HSG A |
| 1.410     | 49 | Weighted Average              |
| 1.180     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.5      | 20            | 0.0250        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 4.0      | 30            | 0.0168        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.6      | 89            | 0.0168        | 0.91              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 63            | 0.0317        | 1.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 19            | 0.0667        | 5.24              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0667        | 1.81              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 171           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 10.8     | 435           | Total         |                   |                |   |

**Subcatchment 9S: CB9**

Runoff = 0.09 cfs @ 12.12 hrs, Volume= 0.009 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.080     | 98 | Paved parking & roofs         |
| 0.120     | 39 | >75% Grass cover, Good, HSG A |
| 0.200     | 63 | Weighted Average              |
| 0.120     |    | Pervious Area                 |
| 0.080     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 10S: CB10**

Runoff = 0.02 cfs @ 12.44 hrs, Volume= 0.007 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.410     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 51 | Weighted Average              |
| 0.410     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 3.3      | 32            | 0.0310        | 0.16              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.4      | 40            | 0.0500        | 1.57              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 47            | 0.0430        | 1.45              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 28            | 0.0350        | 1.31              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 35            | 0.0200        | 2.87              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.9      |               |               |                   |                | Direct Entry, MIN. TC  |
| 6.0      | 211           | Total         |                   |                |  |

**Subcatchment 11S: CB11**

Runoff = 0.08 cfs @ 12.40 hrs, Volume= 0.017 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 0.930     | 54 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 7.4      | 50            | 0.0100        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 7             | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 45            | 0.0440        | 1.47              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 28            | 0.0650        | 1.78              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 138           | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.9      | 275           | Total         |                   |                |   |

**Subcatchment 12S: CB12**

Runoff = 0.05 cfs @ 12.41 hrs, Volume= 0.014 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.760     | 39 | >75% Grass cover, Good, HSG A |
| 0.970     | 52 | Weighted Average              |
| 0.760     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.0      | 50            | 0.0480        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 10            | 0.0480        | 1.53              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 27            | 0.2220        | 3.30              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 23            | 0.0870        | 2.06              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 80            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 45            | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.7      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 264           | Total         |                   |                |   |

**Subcatchment 13S: CB13**

Runoff = 0.01 cfs @ 15.37 hrs, Volume= 0.004 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.890     | 39 | >75% Grass cover, Good, HSG A |
| 1.000     | 45 | Weighted Average              |
| 0.890     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 2.0         | 34               | 0.1230           | 0.28                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.0         | 6                | 0.2000           | 3.13                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1         | 12               | 0.1670           | 2.86                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.5         | 94               | 0.0220           | 1.04                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 45               | 0.1330           | 2.55                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.0         | 194              | 0.0520           | 1.60                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7         | 110              | 0.0150           | 2.49                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.6         | 502              | Total            |                      |                   |   |

**Subcatchment 14S: CB14**

Runoff = 0.02 cfs @ 13.66 hrs, Volume= 0.010 af, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.920     | 39 | >75% Grass cover, Good, HSG A |
| 1.110     | 49 | Weighted Average              |
| 0.920     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.6      | 50            | 0.5000        | 0.54              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 17            | 0.5000        | 4.95              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 30            | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 36            | 0.0560        | 1.66              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 51            | 0.0390        | 1.38              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 32            | 0.1030        | 2.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 16            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 17            | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 107           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 1.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 5.3      | 371           | Total         |                   |                |   |

**Subcatchment 15S: CB15**

Runoff = 0.14 cfs @ 12.11 hrs, Volume= 0.013 af, Depth= 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.240     | 66 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 5             | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 5             | Total         |                   |                |   |

**Subcatchment 16S: CB16**

Runoff = 0.06 cfs @ 12.31 hrs, Volume= 0.012 af, Depth= 0.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.360     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 56 | Weighted Average              |
| 0.360     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC  |
| 0.0      | 11            | 0.0200        | 6.42              | 5.04           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 11            | Total         |                   |                |  |

**Subcatchment 17S: CB17**

Runoff = 0.02 cfs @ 14.92 hrs, Volume= 0.011 af, Depth= 0.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.340     | 98 | Paved parking & roofs         |
| 0.900     | 39 | >75% Grass cover, Good, HSG A |
| 0.570     | 30 | Woods, Good, HSG A            |
| 1.810     | 47 | Weighted Average              |
| 1.470     |    | Pervious Area                 |
| 0.340     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 57            | 0.3030        | 3.85              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 10            | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 22            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 83            | 0.0720        | 5.45              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.8      | 102           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.7      | 134           | 0.0050        | 3.21              | 2.52           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 14.7     | 615           | Total         |                   |                |   |

**Subcatchment 50S: CB50**

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.028 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.030     | 39 | >75% Grass cover, Good, HSG A |
| 0.170     | 88 | Weighted Average              |
| 0.030     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 51S: CB51**

Runoff = 0.01 cfs @ 15.08 hrs, Volume= 0.007 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 1.340     | 39 | >75% Grass cover, Good, HSG A |
| 1.510     | 46 | Weighted Average              |
| 1.340     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 2.8      | 22            | 0.0230        | 0.13              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 36            | 0.1670        | 2.86              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 12            | 0.3330        | 4.04              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 74            | 0.0810        | 1.99              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0220        | 1.04              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.9      | 111           | 0.0100        | 2.03              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | Paved Kv= 20.3 fps<br>Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.4      | 468           | Total         |                   |                |  |

**Subcatchment 52S: CB52**

Runoff = 0.47 cfs @ 12.10 hrs, Volume= 0.035 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.100     | 39 | >75% Grass cover, Good, HSG A |
| 0.310     | 79 | Weighted Average              |
| 0.100     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0466        | 9.79              | 7.69           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 53S: CB53**

Runoff = 0.20 cfs @ 12.11 hrs, Volume= 0.018 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.200     | 39 | >75% Grass cover, Good, HSG A |
| 0.360     | 65 | Weighted Average              |
| 0.200     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 54S: CB54**

Runoff = 0.33 cfs @ 12.11 hrs, Volume= 0.030 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.260     | 98 | Paved parking & roofs         |
| 0.340     | 39 | >75% Grass cover, Good, HSG A |
| 0.600     | 65 | Weighted Average              |
| 0.340     |    | Pervious Area                 |
| 0.260     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 6             | Total         |                   |                |   |

**Subcatchment 55S: CB55**

Runoff = 0.58 cfs @ 12.12 hrs, Volume= 0.056 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.500     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 1.200     | 64 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.500     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.0      | 14            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 60S: CB60**

Runoff = 0.35 cfs @ 12.10 hrs, Volume= 0.027 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.140     | 39 | >75% Grass cover, Good, HSG A |
| 0.330     | 73 | Weighted Average              |
| 0.140     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 13            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 13            | Total         |                   |                |   |

**Subcatchment 61S: CB61**

Runoff = 0.20 cfs @ 12.13 hrs, Volume= 0.022 af, Depth= 0.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.200     | 98 | Paved parking & roofs         |
| 0.300     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 63 | Weighted Average              |
| 0.300     |    | Pervious Area                 |
| 0.200     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.8      | 24            | 0.0833        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 141           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 26            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 58            | 0.0600        | 1.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 42            | 0.0240        | 1.08              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 170           | 0.0300        | 3.52              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 11            | 0.0120        | 4.97              | 3.90           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.7      | 472           | Total         |                   |                |   |

**Subcatchment 62S: CB62**

Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.020 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.280     | 71 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.1      | 14            | Total         |                   |                |   |

**Subcatchment 63S: CB63**

Runoff = 0.01 cfs @ 15.15 hrs, Volume= 0.008 af, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.280     | 98 | Paved parking & roofs         |
| 0.870     | 39 | >75% Grass cover, Good, HSG A |
| 0.550     | 30 | Woods, Good, HSG A            |
| 1.700     | 46 | Weighted Average              |
| 1.420     |    | Pervious Area                 |
| 0.280     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 8.5      | 36            | 0.0260        | 0.07              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 1.1      | 51            | 0.0260        | 0.81              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.1      | 14            | 0.2860        | 2.67              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 40            | 0.3500        | 4.14              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 35            | 0.0570        | 1.67              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.0      | 71            | 0.0290        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 59            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 32            | 0.0630        | 5.10              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 30            | 0.0400        | 4.06              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 11.7     | 374           | Total         |                   |                |   |

### Subcatchment 70S: 70S

Runoff = 0.12 cfs @ 12.43 hrs, Volume= 0.035 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.168     | 98 | Paved parking & roofs         |
| 1.924     | 39 | >75% Grass cover, Good, HSG A |
| 0.358     | 98 | POND                          |
| 2.450     | 52 | Weighted Average              |
| 1.924     |    | Pervious Area                 |
| 0.526     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 3.2         | 31               | 0.0320           | 0.16                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 2.2         | 170              | 0.0350           | 1.31                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 45               | 0.0910           | 2.11                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.3         | 85               | 0.0235           | 1.07                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.5         | 371              | Total            |                      |                   |  |

### Subcatchment 71S: 71S

Runoff = 0.00 cfs @ 23.98 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.630     | 39 | >75% Grass cover, Good, HSG A |
| 1.120     | 30 | Woods, Good, HSG A            |
| 1.910     | 39 | Weighted Average              |
| 1.750     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 2.2         | 33               | 0.0910           | 0.25                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 1.5         | 221              | 0.1270           | 2.49                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 2.0         | 110              | 0.0180           | 0.94                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.6         | 97               | 0.0206           | 1.00                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.7         | 501              | Total            |                      |                   |  |

### Subcatchment 72S: 72S

Runoff = 0.01 cfs @ 15.40 hrs, Volume= 0.004 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.200     | 30 | Woods, Good, HSG A              |
| 0.830     | 49 | Desert shrub range, Good, HSG A |
| 1.030     | 45 | Weighted Average                |
| 1.030     |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.4      | 50            | 0.0110        | 0.13              |                | Sheet Flow,<br>Range n= 0.130 P2= 3.20"                           |
| 0.4      | 50            | 0.0465        | 2.16              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.1      | 24            | 0.0833        | 2.89              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.0      | 152           | 0.0164        | 1.28              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 8.9      | 276           | Total         |                   |                |   |

**Subcatchment 73S: 73S**

Runoff = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 2yr Rainfall=3.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.171     | 98 | Paved parking & roofs           |
| 0.969     | 39 | >75% Grass cover, Good, HSG A   |
| 53.000    | 30 | Woods, Good, HSG A              |
| 0.960     | 49 | Desert shrub range, Good, HSG A |
| 55.100    | 31 | Weighted Average                |
| 54.929    |    | Pervious Area                   |
| 0.171     |    | Impervious Area                 |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.3      | 36            | 0.0555        | 0.10              |                | Sheet Flow,<br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 1.0      | 157           | 0.3000        | 2.74              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps                |
| 0.3      | 54            | 0.3890        | 3.12              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps                |
| 0.2      | 37            | 0.2160        | 3.25              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps     |
| 0.1      | 23            | 0.1310        | 3.62              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.1      | 185           | 0.0210        | 1.45              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 10.0     | 492           | Total         |                   |                |   |

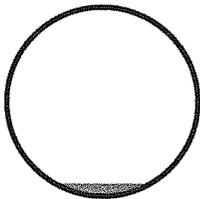
**Reach 1R: DMH1-DMH2**

Inflow Area = 0.900 ac, Inflow Depth = 0.23" for 2yr event  
Inflow = 0.08 cfs @ 12.36 hrs, Volume= 0.018 af  
Outflow = 0.08 cfs @ 12.39 hrs, Volume= 0.018 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.21 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.96 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4 cf @ 12.37 hrs, Average Depth at Peak Storage= 0.07'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0500 '/  
Inlet Invert= 214.44', Outlet Invert= 207.04'



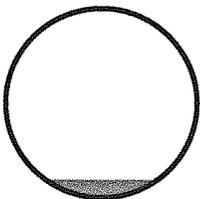
**Reach 2R: DMH2-DMH3**

Inflow Area = 0.900 ac, Inflow Depth = 0.23" for 2yr event  
Inflow = 0.08 cfs @ 12.39 hrs, Volume= 0.018 af  
Outflow = 0.08 cfs @ 12.41 hrs, Volume= 0.018 af, Atten= 1%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 1.95 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.18 fps, Avg. Travel Time= 1.3 min

Peak Storage= 4 cf @ 12.40 hrs, Average Depth at Peak Storage= 0.10'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 95.0' Slope= 0.0120 '/  
Inlet Invert= 207.04', Outlet Invert= 205.90'



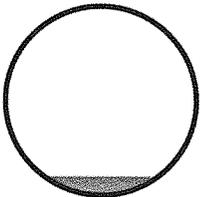
**Reach 3R: DMH3-DMH4**

Inflow Area = 2.630 ac, Inflow Depth = 0.13" for 2yr event  
Inflow = 0.08 cfs @ 12.46 hrs, Volume= 0.028 af  
Outflow = 0.08 cfs @ 12.50 hrs, Volume= 0.028 af, Atten= 1%, Lag= 2.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.00 fps, Min. Travel Time= 1.7 min  
Avg. Velocity = 1.36 fps, Avg. Travel Time= 2.5 min

Peak Storage= 8 cf @ 12.48 hrs, Average Depth at Peak Storage= 0.10'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 205.0' Slope= 0.0120 '/'  
Inlet Invert= 205.80', Outlet Invert= 203.34'



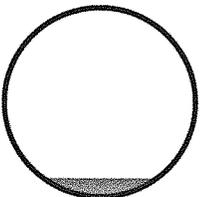
**Reach 4R: DMH4-DMH5**

Inflow Area = 2.630 ac, Inflow Depth = 0.13" for 2yr event  
Inflow = 0.08 cfs @ 12.50 hrs, Volume= 0.028 af  
Outflow = 0.08 cfs @ 12.53 hrs, Volume= 0.028 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.00 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.1 min

Peak Storage= 4 cf @ 12.51 hrs, Average Depth at Peak Storage= 0.10'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 90.0' Slope= 0.0120 '/'  
Inlet Invert= 203.24', Outlet Invert= 202.16'



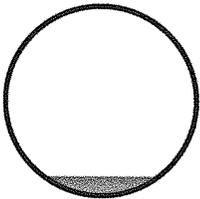
**Reach 5R: DMH5-DMH6**

Inflow Area = 4.426 ac, Inflow Depth = 0.15" for 2yr event  
Inflow = 0.17 cfs @ 12.46 hrs, Volume= 0.054 af  
Outflow = 0.17 cfs @ 12.50 hrs, Volume= 0.054 af, Atten= 1%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.47 fps, Min. Travel Time= 1.5 min  
Avg. Velocity = 1.63 fps, Avg. Travel Time= 2.2 min

Peak Storage= 15 cf @ 12.47 hrs, Average Depth at Peak Storage= 0.13'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 215.0' Slope= 0.0130 '/'  
Inlet Invert= 201.91', Outlet Invert= 199.11'



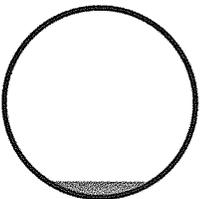
**Reach 6R: DMH6-DMH7**

Inflow Area = 6.776 ac, Inflow Depth = 0.13" for 2yr event  
Inflow = 0.18 cfs @ 12.53 hrs, Volume= 0.073 af  
Outflow = 0.18 cfs @ 12.53 hrs, Volume= 0.073 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.76 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 2.67 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.53 hrs, Average Depth at Peak Storage= 0.10'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 51.0' Slope= 0.0400 '/'  
Inlet Invert= 199.01', Outlet Invert= 196.97'



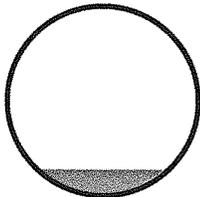
**Reach 7R: DMH7-DMH8**

Inflow Area = 9.586 ac, Inflow Depth = 0.19" for 2yr event  
Inflow = 0.80 cfs @ 12.12 hrs, Volume= 0.151 af  
Outflow = 0.77 cfs @ 12.13 hrs, Volume= 0.151 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.39 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 2.90 fps, Avg. Travel Time= 0.7 min

Peak Storage= 18 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.21'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 120.0' Slope= 0.0350 '/'  
Inlet Invert= 196.72', Outlet Invert= 192.52'



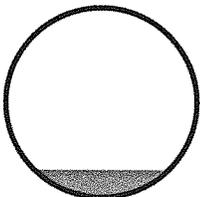
**Reach 8R: DMH8-DMH9**

Inflow Area = 10.306 ac, Inflow Depth = 0.19" for 2yr event  
Inflow = 0.85 cfs @ 12.13 hrs, Volume= 0.166 af  
Outflow = 0.85 cfs @ 12.15 hrs, Volume= 0.166 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.45 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.91 fps, Avg. Travel Time= 1.1 min

Peak Storage= 31 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 196.0' Slope= 0.0330 '/'  
Inlet Invert= 190.52', Outlet Invert= 184.05'



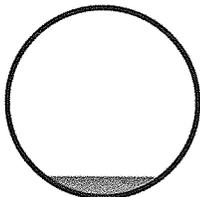
**Reach 9R: DMH9-DMH10**

Inflow Area = 12.206 ac, Inflow Depth = 0.19" for 2yr event  
Inflow = 0.87 cfs @ 12.16 hrs, Volume= 0.197 af  
Outflow = 0.85 cfs @ 12.20 hrs, Volume= 0.197 af, Atten= 3%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.76 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.5 min

Peak Storage= 44 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 242.0' Slope= 0.0250 '/'  
Inlet Invert= 183.55', Outlet Invert= 177.50'



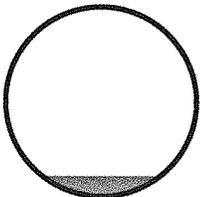
**Reach 10R: DMH10-DMH50**

Inflow Area = 14.316 ac, Inflow Depth = 0.18" for 2yr event  
Inflow = 0.85 cfs @ 12.20 hrs, Volume= 0.211 af  
Outflow = 0.84 cfs @ 12.20 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.54 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.3 min

Peak Storage= 9 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 50.0' Slope= 0.0220 '/'  
Inlet Invert= 177.40', Outlet Invert= 176.30'



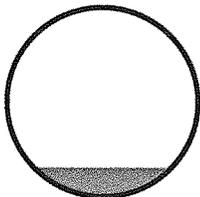
**Reach 11R: DMH11-DMH12**

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event  
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af  
Outflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.38 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 1.35 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.15'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 2.0' Slope= 0.0100 '/'  
Inlet Invert= 173.95', Outlet Invert= 173.93'



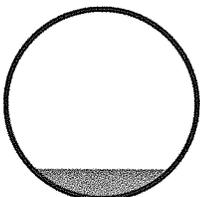
**Reach 12R: DMH12-DMH13**

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event  
Inflow = 0.18 cfs @ 12.14 hrs, Volume= 0.036 af  
Outflow = 0.18 cfs @ 12.17 hrs, Volume= 0.036 af, Atten= 1%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.39 fps, Min. Travel Time= 1.0 min  
Avg. Velocity = 1.34 fps, Avg. Travel Time= 1.8 min

Peak Storage= 11 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.15'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0100 '/'  
Inlet Invert= 173.83', Outlet Invert= 172.35'



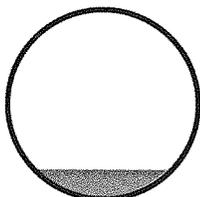
**Reach 13R: DMH13-FES**

Inflow Area = 2.550 ac, Inflow Depth = 0.17" for 2yr event  
Inflow = 0.18 cfs @ 12.17 hrs, Volume= 0.036 af  
Outflow = 0.18 cfs @ 12.18 hrs, Volume= 0.036 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 2.36 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 1.34 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.15'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 25.0' Slope= 0.0100 '/'  
Inlet Invert= 172.25', Outlet Invert= 172.00'



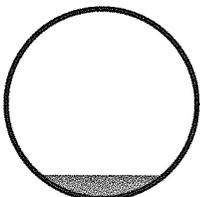
**Reach 50R: DMH50-DMH51**

Inflow Area = 15.996 ac, Inflow Depth = 0.18" for 2yr event  
Inflow = 1.11 cfs @ 12.17 hrs, Volume= 0.247 af  
Outflow = 1.09 cfs @ 12.19 hrs, Volume= 0.247 af, Atten= 2%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.74 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.30 fps, Avg. Travel Time= 1.0 min

Peak Storage= 33 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.26'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 142.0' Slope= 0.0200 '/'  
Inlet Invert= 176.30', Outlet Invert= 173.46'



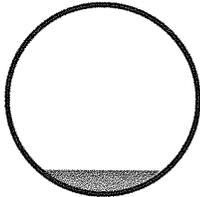
**Reach 51R: DMH51-DMH55**

Inflow Area = 15.996 ac, Inflow Depth = 0.18" for 2yr event  
Inflow = 1.09 cfs @ 12.19 hrs, Volume= 0.247 af  
Outflow = 1.09 cfs @ 12.19 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.73 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.30 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.25'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 15.0' Slope= 0.0200 '/'  
Inlet Invert= 173.36', Outlet Invert= 173.06'



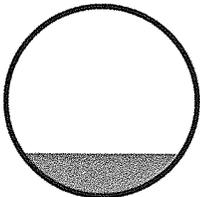
**Reach 52R: DMH52-DMH55**

Inflow Area = 2.470 ac, Inflow Depth = 0.67" for 2yr event  
Inflow = 1.52 cfs @ 12.12 hrs, Volume= 0.138 af  
Outflow = 1.50 cfs @ 12.12 hrs, Volume= 0.138 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.30 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 2.94 fps, Avg. Travel Time= 0.5 min

Peak Storage= 19 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.28'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 92.0' Slope= 0.0450 '/'  
Inlet Invert= 177.95', Outlet Invert= 173.81'



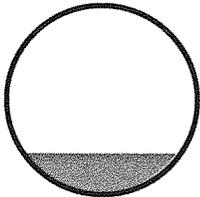
**Reach 53R: DMH53-DMH52**

Inflow Area = 1.800 ac, Inflow Depth = 0.57" for 2yr event  
Inflow = 0.90 cfs @ 12.12 hrs, Volume= 0.086 af  
Outflow = 0.87 cfs @ 12.14 hrs, Volume= 0.086 af, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.07 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.16 fps, Avg. Travel Time= 0.8 min

Peak Storage= 18 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 143.0' Slope= 0.0600 '/  
Inlet Invert= 186.78', Outlet Invert= 178.20'



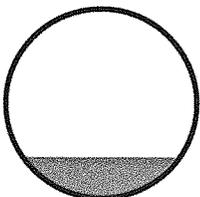
**Reach 54R: DMH54-DMH53**

Inflow Area = 1.800 ac, Inflow Depth = 0.57" for 2yr event  
Inflow = 0.91 cfs @ 12.11 hrs, Volume= 0.086 af  
Outflow = 0.90 cfs @ 12.12 hrs, Volume= 0.086 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.15 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.17 fps, Avg. Travel Time= 0.5 min

Peak Storage= 13 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.22'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 100.0' Slope= 0.0600 '/  
Inlet Invert= 192.88', Outlet Invert= 186.88'



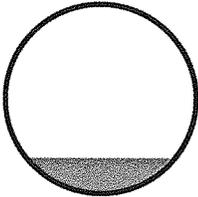
**Reach 55R: DMH55-DMH56**

Inflow Area = 18.466 ac, Inflow Depth = 0.25" for 2yr event  
Inflow = 2.51 cfs @ 12.15 hrs, Volume= 0.385 af  
Outflow = 2.50 cfs @ 12.15 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.07 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 2.55 fps, Avg. Travel Time= 0.5 min

Peak Storage= 31 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.38'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 76.0' Slope= 0.0200 '/  
Inlet Invert= 172.96', Outlet Invert= 171.44'



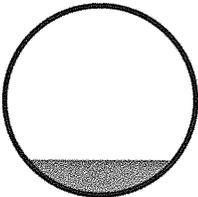
**Reach 56R: DMH56-FES**

Inflow Area = 18.466 ac, Inflow Depth = 0.25" for 2yr event  
Inflow = 2.50 cfs @ 12.15 hrs, Volume= 0.385 af  
Outflow = 2.50 cfs @ 12.16 hrs, Volume= 0.385 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.06 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.56 fps, Avg. Travel Time= 0.2 min

Peak Storage= 13 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.38'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 32.0' Slope= 0.0200 '/  
Inlet Invert= 171.34', Outlet Invert= 170.70'



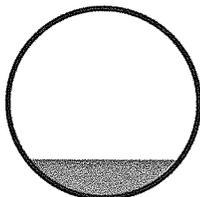
**Reach 60R: DMH60-DMH7**

Inflow Area = 2.810 ac, Inflow Depth = 0.33" for 2yr event  
Inflow = 0.80 cfs @ 12.12 hrs, Volume= 0.077 af  
Outflow = 0.79 cfs @ 12.12 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.89 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.97 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.20'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 33.0' Slope= 0.0600 '/'  
Inlet Invert= 199.20', Outlet Invert= 197.22'



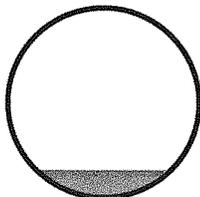
**Reach 61R: DMH61-DMH60**

Inflow Area = 1.980 ac, Inflow Depth = 0.17" for 2yr event  
Inflow = 0.26 cfs @ 12.10 hrs, Volume= 0.029 af  
Outflow = 0.24 cfs @ 12.13 hrs, Volume= 0.029 af, Atten= 5%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.62 fps, Min. Travel Time= 0.8 min  
Avg. Velocity = 1.70 fps, Avg. Travel Time= 1.8 min

Peak Storage= 13 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.15'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 180.0' Slope= 0.0250 '/'  
Inlet Invert= 203.80', Outlet Invert= 199.30'



**Pond 1P: POND 1**

Inflow Area = 23.466 ac, Inflow Depth = 0.21" for 2yr event  
 Inflow = 2.94 cfs @ 12.22 hrs, Volume= 0.417 af  
 Outflow = 2.62 cfs @ 12.27 hrs, Volume= 0.417 af, Atten= 11%, Lag= 2.8 min  
 Discarded = 2.62 cfs @ 12.27 hrs, Volume= 0.417 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 168.02' @ 12.27 hrs Surf.Area= 0.291 ac Storage= 0.005 af

Plug-Flow detention time= 1.6 min calculated for 0.417 af (100% of inflow)  
 Center-of-Mass det. time= 1.4 min ( 962.0 - 960.6 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 168.00' | 1.427 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 168.00           | 0.290             | 0.000                 | 0.000                 |
| 170.00           | 0.357             | 0.647                 | 0.647                 |
| 172.00           | 0.423             | 0.780                 | 1.427                 |

| Device | Routing   | Invert | Outlet Devices                              |
|--------|-----------|--------|---|
| #1     | Discarded | 0.00'  | 20.000 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=5.86 cfs @ 12.27 hrs HW=168.02' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 5.86 cfs)

**Pond 12P: SFB 10**

Inflow Area = 21.016 ac, Inflow Depth = 0.24" for 2yr event  
 Inflow = 2.67 cfs @ 12.16 hrs, Volume= 0.421 af  
 Outflow = 2.91 cfs @ 12.22 hrs, Volume= 0.381 af, Atten= 0%, Lag= 3.6 min  
 Primary = 2.91 cfs @ 12.22 hrs, Volume= 0.381 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 170.93' @ 12.20 hrs Surf.Area= 0.031 ac Storage= 0.043 af

Plug-Flow detention time= 69.0 min calculated for 0.381 af (91% of inflow)  
 Center-of-Mass det. time= 24.7 min ( 958.2 - 933.5 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 169.00' | 0.083 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 169.00           | 0.015             | 0.000                 | 0.000                 |
| 170.00           | 0.022             | 0.018                 | 0.018                 |
| 172.00           | 0.042             | 0.064                 | 0.083                 |

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 170.80' | <b>20.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

Primary OutFlow Max=2.54 cfs @ 12.22 hrs HW=170.93' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 2.54 cfs @ 1.00 fps)

**Link 74L: COMBINE-HYDROGRAPHS**

Inflow Area = 58.040 ac, Inflow Depth = 0.00" for 2yr event  
 Inflow = 0.01 cfs @ 15.40 hrs, Volume= 0.004 af  
 Primary = 0.01 cfs @ 15.40 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

## **10 YR POST-DEVELOPMENT**

**Subcatchment 1S: CB1**

Runoff = 0.25 cfs @ 12.10 hrs, Volume= 0.020 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.070     | 98 | Paved parking & roofs         |
| 0.110     | 39 | >75% Grass cover, Good, HSG A |
| 0.180     | 62 | Weighted Average              |
| 0.110     |    | Pervious Area                 |
| 0.070     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC.   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |  |

**Subcatchment 2S: CB2**

Runoff = 0.38 cfs @ 12.15 hrs, Volume= 0.043 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.180     | 98 | Paved parking & roofs         |
| 0.400     | 39 | >75% Grass cover, Good, HSG A |
| 0.140     | 30 | Woods, Good, HSG A            |
| 0.720     | 52 | Weighted Average              |
| 0.540     |    | Pervious Area                 |
| 0.180     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.7         | 26               | 0.0380           | 0.08                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.2         | 49               | 0.4760           | 3.45                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.3         | 48               | 0.1460           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 21               | 0.0470           | 1.52                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6         | 100              | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.3         | 273              | Total            |                      |                   |   |

### Subcatchment 3S: CB3

Runoff = 0.23 cfs @ 12.31 hrs, Volume= 0.035 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.480     | 39 | >75% Grass cover, Good, HSG A |
| 0.070     | 30 | Woods, Good, HSG A            |
| 0.690     | 50 | Weighted Average              |
| 0.550     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 12.3        | 50               | 0.0200           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.6         | 50               | 0.0400           | 1.40                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 11               | 0.0550           | 4.76                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.9         | 236              | 0.0500           | 4.54                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 13.8        | 354              | Total            |                      |                   |   |

**Subcatchment 4S: CB4**

Runoff = 0.13 cfs @ 12.39 hrs, Volume= 0.029 af, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 0.350     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 30 | Woods, Good, HSG A            |
| 1.040     | 44 | Weighted Average              |
| 0.870     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 4.8      | 26            | 0.0560        | 0.09              |                | Sheet Flow,<br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.4      | 67            | 0.3000        | 2.74              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 0.7      | 72            | 0.1290        | 1.80              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 1.7      | 154           | 0.0455        | 1.49              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 24            | 0.0833        | 5.86              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.6      | 95            | 0.0158        | 2.55              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.4      | 453           | Total         |                   |                |  |

**Subcatchment 5S: CB5**

Runoff = 0.32 cfs @ 12.12 hrs, Volume= 0.035 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.130     | 98 | Paved parking & roofs         |
| 0.450     | 39 | >75% Grass cover, Good, HSG A |
| 0.580     | 52 | Weighted Average              |
| 0.450     |    | Pervious Area                 |
| 0.130     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC.</b>   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

### Subcatchment 6S: CB6

Runoff = 0.64 cfs @ 12.15 hrs, Volume= 0.073 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.276     | 98 | Paved parking & roofs         |
| 0.940     | 39 | >75% Grass cover, Good, HSG A |
| 1.216     | 52 | Weighted Average              |
| 0.940     |    | Pervious Area                 |
| 0.276     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 0.8         | 14               | 0.2140           | 0.30                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7         | 34               | 0.0588           | 0.21                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.8         | 104              | 0.0192           | 0.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 25               | 0.0800           | 1.98                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 19               | 0.0526           | 1.61                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.1         | 136              | 0.0100           | 2.03                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.1         | 361              | Total            |                      |                   |   |

**Subcatchment 7S: CB7**

Runoff = 0.25 cfs @ 12.21 hrs, Volume= 0.040 af, Depth= 0.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.790     | 39 | >75% Grass cover, Good, HSG A |
| 0.940     | 48 | Weighted Average              |
| 0.790     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 1.5      | 13            | 0.0380        | 0.15              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 14            | 0.1430        | 2.65              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 29            | 0.0690        | 1.84              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 88            | 0.0227        | 1.05              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 6             | 0.3330        | 4.04              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0225        | 1.05              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 2.4      | 127           | 0.0157        | 0.88              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 61            | 0.0100        | 2.03              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.6      | 434           | Total         |                   |                |  |

**Subcatchment 8S: CB6**

Runoff = 0.42 cfs @ 12.26 hrs, Volume= 0.066 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 1.180     | 39 | >75% Grass cover, Good, HSG A |
| 1.410     | 49 | Weighted Average              |
| 1.180     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.5      | 20            | 0.0250        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 4.0      | 30            | 0.0168        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.6      | 89            | 0.0168        | 0.91              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 63            | 0.0317        | 1.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 19            | 0.0667        | 5.24              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0667        | 1.81              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 171           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 10.8     | 435           | Total         |                   |                |   |

**Subcatchment 9S: CB9**

Runoff = 0.29 cfs @ 12.10 hrs, Volume= 0.023 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.080     | 98 | Paved parking & roofs         |
| 0.120     | 39 | >75% Grass cover, Good, HSG A |
| 0.200     | 63 | Weighted Average              |
| 0.120     |    | Pervious Area                 |
| 0.080     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 10S: CB10**

Runoff = 0.24 cfs @ 12.13 hrs, Volume= 0.029 af, Depth= 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.410     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 51 | Weighted Average              |
| 0.410     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 3.3      | 32            | 0.0310        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 47            | 0.0430        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 28            | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 35            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 211           | Total         |                   |                |   |

**Subcatchment 11S: CB11**

Runoff = 0.59 cfs @ 12.16 hrs, Volume= 0.064 af, Depth= 0.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 0.930     | 54 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

**uc987-2020POST**

Type III 24-hr 10yr Rainfall=4.80"

Prepared by CAQ/rrg

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1/29/2020

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 7.4         | 50               | 0.0100           | 0.11                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2         | 7                | 0.0100           | 0.70                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 45               | 0.0440           | 1.47                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 28               | 0.0650           | 1.78                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 138              | 0.0600           | 4.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.9         | 275              | Total            |                      |                   |   |

**Subcatchment 12S: CB12**

Runoff = 0.54 cfs @ 12.12 hrs, Volume= 0.058 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.760     | 39 | >75% Grass cover, Good, HSG A |
| 0.970     | 52 | Weighted Average              |
| 0.760     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.0      | 50            | 0.0480        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 10            | 0.0480        | 1.53              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 27            | 0.2220        | 3.30              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 23            | 0.0870        | 2.06              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 80            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 45            | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.7      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 264           | Total         |                   |                |   |

**Subcatchment 13S: CB13**

Runoff = 0.16 cfs @ 12.34 hrs, Volume= 0.032 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.890     | 39 | >75% Grass cover, Good, HSG A |
| 1.000     | 45 | Weighted Average              |
| 0.890     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.0      | 34            | 0.1230        | 0.28              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.0      | 6             | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 12            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.5      | 94            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 45            | 0.1330        | 2.55              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.0      | 194           | 0.0520        | 1.60              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 110           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.6      | 502           | Total         |                   |                |   |

**Subcatchment 14S: CB14**

Runoff = 0.38 cfs @ 12.14 hrs, Volume= 0.052 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.920     | 39 | >75% Grass cover, Good, HSG A |
| 1.110     | 49 | Weighted Average              |
| 0.920     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.6      | 50            | 0.5000        | 0.54              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 17            | 0.5000        | 4.95              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 30            | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 36            | 0.0560        | 1.66              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 51            | 0.0390        | 1.38              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 32            | 0.1030        | 2.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 16            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 17            | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 107           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 1.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 5.3      | 371           | Total         |                   |                |   |

**Subcatchment 15S: CB15**

Runoff = 0.42 cfs @ 12.10 hrs, Volume= 0.032 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.240     | 66 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 5             | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 5             | Total         |                   |                |   |

**Subcatchment 16S: CB16**

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.039 af, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.360     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 56 | Weighted Average              |
| 0.360     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC  |
| 0.0      | 11            | 0.0200        | 6.42              | 5.04           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 11            | Total         |                   |                |  |

**Subcatchment 17S: CB17**

Runoff = 0.37 cfs @ 12.42 hrs, Volume= 0.071 af, Depth= 0.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.340     | 98 | Paved parking & roofs         |
| 0.900     | 39 | >75% Grass cover, Good, HSG A |
| 0.570     | 30 | Woods, Good, HSG A            |
| 1.810     | 47 | Weighted Average              |
| 1.470     |    | Pervious Area                 |
| 0.340     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 57            | 0.3030        | 3.85              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 10            | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 22            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 83            | 0.0720        | 5.45              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.8      | 102           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.7      | 134           | 0.0050        | 3.21              | 2.52           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 14.7     | 615           | Total         |                   |                |   |

**Subcatchment 50S: CB50**

Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.049 af, Depth= 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.030     | 39 | >75% Grass cover, Good, HSG A |
| 0.170     | 88 | Weighted Average              |
| 0.030     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 51S: CB51**

Runoff = 0.28 cfs @ 12.33 hrs, Volume= 0.053 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 1.340     | 39 | >75% Grass cover, Good, HSG A |
| 1.510     | 46 | Weighted Average              |
| 1.340     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.8      | 22            | 0.0230        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 36            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 12            | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 74            | 0.0810        | 1.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.9      | 111           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.4      | 468           | Total         |                   |                |   |

**Subcatchment 52S: CB52**

Runoff = 0.94 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.100     | 39 | >75% Grass cover, Good, HSG A |
| 0.310     | 79 | Weighted Average              |
| 0.100     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.0         | 7                | 0.0466           | 9.79                 | 7.69              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

**Subcatchment 53S: CB53**

Runoff = 0.60 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.200     | 39 | >75% Grass cover, Good, HSG A |
| 0.360     | 65 | Weighted Average              |
| 0.200     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.9         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.1         | 14               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 14               | Total            |                      |                   |   |

**Subcatchment 54S: CB54**

Runoff = 0.99 cfs @ 12.10 hrs, Volume= 0.076 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.260     | 98 | Paved parking & roofs         |
| 0.340     | 39 | >75% Grass cover, Good, HSG A |
| 0.600     | 65 | Weighted Average              |
| 0.340     |    | Pervious Area                 |
| 0.260     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 6             | Total         |                   |                |   |

**Subcatchment 55S: CB55**

Runoff = 1.88 cfs @ 12.10 hrs, Volume= 0.145 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.500     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 1.200     | 64 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.500     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.0      | 14            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 60S: CB60**

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.140     | 39 | >75% Grass cover, Good, HSG A |
| 0.330     | 73 | Weighted Average              |
| 0.140     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 13            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 13            | Total         |                   |                |   |

**Subcatchment 61S: CB61**

Runoff = 0.72 cfs @ 12.11 hrs, Volume= 0.058 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.200     | 98 | Paved parking & roofs         |
| 0.300     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 63 | Weighted Average              |
| 0.300     |    | Pervious Area                 |
| 0.200     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.8      | 24            | 0.0833        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 141           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 26            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 58            | 0.0600        | 1.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 42            | 0.0240        | 1.08              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 170           | 0.0300        | 3.52              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 11            | 0.0120        | 4.97              | 3.90           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.7      | 472           | Total         |                   |                |   |

**Subcatchment 62S: CB62**

Runoff = 0.62 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.280     | 71 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.1      | 14            | Total         |                   |                |   |

**Subcatchment 63S: CB63**

Runoff = 0.31 cfs @ 12.40 hrs, Volume= 0.060 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.280     | 98 | Paved parking & roofs         |
| 0.870     | 39 | >75% Grass cover, Good, HSG A |
| 0.550     | 30 | Woods, Good, HSG A            |
| 1.700     | 46 | Weighted Average              |
| 1.420     |    | Pervious Area                 |
| 0.280     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 8.5         | 36               | 0.0260           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 1.1         | 51               | 0.0260           | 0.81                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.1         | 14               | 0.2860           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2         | 40               | 0.3500           | 4.14                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 35               | 0.0570           | 1.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.0         | 71               | 0.0290           | 1.19                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 59               | 0.0250           | 3.21                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 32               | 0.0630           | 5.10                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 30               | 0.0400           | 4.06                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 6                | 0.0233           | 6.92                 | 5.44              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 11.7        | 374              | Total            |                      |                   |   |

**Subcatchment 70S: 70S**

Runoff = 1.27 cfs @ 12.15 hrs, Volume= 0.146 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.168     | 98 | Paved parking & roofs         |
| 1.924     | 39 | >75% Grass cover, Good, HSG A |
| 0.358     | 98 | POND                          |
| 2.450     | 52 | Weighted Average              |
| 1.924     |    | Pervious Area                 |
| 0.526     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 3.2         | 31               | 0.0320           | 0.16                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 2.2         | 170              | 0.0350           | 1.31                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 45               | 0.0910           | 2.11                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.3         | 85               | 0.0235           | 1.07                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.5         | 371              | Total            |                      |                   |  |

**Subcatchment 71S: 71S**

Runoff = 0.04 cfs @ 13.70 hrs, Volume= 0.026 af, Depth= 0.16"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.630     | 39 | >75% Grass cover, Good, HSG A |
| 1.120     | 30 | Woods, Good, HSG A            |
| 1.910     | 39 | Weighted Average              |
| 1.750     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 2.2         | 33               | 0.0910           | 0.25                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 1.5         | 221              | 0.1270           | 2.49                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 2.0         | 110              | 0.0180           | 0.94                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.6         | 97               | 0.0206           | 1.00                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.7         | 501              | Total            |                      |                   |  |

**Subcatchment 72S: 72S**

Runoff = 0.16 cfs @ 12.38 hrs, Volume= 0.033 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.200     | 30 | Woods, Good, HSG A              |
| 0.830     | 49 | Desert shrub range, Good, HSG A |
| 1.030     | 45 | Weighted Average                |
| 1.030     |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.4      | 50            | 0.0110        | 0.13              |                | Sheet Flow,<br>Range n= 0.130 P2= 3.20"                           |
| 0.4      | 50            | 0.0465        | 2.16              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.1      | 24            | 0.0833        | 2.89              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.0      | 152           | 0.0164        | 1.28              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 8.9      | 276           | Total         |                   |                |   |

**Subcatchment 73S: 73S**

Runoff = 0.07 cfs @ 23.75 hrs, Volume= 0.025 af, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 10yr Rainfall=4.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.171     | 98 | Paved parking & roofs           |
| 0.969     | 39 | >75% Grass cover, Good, HSG A   |
| 53.000    | 30 | Woods, Good, HSG A              |
| 0.960     | 49 | Desert shrub range, Good, HSG A |
| 55.100    | 31 | Weighted Average                |
| 54.929    |    | Pervious Area                   |
| 0.171     |    | Impervious Area                 |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.3      | 36            | 0.0555        | 0.10              |                | Sheet Flow,<br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 1.0      | 157           | 0.3000        | 2.74              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps                |
| 0.3      | 54            | 0.3890        | 3.12              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps                |
| 0.2      | 37            | 0.2160        | 3.25              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps     |
| 0.1      | 23            | 0.1310        | 3.62              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.1      | 185           | 0.0210        | 1.45              |                | Shallow Concentrated Flow,<br>Nearly Bare & Untilled Kv= 10.0 fps |
| 10.0     | 492           | Total         |                   |                |   |

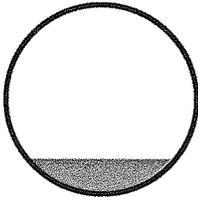
**Reach 1R: DMH1-DMH2**

Inflow Area = 0.900 ac, Inflow Depth = 0.84" for 10yr event  
Inflow = 0.60 cfs @ 12.13 hrs, Volume= 0.063 af  
Outflow = 0.60 cfs @ 12.15 hrs, Volume= 0.063 af, Atten= 1%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.97 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 2.65 fps, Avg. Travel Time= 0.9 min

Peak Storage= 15 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.19'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0500 '/'  
Inlet Invert= 214.44', Outlet Invert= 207.04'



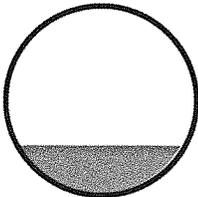
**Reach 2R: DMH2-DMH3**

Inflow Area = 0.900 ac, Inflow Depth = 0.84" for 10yr event  
Inflow = 0.60 cfs @ 12.15 hrs, Volume= 0.063 af  
Outflow = 0.59 cfs @ 12.16 hrs, Volume= 0.063 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.60 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.60 fps, Avg. Travel Time= 1.0 min

Peak Storage= 16 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.27'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 95.0' Slope= 0.0120 '/'  
Inlet Invert= 207.04', Outlet Invert= 205.90'



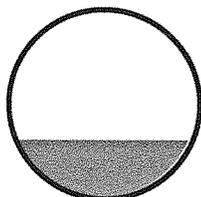
**Reach 3R: DMH3-DMH4**

Inflow Area = 2.630 ac, Inflow Depth = 0.58" for 10yr event  
Inflow = 0.82 cfs @ 12.21 hrs, Volume= 0.127 af  
Outflow = 0.81 cfs @ 12.25 hrs, Volume= 0.127 af, Atten= 1%, Lag= 2.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.93 fps, Min. Travel Time= 0.9 min  
Avg. Velocity = 1.97 fps, Avg. Travel Time= 1.7 min

Peak Storage= 43 cf @ 12.22 hrs, Average Depth at Peak Storage= 0.31'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 205.0' Slope= 0.0120 '/'  
Inlet Invert= 205.80', Outlet Invert= 203.34'



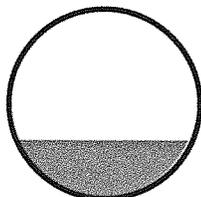
**Reach 4R: DMH4-DMH5**

Inflow Area = 2.630 ac, Inflow Depth = 0.58" for 10yr event  
Inflow = 0.81 cfs @ 12.25 hrs, Volume= 0.127 af  
Outflow = 0.81 cfs @ 12.26 hrs, Volume= 0.127 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.92 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.97 fps, Avg. Travel Time= 0.8 min

Peak Storage= 19 cf @ 12.25 hrs, Average Depth at Peak Storage= 0.31'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 90.0' Slope= 0.0120 '/'  
Inlet Invert= 203.24', Outlet Invert= 202.16'



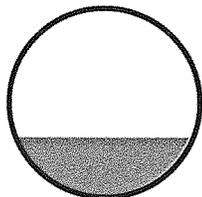
**Reach 5R: DMH5-DMH6**

Inflow Area = 4.426 ac, Inflow Depth = 0.64" for 10yr event  
Inflow = 1.60 cfs @ 12.20 hrs, Volume= 0.235 af  
Outflow = 1.60 cfs @ 12.22 hrs, Volume= 0.235 af, Atten= 0%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.80 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 2.33 fps, Avg. Travel Time= 1.5 min

Peak Storage= 72 cf @ 12.21 hrs, Average Depth at Peak Storage= 0.40'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 215.0' Slope= 0.0130 '/'  
Inlet Invert= 201.91', Outlet Invert= 199.11'



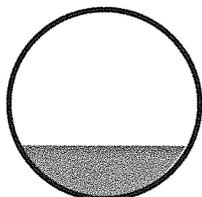
**Reach 6R: DMH6-DMH7**

Inflow Area = 6.776 ac, Inflow Depth = 0.60" for 10yr event  
Inflow = 2.24 cfs @ 12.23 hrs, Volume= 0.341 af  
Outflow = 2.24 cfs @ 12.24 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.89 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.90 fps, Avg. Travel Time= 0.2 min

Peak Storage= 14 cf @ 12.23 hrs, Average Depth at Peak Storage= 0.35'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 51.0' Slope= 0.0400 '/'  
Inlet Invert= 199.01', Outlet Invert= 196.97'



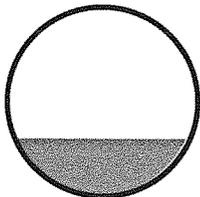
**Reach 7R: DMH7-DMH8**

Inflow Area = 9.586 ac, Inflow Depth = 0.70" for 10yr event  
Inflow = 3.98 cfs @ 12.17 hrs, Volume= 0.563 af  
Outflow = 3.97 cfs @ 12.17 hrs, Volume= 0.563 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 8.69 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.88 fps, Avg. Travel Time= 0.5 min

Peak Storage= 55 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.46'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 120.0' Slope= 0.0350 '/  
Inlet Invert= 196.72', Outlet Invert= 192.52'



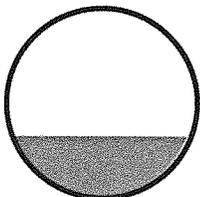
**Reach 8R: DMH8-DMH9**

Inflow Area = 10.306 ac, Inflow Depth = 0.72" for 10yr event  
Inflow = 4.43 cfs @ 12.17 hrs, Volume= 0.615 af  
Outflow = 4.34 cfs @ 12.18 hrs, Volume= 0.615 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 8.77 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 3.89 fps, Avg. Travel Time= 0.8 min

Peak Storage= 99 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.49'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 196.0' Slope= 0.0330 '/  
Inlet Invert= 190.52', Outlet Invert= 184.05'



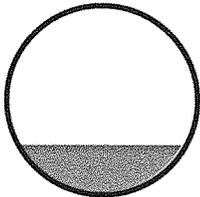
**Reach 9R: DMH9-DMH10**

Inflow Area = 12.206 ac, Inflow Depth = 0.72" for 10yr event  
Inflow = 5.47 cfs @ 12.17 hrs, Volume= 0.737 af  
Outflow = 5.36 cfs @ 12.19 hrs, Volume= 0.737 af, Atten= 2%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 8.19 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 3.58 fps, Avg. Travel Time= 1.1 min

Peak Storage= 161 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.53'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 242.0' Slope= 0.0250 '/'  
Inlet Invert= 183.55', Outlet Invert= 177.50'



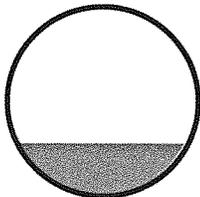
**Reach 10R: DMH10-DMH50**

Inflow Area = 14.316 ac, Inflow Depth = 0.69" for 10yr event  
Inflow = 5.83 cfs @ 12.19 hrs, Volume= 0.820 af  
Outflow = 5.82 cfs @ 12.20 hrs, Volume= 0.820 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 8.01 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.52 fps, Avg. Travel Time= 0.2 min

Peak Storage= 36 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.56'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 50.0' Slope= 0.0220 '/'  
Inlet Invert= 177.40', Outlet Invert= 176.30'



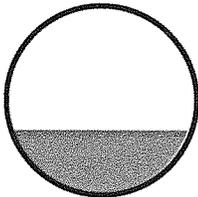
**Reach 11R: DMH11-DMH12**

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event  
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af  
Outflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.77 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 1.87 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 2.0' Slope= 0.0100 1'  
Inlet Invert= 173.95', Outlet Invert= 173.93'



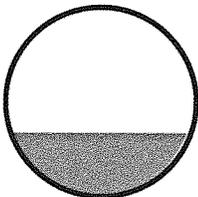
**Reach 12R: DMH12-DMH13**

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event  
Inflow = 0.91 cfs @ 12.12 hrs, Volume= 0.142 af  
Outflow = 0.88 cfs @ 12.15 hrs, Volume= 0.142 af, Atten= 3%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.76 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 1.86 fps, Avg. Travel Time= 1.3 min

Peak Storage= 35 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0100 1'  
Inlet Invert= 173.83', Outlet Invert= 172.35'



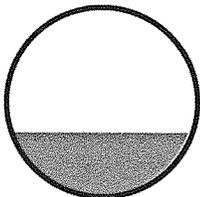
**Reach 13R: DMH13-FES**

Inflow Area = 2.550 ac, Inflow Depth = 0.67" for 10yr event  
Inflow = 0.88 cfs @ 12.15 hrs, Volume= 0.142 af  
Outflow = 0.88 cfs @ 12.16 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 3.76 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 1.86 fps, Avg. Travel Time= 0.2 min

Peak Storage= 6 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 25.0' Slope= 0.0100 '/'  
Inlet Invert= 172.25', Outlet Invert= 172.00'



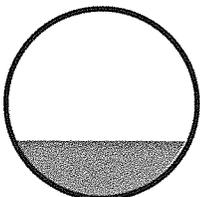
**Reach 50R: DMH50-DMH51**

Inflow Area = 15.996 ac, Inflow Depth = 0.69" for 10yr event  
Inflow = 6.47 cfs @ 12.19 hrs, Volume= 0.923 af  
Outflow = 6.47 cfs @ 12.20 hrs, Volume= 0.923 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.98 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.03 fps, Avg. Travel Time= 0.8 min

Peak Storage= 115 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.61'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 142.0' Slope= 0.0200 '/'  
Inlet Invert= 176.30', Outlet Invert= 173.46'



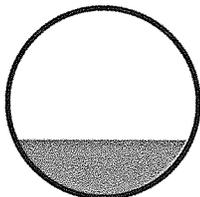
**Reach 51R: DMH51-DMH55**

Inflow Area = 15.996 ac, Inflow Depth = 0.69" for 10yr event  
Inflow = 6.47 cfs @ 12.20 hrs, Volume= 0.923 af  
Outflow = 6.46 cfs @ 12.20 hrs, Volume= 0.923 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.98 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.04 fps, Avg. Travel Time= 0.1 min

Peak Storage= 12 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.61'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 15.0' Slope= 0.0200 '/  
Inlet Invert= 173.36', Outlet Invert= 173.06'



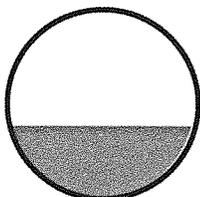
**Reach 52R: DMH52-DMH55**

Inflow Area = 2.470 ac, Inflow Depth = 1.63" for 10yr event  
Inflow = 4.33 cfs @ 12.11 hrs, Volume= 0.335 af  
Outflow = 4.30 cfs @ 12.11 hrs, Volume= 0.335 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.89 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.54 fps, Avg. Travel Time= 0.4 min

Peak Storage= 40 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.48'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 92.0' Slope= 0.0450 '/  
Inlet Invert= 177.95', Outlet Invert= 173.81'



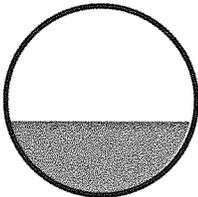
**Reach 53R: DMH53-DMH52**

Inflow Area = 1.800 ac, Inflow Depth = 1.48" for 10yr event  
Inflow = 2.85 cfs @ 12.11 hrs, Volume= 0.221 af  
Outflow = 2.82 cfs @ 12.11 hrs, Volume= 0.221 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.93 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.96 fps, Avg. Travel Time= 0.6 min

Peak Storage= 41 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.39'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 143.0' Slope= 0.0600 '/'  
Inlet Invert= 186.78', Outlet Invert= 178.20'



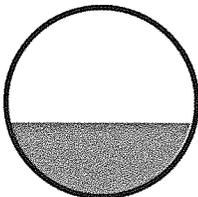
**Reach 54R: DMH54-DMH53**

Inflow Area = 1.800 ac, Inflow Depth = 1.48" for 10yr event  
Inflow = 2.87 cfs @ 12.10 hrs, Volume= 0.221 af  
Outflow = 2.85 cfs @ 12.11 hrs, Volume= 0.221 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.96 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.97 fps, Avg. Travel Time= 0.4 min

Peak Storage= 29 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.40'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 100.0' Slope= 0.0600 '/'  
Inlet Invert= 192.88', Outlet Invert= 186.88'



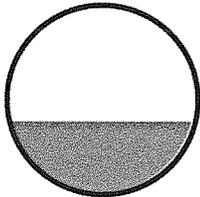
**Reach 55R: DMH55-DMH56**

Inflow Area = 18.466 ac, Inflow Depth = 0.82" for 10yr event  
Inflow = 10.08 cfs @ 12.16 hrs, Volume= 1.258 af  
Outflow = 10.05 cfs @ 12.16 hrs, Volume= 1.258 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.02 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.29 fps, Avg. Travel Time= 0.4 min

Peak Storage= 85 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.77'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 76.0' Slope= 0.0200 '/  
Inlet Invert= 172.96', Outlet Invert= 171.44'



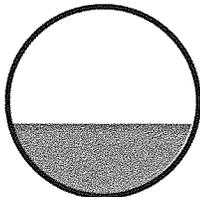
**Reach 56R: DMH56-FES**

Inflow Area = 18.466 ac, Inflow Depth = 0.82" for 10yr event  
Inflow = 10.05 cfs @ 12.16 hrs, Volume= 1.258 af  
Outflow = 10.04 cfs @ 12.16 hrs, Volume= 1.258 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.00 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.30 fps, Avg. Travel Time= 0.2 min

Peak Storage= 36 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.77'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 32.0' Slope= 0.0200 '/  
Inlet Invert= 171.34', Outlet Invert= 170.70'



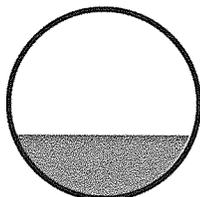
**Reach 60R: DMH60-DMH7**

Inflow Area = 2.810 ac, Inflow Depth = 0.95" for 10yr event  
Inflow = 2.15 cfs @ 12.11 hrs, Volume= 0.222 af  
Outflow = 2.14 cfs @ 12.11 hrs, Volume= 0.222 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.18 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.81 fps, Avg. Travel Time= 0.1 min

Peak Storage= 8 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 33.0' Slope= 0.0600 '/'  
Inlet Invert= 199.20', Outlet Invert= 197.22'



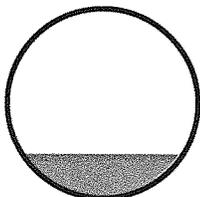
**Reach 61R: DMH61-DMH60**

Inflow Area = 1.980 ac, Inflow Depth = 0.64" for 10yr event  
Inflow = 0.67 cfs @ 12.12 hrs, Volume= 0.106 af  
Outflow = 0.65 cfs @ 12.15 hrs, Volume= 0.106 af, Atten= 3%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.78 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.33 fps, Avg. Travel Time= 1.3 min

Peak Storage= 25 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.23'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 180.0' Slope= 0.0250 '/'  
Inlet Invert= 203.80', Outlet Invert= 199.30'



**Pond 1P: POND 1**

Inflow Area = 23.466 ac, Inflow Depth = 0.77" for 10yr event  
 Inflow = 12.21 cfs @ 12.17 hrs, Volume= 1.507 af  
 Outflow = 6.20 cfs @ 12.56 hrs, Volume= 1.507 af, Atten= 49%, Lag= 23.3 min  
 Discarded = 6.20 cfs @ 12.56 hrs, Volume= 1.507 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 168.52' @ 12.56 hrs Surf.Area= 0.307 ac Storage= 0.155 af

Plug-Flow detention time= 5.6 min calculated for 1.507 af (100% of inflow)  
 Center-of-Mass det. time= 5.4 min ( 911.8 - 906.4 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 168.00' | 1.427 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 168.00           | 0.290             | 0.000                 | 0.000                 |
| 170.00           | 0.357             | 0.647                 | 0.647                 |
| 172.00           | 0.423             | 0.780                 | 1.427                 |

| Device | Routing   | Invert | Outlet Devices                              |
|--------|-----------|--------|---|
| #1     | Discarded | 0.00'  | 20.000 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=6.20 cfs @ 12.56 hrs HW=168.52' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 6.20 cfs)

**Pond 12P: SFB 10**

Inflow Area = 21.016 ac, Inflow Depth = 0.80" for 10yr event  
 Inflow = 10.92 cfs @ 12.16 hrs, Volume= 1.400 af  
 Outflow = 10.95 cfs @ 12.17 hrs, Volume= 1.360 af, Atten= 0%, Lag= 0.4 min  
 Primary = 10.95 cfs @ 12.17 hrs, Volume= 1.360 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 171.13' @ 12.17 hrs Surf.Area= 0.033 ac Storage= 0.050 af

Plug-Flow detention time= 22.5 min calculated for 1.358 af (97% of inflow)  
 Center-of-Mass det. time= 7.8 min ( 905.8 - 898.0 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 169.00' | 0.083 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 169.00           | 0.015             | 0.000                 | 0.000                 |
| 170.00           | 0.022             | 0.018                 | 0.018                 |
| 172.00           | 0.042             | 0.064                 | 0.083                 |

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 170.80' | <b>20.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

Primary OutFlow Max=10.70 cfs @ 12.17 hrs HW=171.13' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 10.70 cfs @ 1.64 fps)

**Link 74L: COMBINE-HYDROGRAPHS**

Inflow Area = 58.040 ac, Inflow Depth = 0.02" for 10yr event  
 Inflow = 0.18 cfs @ 12.45 hrs, Volume= 0.083 af  
 Primary = 0.18 cfs @ 12.45 hrs, Volume= 0.083 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

**25 YR POST-DEVELOPMENT**

**Subcatchment 1S: CB1**

Runoff = 0.34 cfs @ 12.10 hrs, Volume= 0.026 af, Depth= 1.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.070     | 98 | Paved parking & roofs         |
| 0.110     | 39 | >75% Grass cover, Good, HSG A |
| 0.180     | 62 | Weighted Average              |
| 0.110     |    | Pervious Area                 |
| 0.070     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 2S: CB2**

Runoff = 0.63 cfs @ 12.13 hrs, Volume= 0.062 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.180     | 98 | Paved parking & roofs         |
| 0.400     | 39 | >75% Grass cover, Good, HSG A |
| 0.140     | 30 | Woods, Good, HSG A            |
| 0.720     | 52 | Weighted Average              |
| 0.540     |    | Pervious Area                 |
| 0.180     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.7         | 26               | 0.0380           | 0.08                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.2         | 49               | 0.4760           | 3.45                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.3         | 48               | 0.1460           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 21               | 0.0470           | 1.52                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6         | 100              | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.3         | 273              | Total            |                      |                   |   |

### Subcatchment 3S: CB3

Runoff = 0.41 cfs @ 12.25 hrs, Volume= 0.052 af, Depth= 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.480     | 39 | >75% Grass cover, Good, HSG A |
| 0.070     | 30 | Woods, Good, HSG A            |
| 0.690     | 50 | Weighted Average              |
| 0.550     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 12.3        | 50               | 0.0200           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.6         | 50               | 0.0400           | 1.40                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 11               | 0.0550           | 4.76                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.9         | 236              | 0.0500           | 4.54                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 13.8        | 354              | Total            |                      |                   |   |

**Subcatchment 4S: CB4**

Runoff = 0.28 cfs @ 12.30 hrs, Volume= 0.048 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 0.350     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 30 | Woods, Good, HSG A            |
| 1.040     | 44 | Weighted Average              |
| 0.870     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.8      | 26            | 0.0560        | 0.09              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.4      | 67            | 0.3000        | 2.74              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.7      | 72            | 0.1290        | 1.80              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.7      | 154           | 0.0455        | 1.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 24            | 0.0833        | 5.86              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 95            | 0.0158        | 2.55              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.4      | 453           | Total         |                   |                |   |

**Subcatchment 5S: CB5**

Runoff = 0.55 cfs @ 12.11 hrs, Volume= 0.050 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.130     | 98 | Paved parking & roofs         |
| 0.450     | 39 | >75% Grass cover, Good, HSG A |
| 0.580     | 52 | Weighted Average              |
| 0.450     |    | Pervious Area                 |
| 0.130     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC.</b>   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

### Subcatchment 6S: CB6

Runoff = 1.07 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.276     | 98 | Paved parking & roofs         |
| 0.940     | 39 | >75% Grass cover, Good, HSG A |
| 1.216     | 52 | Weighted Average              |
| 0.940     |    | Pervious Area                 |
| 0.276     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 0.8         | 14               | 0.2140           | 0.30                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7         | 34               | 0.0588           | 0.21                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.8         | 104              | 0.0192           | 0.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 25               | 0.0800           | 1.98                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 19               | 0.0526           | 1.61                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.1         | 136              | 0.0100           | 2.03                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.1         | 361              | Total            |                      |                   |   |

**Subcatchment 7S: CB7**

Runoff = 0.52 cfs @ 12.16 hrs, Volume= 0.061 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.790     | 39 | >75% Grass cover, Good, HSG A |
| 0.940     | 48 | Weighted Average              |
| 0.790     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 1.5      | 13            | 0.0380        | 0.15              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 14            | 0.1430        | 2.65              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 29            | 0.0690        | 1.84              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 88            | 0.0227        | 1.05              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 6             | 0.3330        | 4.04              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0225        | 1.05              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 2.4      | 127           | 0.0157        | 0.88              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 61            | 0.0100        | 2.03              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.6      | 434           | Total         |                   |                |  |

**Subcatchment 8S: CB6**

Runoff = 0.80 cfs @ 12.21 hrs, Volume= 0.099 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 1.180     | 39 | >75% Grass cover, Good, HSG A |
| 1.410     | 49 | Weighted Average              |
| 1.180     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.5      | 20            | 0.0250        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 4.0      | 30            | 0.0168        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.6      | 89            | 0.0168        | 0.91              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 63            | 0.0317        | 1.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 19            | 0.0667        | 5.24              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0667        | 1.81              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 171           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 10.8     | 435           | Total         |                   |                |   |

**Subcatchment 9S: CB9**

Runoff = 0.40 cfs @ 12.10 hrs, Volume= 0.031 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.080     | 98 | Paved parking & roofs         |
| 0.120     | 39 | >75% Grass cover, Good, HSG A |
| 0.200     | 63 | Weighted Average              |
| 0.120     |    | Pervious Area                 |
| 0.080     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 10S: CB10**

Runoff = 0.44 cfs @ 12.11 hrs, Volume= 0.042 af, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.410     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 51 | Weighted Average              |
| 0.410     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 3.3      | 32            | 0.0310        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 47            | 0.0430        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 28            | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 35            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 211           | Total         |                   |                |   |

**Subcatchment 11S: CB11**

Runoff = 0.94 cfs @ 12.15 hrs, Volume= 0.091 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 0.930     | 54 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

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Type III 24-hr 25yr Rainfall=5.50"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 7.4         | 50               | 0.0100           | 0.11                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2         | 7                | 0.0100           | 0.70                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 45               | 0.0440           | 1.47                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 28               | 0.0650           | 1.78                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 138              | 0.0600           | 4.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.9         | 275              | Total            |                      |                   |   |

**Subcatchment 12S: CB12**

Runoff = 0.91 cfs @ 12.11 hrs, Volume= 0.084 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.760     | 39 | >75% Grass cover, Good, HSG A |
| 0.970     | 52 | Weighted Average              |
| 0.760     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.0      | 50            | 0.0480        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 10            | 0.0480        | 1.53              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 27            | 0.2220        | 3.30              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 23            | 0.0870        | 2.06              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 80            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 45            | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.7      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 264           | Total         |                   |                |   |

**Subcatchment 13S: CB13**

Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.051 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.890     | 39 | >75% Grass cover, Good, HSG A |
| 1.000     | 45 | Weighted Average              |
| 0.890     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.0      | 34            | 0.1230        | 0.28              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.0      | 6             | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 12            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.5      | 94            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 45            | 0.1330        | 2.55              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.0      | 194           | 0.0520        | 1.60              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 110           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.6      | 502           | Total         |                   |                |   |

**Subcatchment 14S: CB14**

Runoff = 0.77 cfs @ 12.11 hrs, Volume= 0.078 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.920     | 39 | >75% Grass cover, Good, HSG A |
| 1.110     | 49 | Weighted Average              |
| 0.920     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.6      | 50            | 0.5000        | 0.54              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 17            | 0.5000        | 4.95              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 30            | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 36            | 0.0560        | 1.66              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 51            | 0.0390        | 1.38              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 32            | 0.1030        | 2.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 16            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 17            | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 107           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 1.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 5.3      | 371           | Total         |                   |                |   |

### Subcatchment 15S: CB15

Runoff = 0.56 cfs @ 12.10 hrs, Volume= 0.042 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.240     | 66 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 5             | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 5             | Total         |                   |                |   |

**Subcatchment 16S: CB16**

Runoff = 0.66 cfs @ 12.11 hrs, Volume= 0.055 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.360     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 56 | Weighted Average              |
| 0.360     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC  |
| 0.0      | 11            | 0.0200        | 6.42              | 5.04           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 11            | Total         |                   |                |  |

**Subcatchment 17S: CB17**

Runoff = 0.71 cfs @ 12.31 hrs, Volume= 0.109 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.340     | 98 | Paved parking & roofs         |
| 0.900     | 39 | >75% Grass cover, Good, HSG A |
| 0.570     | 30 | Woods, Good, HSG A            |
| 1.810     | 47 | Weighted Average              |
| 1.470     |    | Pervious Area                 |
| 0.340     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 57            | 0.3030        | 3.85              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 10            | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 22            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 83            | 0.0720        | 5.45              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.8      | 102           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.7      | 134           | 0.0050        | 3.21              | 2.52           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 14.7     | 615           | Total         |                   |                |   |

**Subcatchment 50S: CB50**

Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.030     | 39 | >75% Grass cover, Good, HSG A |
| 0.170     | 88 | Weighted Average              |
| 0.030     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 51S: CB51**

Runoff = 0.61 cfs @ 12.17 hrs, Volume= 0.084 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 1.340     | 39 | >75% Grass cover, Good, HSG A |
| 1.510     | 46 | Weighted Average              |
| 1.340     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.8      | 22            | 0.0230        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 36            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 12            | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 74            | 0.0810        | 1.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.9      | 111           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.4      | 468           | Total         |                   |                |   |

**Subcatchment 52S: CB52**

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 0.084 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.100     | 39 | >75% Grass cover, Good, HSG A |
| 0.310     | 79 | Weighted Average              |
| 0.100     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.0         | 7                | 0.0466           | 9.79                 | 7.69              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

**Subcatchment 53S: CB53**

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.060 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.200     | 39 | >75% Grass cover, Good, HSG A |
| 0.360     | 65 | Weighted Average              |
| 0.200     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.9         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.1         | 14               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 14               | Total            |                      |                   |   |

**Subcatchment 54S: CB54**

Runoff = 1.33 cfs @ 12.10 hrs, Volume= 0.100 af, Depth= 1.99"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.260     | 98 | Paved parking & roofs         |
| 0.340     | 39 | >75% Grass cover, Good, HSG A |
| 0.600     | 65 | Weighted Average              |
| 0.340     |    | Pervious Area                 |
| 0.260     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 6             | Total         |                   |                |   |

**Subcatchment 55S: CB55**

Runoff = 2.54 cfs @ 12.10 hrs, Volume= 0.191 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.500     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 1.200     | 64 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.500     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.0      | 14            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 60S: CB60**

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.140     | 39 | >75% Grass cover, Good, HSG A |
| 0.330     | 73 | Weighted Average              |
| 0.140     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.0         | 13               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 13               | Total            |                      |                   |   |

**Subcatchment 61S: CB61**

Runoff = 0.99 cfs @ 12.11 hrs, Volume= 0.076 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.200     | 98 | Paved parking & roofs         |
| 0.300     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 63 | Weighted Average              |
| 0.300     |    | Pervious Area                 |
| 0.200     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 1.8         | 24               | 0.0833           | 0.23                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7         | 141              | 0.0150           | 0.86                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 26               | 0.0100           | 2.03                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6         | 58               | 0.0600           | 1.71                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6         | 42               | 0.0240           | 1.08                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8         | 170              | 0.0300           | 3.52                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 11               | 0.0120           | 4.97                 | 3.90              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.7         | 472              | Total            |                      |                   |   |

**Subcatchment 62S: CB62**

Runoff = 0.80 cfs @ 12.10 hrs, Volume= 0.058 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.280     | 71 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.1      | 14            | Total         |                   |                |  |

### Subcatchment 63S: CB63

Runoff = 0.61 cfs @ 12.27 hrs, Volume= 0.095 af, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.280     | 98 | Paved parking & roofs         |
| 0.870     | 39 | >75% Grass cover, Good, HSG A |
| 0.550     | 30 | Woods, Good, HSG A            |
| 1.700     | 46 | Weighted Average              |
| 1.420     |    | Pervious Area                 |
| 0.280     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 8.5      | 36            | 0.0260        | 0.07              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 1.1      | 51            | 0.0260        | 0.81              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.1      | 14            | 0.2860        | 2.67              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 40            | 0.3500        | 4.14              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 35            | 0.0570        | 1.67              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.0      | 71            | 0.0290        | 1.19              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 59            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 32            | 0.0630        | 5.10              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 30            | 0.0400        | 4.06              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 11.7     | 374           | Total         |                   |                |   |

**Subcatchment 70S: 70S**

Runoff = 2.14 cfs @ 12.14 hrs, Volume= 0.212 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.168     | 98 | Paved parking & roofs         |
| 1.924     | 39 | >75% Grass cover, Good, HSG A |
| 0.358     | 98 | POND                          |
| 2.450     | 52 | Weighted Average              |
| 1.924     |    | Pervious Area                 |
| 0.526     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 3.2      | 31            | 0.0320        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 2.2      | 170           | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 45            | 0.0910        | 2.11              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.3      | 85            | 0.0235        | 1.07              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.5      | 371           | Total         |                   |                |  |

**Subcatchment 71S: 71S**

Runoff = 0.18 cfs @ 12.43 hrs, Volume= 0.050 af, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.630     | 39 | >75% Grass cover, Good, HSG A |
| 1.120     | 30 | Woods, Good, HSG A            |
| 1.910     | 39 | Weighted Average              |
| 1.750     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 2.2      | 33            | 0.0910        | 0.25              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 1.5      | 221           | 0.1270        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 2.0      | 110           | 0.0180        | 0.94              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.6      | 97            | 0.0206        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.7      | 501           | Total         |                   |                |  |

**Subcatchment 72S: 72S**

Runoff = 0.32 cfs @ 12.20 hrs, Volume= 0.052 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.200     | 30 | Woods, Good, HSG A              |
| 0.830     | 49 | Desert shrub range, Good, HSG A |
| 1.030     | 45 | Weighted Average                |
| 1.030     |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.4      | 50            | 0.0110        | 0.13              |                | <b>Sheet Flow,</b><br>Range n= 0.130 P2= 3.20"                           |
| 0.4      | 50            | 0.0465        | 2.16              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.1      | 24            | 0.0833        | 2.89              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.0      | 152           | 0.0164        | 1.28              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 8.9      | 276           | Total         |                   |                |  |

### Subcatchment 73S: 73S

Runoff = 0.31 cfs @ 16.91 hrs, Volume= 0.217 af, Depth= 0.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25yr Rainfall=5.50"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.171     | 98 | Paved parking & roofs           |
| 0.969     | 39 | >75% Grass cover, Good, HSG A   |
| 53.000    | 30 | Woods, Good, HSG A              |
| 0.960     | 49 | Desert shrub range, Good, HSG A |
| 55.100    | 31 | Weighted Average                |
| 54.929    |    | Pervious Area                   |
| 0.171     |    | Impervious Area                 |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.3      | 36            | 0.0555        | 0.10              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 1.0      | 157           | 0.3000        | 2.74              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.3      | 54            | 0.3890        | 3.12              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 37            | 0.2160        | 3.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps     |
| 0.1      | 23            | 0.1310        | 3.62              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.1      | 185           | 0.0210        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 10.0     | 492           | Total         |                   |                |  |

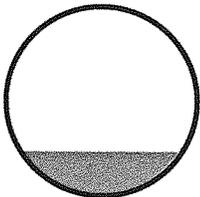
**Reach 1R: DMH1-DMH2**

Inflow Area = 0.900 ac, Inflow Depth = 1.18" for 25yr event  
Inflow = 0.98 cfs @ 12.12 hrs, Volume= 0.089 af  
Outflow = 0.94 cfs @ 12.13 hrs, Volume= 0.089 af, Atten= 3%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.81 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 2.86 fps, Avg. Travel Time= 0.9 min

Peak Storage= 21 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.24'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0500 '/'  
Inlet Invert= 214.44', Outlet Invert= 207.04'



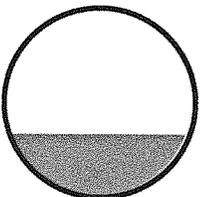
**Reach 2R: DMH2-DMH3**

Inflow Area = 0.900 ac, Inflow Depth = 1.18" for 25yr event  
Inflow = 0.94 cfs @ 12.13 hrs, Volume= 0.089 af  
Outflow = 0.94 cfs @ 12.15 hrs, Volume= 0.089 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.09 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.72 fps, Avg. Travel Time= 0.9 min

Peak Storage= 22 cf @ 12.14 hrs, Average Depth at Peak Storage= 0.34'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 95.0' Slope= 0.0120 '/'  
Inlet Invert= 207.04', Outlet Invert= 205.90'



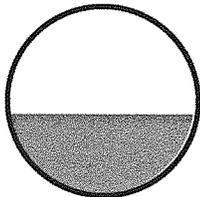
**Reach 3R: DMH3-DMH4**

Inflow Area = 2.630 ac, Inflow Depth = 0.86" for 25yr event  
Inflow = 1.50 cfs @ 12.18 hrs, Volume= 0.189 af  
Outflow = 1.49 cfs @ 12.21 hrs, Volume= 0.189 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.65 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.6 min

Peak Storage= 66 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.43'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 205.0' Slope= 0.0120 '/'  
Inlet Invert= 205.80', Outlet Invert= 203.34'



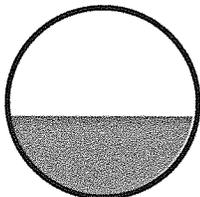
**Reach 4R: DMH4-DMH5**

Inflow Area = 2.630 ac, Inflow Depth = 0.86" for 25yr event  
Inflow = 1.49 cfs @ 12.21 hrs, Volume= 0.189 af  
Outflow = 1.49 cfs @ 12.22 hrs, Volume= 0.189 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.64 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.21 hrs, Average Depth at Peak Storage= 0.43'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 90.0' Slope= 0.0120 '/'  
Inlet Invert= 203.24', Outlet Invert= 202.16'



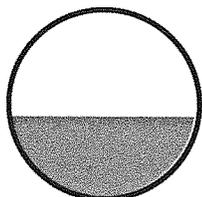
**Reach 5R: DMH5-DMH6**

Inflow Area = 4.426 ac, Inflow Depth = 0.93" for 25yr event  
Inflow = 2.87 cfs @ 12.17 hrs, Volume= 0.344 af  
Outflow = 2.81 cfs @ 12.20 hrs, Volume= 0.344 af, Atten= 2%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.61 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.52 fps, Avg. Travel Time= 1.4 min

Peak Storage= 110 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.54'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 215.0' Slope= 0.0130 '/'  
Inlet Invert= 201.91', Outlet Invert= 199.11'



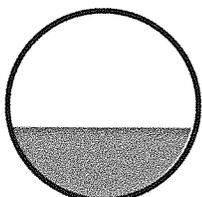
**Reach 6R: DMH6-DMH7**

Inflow Area = 6.776 ac, Inflow Depth = 0.89" for 25yr event  
Inflow = 4.08 cfs @ 12.19 hrs, Volume= 0.505 af  
Outflow = 4.08 cfs @ 12.20 hrs, Volume= 0.505 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.34 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.21 fps, Avg. Travel Time= 0.2 min

Peak Storage= 22 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.48'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 51.0' Slope= 0.0400 '/'  
Inlet Invert= 199.01', Outlet Invert= 196.97'



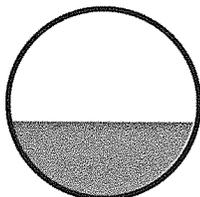
**Reach 7R: DMH7-DMH8**

Inflow Area = 9.586 ac, Inflow Depth = 1.01" for 25yr event  
Inflow = 6.78 cfs @ 12.16 hrs, Volume= 0.808 af  
Outflow = 6.75 cfs @ 12.17 hrs, Volume= 0.808 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.08 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.19 fps, Avg. Travel Time= 0.5 min

Peak Storage= 81 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.61'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 120.0' Slope= 0.0350 '/'  
Inlet Invert= 196.72', Outlet Invert= 192.52'



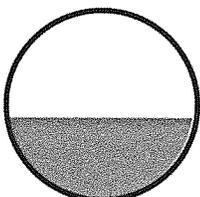
**Reach 8R: DMH8-DMH9**

Inflow Area = 10.306 ac, Inflow Depth = 1.03" for 25yr event  
Inflow = 7.46 cfs @ 12.16 hrs, Volume= 0.880 af  
Outflow = 7.42 cfs @ 12.17 hrs, Volume= 0.880 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.12 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 4.18 fps, Avg. Travel Time= 0.8 min

Peak Storage= 145 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.65'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 196.0' Slope= 0.0330 '/'  
Inlet Invert= 190.52', Outlet Invert= 184.05'



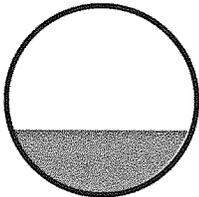
**Reach 9R: DMH9-DMH10**

Inflow Area = 12.206 ac, Inflow Depth = 1.04" for 25yr event  
Inflow = 9.14 cfs @ 12.16 hrs, Volume= 1.055 af  
Outflow = 8.93 cfs @ 12.18 hrs, Volume= 1.055 af, Atten= 2%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.50 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 3.85 fps, Avg. Travel Time= 1.0 min

Peak Storage= 233 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 242.0' Slope= 0.0250 '/'  
Inlet Invert= 183.55', Outlet Invert= 177.50'



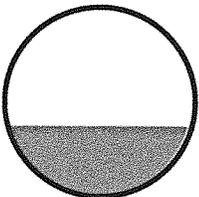
**Reach 10R: DMH10-DMH50**

Inflow Area = 14.316 ac, Inflow Depth = 0.99" for 25yr event  
Inflow = 10.04 cfs @ 12.17 hrs, Volume= 1.184 af  
Outflow = 10.02 cfs @ 12.17 hrs, Volume= 1.184 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.29 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.80 fps, Avg. Travel Time= 0.2 min

Peak Storage= 54 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.75'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 50.0' Slope= 0.0220 '/'  
Inlet Invert= 177.40', Outlet Invert= 176.30'



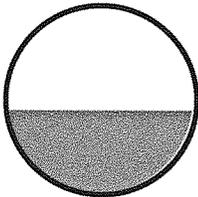
**Reach 11R: DMH11-DMH12**

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event  
Inflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af  
Outflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.31 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 2.03 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 2.0' Slope= 0.0100 '/'  
Inlet Invert= 173.95', Outlet Invert= 173.93'



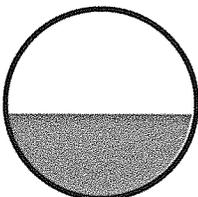
**Reach 12R: DMH12-DMH13**

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event  
Inflow = 1.46 cfs @ 12.15 hrs, Volume= 0.205 af  
Outflow = 1.47 cfs @ 12.17 hrs, Volume= 0.205 af, Atten= 0%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.32 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.01 fps, Avg. Travel Time= 1.2 min

Peak Storage= 50 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0100 '/'  
Inlet Invert= 173.83', Outlet Invert= 172.35'



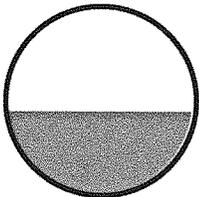
**Reach 13R: DMH13-FES**

Inflow Area = 2.550 ac, Inflow Depth = 0.97" for 25yr event  
Inflow = 1.47 cfs @ 12.17 hrs, Volume= 0.205 af  
Outflow = 1.46 cfs @ 12.17 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.31 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.00 fps, Avg. Travel Time= 0.2 min

Peak Storage= 8 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 25.0' Slope= 0.0100 '/  
Inlet Invert= 172.25', Outlet Invert= 172.00'



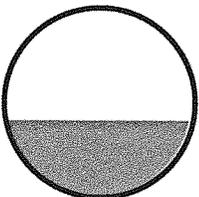
**Reach 50R: DMH50-DMH51**

Inflow Area = 15.996 ac, Inflow Depth = 1.00" for 25yr event  
Inflow = 11.17 cfs @ 12.17 hrs, Volume= 1.327 af  
Outflow = 10.96 cfs @ 12.18 hrs, Volume= 1.327 af, Atten= 2%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.24 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.27 fps, Avg. Travel Time= 0.7 min

Peak Storage= 171 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.82'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 142.0' Slope= 0.0200 '/  
Inlet Invert= 176.30', Outlet Invert= 173.46'



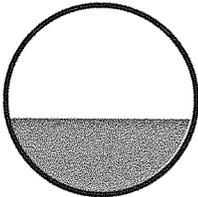
**Reach 51R: DMH51-DMH55**

Inflow Area = 15.996 ac, Inflow Depth = 1.00" for 25yr event  
Inflow = 10.96 cfs @ 12.18 hrs, Volume= 1.327 af  
Outflow = 10.95 cfs @ 12.18 hrs, Volume= 1.327 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 9.21 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.27 fps, Avg. Travel Time= 0.1 min

Peak Storage= 18 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.81'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 15.0' Slope= 0.0200 '/  
Inlet Invert= 173.36', Outlet Invert= 173.06'



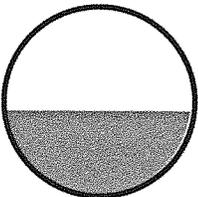
**Reach 52R: DMH52-DMH55**

Inflow Area = 2.470 ac, Inflow Depth = 2.11" for 25yr event  
Inflow = 5.75 cfs @ 12.10 hrs, Volume= 0.435 af  
Outflow = 5.71 cfs @ 12.11 hrs, Volume= 0.435 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.67 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.74 fps, Avg. Travel Time= 0.4 min

Peak Storage= 50 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 92.0' Slope= 0.0450 '/  
Inlet Invert= 177.95', Outlet Invert= 173.81'



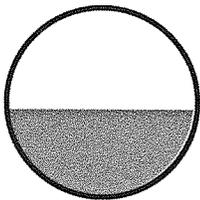
**Reach 53R: DMH53-DMH52**

Inflow Area = 1.800 ac, Inflow Depth = 1.94" for 25yr event  
Inflow = 3.85 cfs @ 12.10 hrs, Volume= 0.291 af  
Outflow = 3.81 cfs @ 12.11 hrs, Volume= 0.291 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.76 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.20 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 12.11 hrs, Average Depth at Peak Storage= 0.47'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 143.0' Slope= 0.0600 '/'  
Inlet Invert= 186.78', Outlet Invert= 178.20'



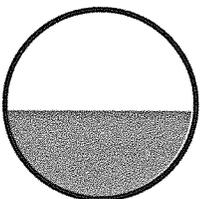
**Reach 54R: DMH54-DMH53**

Inflow Area = 1.800 ac, Inflow Depth = 1.94" for 25yr event  
Inflow = 3.88 cfs @ 12.10 hrs, Volume= 0.291 af  
Outflow = 3.85 cfs @ 12.10 hrs, Volume= 0.291 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.79 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.22 fps, Avg. Travel Time= 0.4 min

Peak Storage= 36 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.47'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 100.0' Slope= 0.0600 '/'  
Inlet Invert= 192.88', Outlet Invert= 186.88'



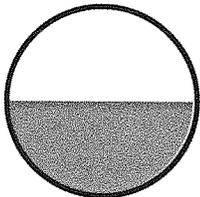
**Reach 55R: DMH55-DMH56**

Inflow Area = 18.466 ac, Inflow Depth = 1.14" for 25yr event  
Inflow = 15.94 cfs @ 12.15 hrs, Volume= 1.761 af  
Outflow = 15.91 cfs @ 12.16 hrs, Volume= 1.761 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.18 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.54 fps, Avg. Travel Time= 0.4 min

Peak Storage= 119 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.00'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 76.0' Slope= 0.0200 '/'  
Inlet Invert= 172.96', Outlet Invert= 171.44'



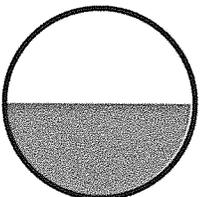
**Reach 56R: DMH56-FES**

Inflow Area = 18.466 ac, Inflow Depth = 1.14" for 25yr event  
Inflow = 15.91 cfs @ 12.16 hrs, Volume= 1.761 af  
Outflow = 15.90 cfs @ 12.16 hrs, Volume= 1.761 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.17 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.54 fps, Avg. Travel Time= 0.2 min

Peak Storage= 50 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.00'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 32.0' Slope= 0.0200 '/'  
Inlet Invert= 171.34', Outlet Invert= 170.70'



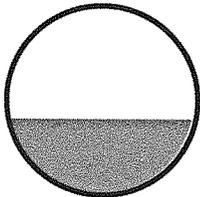
**Reach 60R: DMH60-DMH7**

Inflow Area = 2.810 ac, Inflow Depth = 1.29" for 25yr event  
Inflow = 2.99 cfs @ 12.12 hrs, Volume= 0.303 af  
Outflow = 2.98 cfs @ 12.12 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.03 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.08 fps, Avg. Travel Time= 0.1 min

Peak Storage= 10 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.40'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 33.0' Slope= 0.0600 '/'  
Inlet Invert= 199.20', Outlet Invert= 197.22'



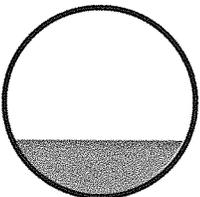
**Reach 61R: DMH61-DMH60**

Inflow Area = 1.980 ac, Inflow Depth = 0.93" for 25yr event  
Inflow = 1.11 cfs @ 12.16 hrs, Volume= 0.153 af  
Outflow = 1.11 cfs @ 12.17 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.58 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.53 fps, Avg. Travel Time= 1.2 min

Peak Storage= 36 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.30'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 180.0' Slope= 0.0250 '/'  
Inlet Invert= 203.80', Outlet Invert= 199.30'



**Pond 1P: POND 1**

Inflow Area = 23.466 ac, Inflow Depth = 1.09" for 25yr event  
 Inflow = 19.52 cfs @ 12.16 hrs, Volume= 2.139 af  
 Outflow = 6.66 cfs @ 12.65 hrs, Volume= 2.139 af, Atten= 66%, Lag= 29.0 min  
 Discarded = 6.66 cfs @ 12.65 hrs, Volume= 2.139 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 169.21' @ 12.65 hrs Surf.Area= 0.330 ac Storage= 0.374 af

Plug-Flow detention time= 14.4 min calculated for 2.136 af (100% of inflow)  
 Center-of-Mass det. time= 14.4 min ( 907.9 - 893.5 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 168.00' | 1.427 af      | <b>Custom Stage Data (Prismatic) Listed below (Recalc)</b> |

| Elevation<br>(feet) | Surf.Area<br>(acres) | Inc.Store<br>(acre-feet) | Cum.Store<br>(acre-feet) |
|---------------------|----------------------|--------------------------|--------------------------|
| 168.00              | 0.290                | 0.000                    | 0.000                    |
| 170.00              | 0.357                | 0.647                    | 0.647                    |
| 172.00              | 0.423                | 0.780                    | 1.427                    |

| Device | Routing   | Invert | Outlet Devices                                     |
|--------|-----------|--------|--|
| #1     | Discarded | 0.00'  | <b>20.000 in/hr Exfiltration over Surface area</b> |

**Discarded OutFlow** Max=6.66 cfs @ 12.65 hrs HW=169.21' (Free Discharge)  
 ↑1=Exfiltration (Exfiltration Controls 6.66 cfs)

**Pond 12P: SFB 10**

Inflow Area = 21.016 ac, Inflow Depth = 1.12" for 25yr event  
 Inflow = 17.36 cfs @ 12.16 hrs, Volume= 1.967 af  
 Outflow = 17.43 cfs @ 12.16 hrs, Volume= 1.927 af, Atten= 0%, Lag= 0.3 min  
 Primary = 17.43 cfs @ 12.16 hrs, Volume= 1.927 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 171.24' @ 12.17 hrs Surf.Area= 0.034 ac Storage= 0.054 af

Plug-Flow detention time= 16.7 min calculated for 1.925 af (98% of inflow)  
 Center-of-Mass det. time= 6.0 min ( 893.2 - 887.2 )

| Volume | Invert  | Avail.Storage | Storage Description  |
|--------|---------|---------------|--|
| #1     | 169.00' | 0.083 af      | <b>Custom Stage Data (Prismatic) Listed below (Recalc)</b> |

| Elevation<br>(feet) | Surf.Area<br>(acres) | Inc.Store<br>(acre-feet) | Cum.Store<br>(acre-feet) |
|---------------------|----------------------|--------------------------|--------------------------|
| 169.00              | 0.015                | 0.000                    | 0.000                    |
| 170.00              | 0.022                | 0.018                    | 0.018                    |
| 172.00              | 0.042                | 0.064                    | 0.083                    |

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 170.80' | <b>20.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

Primary OutFlow Max=17.08 cfs @ 12.16 hrs HW=171.24' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 17.08 cfs @ 1.95 fps)

**Link 74L: COMBINE-HYDROGRAPHS**

Inflow Area = 58.040 ac, Inflow Depth = 0.07" for 25yr event  
 Inflow = 0.48 cfs @ 12.37 hrs, Volume= 0.319 af  
 Primary = 0.48 cfs @ 12.37 hrs, Volume= 0.319 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

**50 YR POST-DEVELOPMENT**

**Subcatchment 1S: CB1**

Runoff = 0.45 cfs @ 12.10 hrs, Volume= 0.033 af, Depth= 2.23"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.070     | 98 | Paved parking & roofs         |
| 0.110     | 39 | >75% Grass cover, Good, HSG A |
| 0.180     | 62 | Weighted Average              |
| 0.110     |    | Pervious Area                 |
| 0.070     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC.   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |  |

**Subcatchment 2S: CB2**

Runoff = 0.94 cfs @ 12.12 hrs, Volume= 0.084 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.180     | 98 | Paved parking & roofs         |
| 0.400     | 39 | >75% Grass cover, Good, HSG A |
| 0.140     | 30 | Woods, Good, HSG A            |
| 0.720     | 52 | Weighted Average              |
| 0.540     |    | Pervious Area                 |
| 0.180     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.7         | 26               | 0.0380           | 0.08                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.2         | 49               | 0.4760           | 3.45                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.3         | 48               | 0.1460           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 21               | 0.0470           | 1.52                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6         | 100              | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.3         | 273              | Total            |                      |                   |   |

### Subcatchment 3S: CB3

Runoff = 0.62 cfs @ 12.23 hrs, Volume= 0.071 af, Depth= 1.24"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.480     | 39 | >75% Grass cover, Good, HSG A |
| 0.070     | 30 | Woods, Good, HSG A            |
| 0.690     | 50 | Weighted Average              |
| 0.550     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 12.3        | 50               | 0.0200           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.6         | 50               | 0.0400           | 1.40                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 11               | 0.0550           | 4.76                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.9         | 236              | 0.0500           | 4.54                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 13.8        | 354              | Total            |                      |                   |   |

**Subcatchment 4S: CB4**

Runoff = 0.54 cfs @ 12.17 hrs, Volume= 0.071 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 0.350     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 30 | Woods, Good, HSG A            |
| 1.040     | 44 | Weighted Average              |
| 0.870     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.8      | 26            | 0.0560        | 0.09              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.4      | 67            | 0.3000        | 2.74              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.7      | 72            | 0.1290        | 1.80              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.7      | 154           | 0.0455        | 1.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 24            | 0.0833        | 5.86              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 95            | 0.0158        | 2.55              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.4      | 453           | Total         |                   |                |   |

**Subcatchment 5S: CB5**

Runoff = 0.80 cfs @ 12.11 hrs, Volume= 0.067 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.130     | 98 | Paved parking & roofs         |
| 0.450     | 39 | >75% Grass cover, Good, HSG A |
| 0.580     | 52 | Weighted Average              |
| 0.450     |    | Pervious Area                 |
| 0.130     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 6S: CB6**

Runoff = 1.60 cfs @ 12.12 hrs, Volume= 0.141 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.276     | 98 | Paved parking & roofs         |
| 0.940     | 39 | >75% Grass cover, Good, HSG A |
| 1.216     | 52 | Weighted Average              |
| 0.940     |    | Pervious Area                 |
| 0.276     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.8      | 14            | 0.2140        | 0.30              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 34            | 0.0588        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.8      | 104           | 0.0192        | 0.97              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 25            | 0.0800        | 1.98              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 19            | 0.0526        | 1.61              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.1      | 136           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.1      | 361           | Total         |                   |                |   |

**Subcatchment 7S: CB7**

Runoff = 0.84 cfs @ 12.14 hrs, Volume= 0.086 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.790     | 39 | >75% Grass cover, Good, HSG A |
| 0.940     | 48 | Weighted Average              |
| 0.790     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.5      | 13            | 0.0380        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 14            | 0.1430        | 2.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 29            | 0.0690        | 1.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 88            | 0.0227        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 6             | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0225        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.4      | 127           | 0.0157        | 0.88              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 61            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.6      | 434           | Total         |                   |                |   |

**Subcatchment 8S: CB6**

Runoff = 1.25 cfs @ 12.19 hrs, Volume= 0.137 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 1.180     | 39 | >75% Grass cover, Good, HSG A |
| 1.410     | 49 | Weighted Average              |
| 1.180     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 2.5         | 20               | 0.0250           | 0.13                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 4.0         | 30               | 0.0168           | 0.12                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.6         | 89               | 0.0168           | 0.91                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8         | 63               | 0.0317           | 1.25                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1         | 19               | 0.0667           | 5.24                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 14               | 0.0667           | 1.81                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4         | 171              | 0.0100           | 2.03                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 10.8        | 435              | Total            |                      |                   |   |

### Subcatchment 9S: CB9

Runoff = 0.52 cfs @ 12.10 hrs, Volume= 0.039 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.080     | 98 | Paved parking & roofs         |
| 0.120     | 39 | >75% Grass cover, Good, HSG A |
| 0.200     | 63 | Weighted Average              |
| 0.120     |    | Pervious Area                 |
| 0.080     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC.</b>   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

**Subcatchment 10S: CB10**

Runoff = 0.66 cfs @ 12.11 hrs, Volume= 0.057 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.410     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 51 | Weighted Average              |
| 0.410     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 3.3      | 32            | 0.0310        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 47            | 0.0430        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 28            | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 35            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 211           | Total         |                   |                |   |

**Subcatchment 11S: CB11**

Runoff = 1.33 cfs @ 12.15 hrs, Volume= 0.120 af, Depth= 1.55"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 0.930     | 54 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

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Type III 24-hr 50yr Rainfall=6.20"

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| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 7.4      | 50            | 0.0100        | 0.11              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 7             | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 45            | 0.0440        | 1.47              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 28            | 0.0650        | 1.78              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 138           | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.9      | 275           | Total         |                   |                |   |

**Subcatchment 12S: CB12**

Runoff = 1.33 cfs @ 12.11 hrs, Volume= 0.113 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.760     | 39 | >75% Grass cover, Good, HSG A |
| 0.970     | 52 | Weighted Average              |
| 0.760     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 4.0         | 50               | 0.0480           | 0.21                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1         | 10               | 0.0480           | 1.53                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1         | 27               | 0.2220           | 3.30                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 23               | 0.0870           | 2.06                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4         | 80               | 0.0250           | 3.21                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 5                | 0.0200           | 2.87                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2         | 9                | 0.0200           | 0.99                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2         | 45               | 0.0600           | 4.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 15               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.7         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 6.0         | 264              | Total            |                      |                   |   |

**Subcatchment 13S: CB13**

Runoff = 0.63 cfs @ 12.14 hrs, Volume= 0.074 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.890     | 39 | >75% Grass cover, Good, HSG A |
| 1.000     | 45 | Weighted Average              |
| 0.890     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 2.0      | 34            | 0.1230        | 0.28              |                | Sheet Flow,<br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.0      | 6             | 0.2000        | 3.13              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 12            | 0.1670        | 2.86              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 1.5      | 94            | 0.0220        | 1.04              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 45            | 0.1330        | 2.55              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 2.0      | 194           | 0.0520        | 1.60              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 110           | 0.0150        | 2.49              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.6      | 502           | Total         |                   |                |  |

**Subcatchment 14S: CB14**

Runoff = 1.20 cfs @ 12.10 hrs, Volume= 0.108 af, Depth= 1.17"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.920     | 39 | >75% Grass cover, Good, HSG A |
| 1.110     | 49 | Weighted Average              |
| 0.920     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.6      | 50            | 0.5000        | 0.54              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 17            | 0.5000        | 4.95              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 30            | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 36            | 0.0560        | 1.66              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 51            | 0.0390        | 1.38              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 32            | 0.1030        | 2.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 16            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 17            | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 107           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 1.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 5.3      | 371           | Total         |                   |                |   |

**Subcatchment 15S: CB15**

Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.052 af, Depth= 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.240     | 66 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 5             | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 5             | Total         |                   |                |   |

**Subcatchment 16S: CB16**

Runoff = 0.90 cfs @ 12.10 hrs, Volume= 0.071 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.360     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 56 | Weighted Average              |
| 0.360     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.0      |               |               |                   |                | Direct Entry, MIN. TC  |
| 0.0      | 11            | 0.0200        | 6.42              | 5.04           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 11            | Total         |                   |                |  |

**Subcatchment 17S: CB17**

Runoff = 1.18 cfs @ 12.27 hrs, Volume= 0.154 af, Depth= 1.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.340     | 98 | Paved parking & roofs         |
| 0.900     | 39 | >75% Grass cover, Good, HSG A |
| 0.570     | 30 | Woods, Good, HSG A            |
| 1.810     | 47 | Weighted Average              |
| 1.470     |    | Pervious Area                 |
| 0.340     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 57            | 0.3030        | 3.85              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 10            | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 22            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 83            | 0.0720        | 5.45              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.8      | 102           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.7      | 134           | 0.0050        | 3.21              | 2.52           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 14.7     | 615           | Total         |                   |                |   |

**Subcatchment 50S: CB50**

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.068 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.030     | 39 | >75% Grass cover, Good, HSG A |
| 0.170     | 88 | Weighted Average              |
| 0.030     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 51S: CB51**

Runoff = 1.07 cfs @ 12.15 hrs, Volume= 0.120 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 1.340     | 39 | >75% Grass cover, Good, HSG A |
| 1.510     | 46 | Weighted Average              |
| 1.340     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.8      | 22            | 0.0230        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 36            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 12            | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 74            | 0.0810        | 1.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.9      | 111           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.4      | 468           | Total         |                   |                |   |

**Subcatchment 52S: CB52**

Runoff = 1.37 cfs @ 12.09 hrs, Volume= 0.100 af, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.100     | 39 | >75% Grass cover, Good, HSG A |
| 0.310     | 79 | Weighted Average              |
| 0.100     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 6.0         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.0         | 7                | 0.0466           | 9.79                 | 7.69              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 7                | Total            |                      |                   |   |

**Subcatchment 53S: CB53**

Runoff = 1.02 cfs @ 12.10 hrs, Volume= 0.075 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.200     | 39 | >75% Grass cover, Good, HSG A |
| 0.360     | 65 | Weighted Average              |
| 0.200     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 5.9         |                  |                  |                      |                   | <b>Direct Entry, MIN. TC</b>  |
| 0.1         | 14               | 0.0100           | 4.54                 | 3.56              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0         | 14               | Total            |                      |                   |   |

**Subcatchment 54S: CB54**

Runoff = 1.69 cfs @ 12.10 hrs, Volume= 0.125 af, Depth= 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.260     | 98 | Paved parking & roofs         |
| 0.340     | 39 | >75% Grass cover, Good, HSG A |
| 0.600     | 65 | Weighted Average              |
| 0.340     |    | Pervious Area                 |
| 0.260     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 6             | Total         |                   |                |   |

**Subcatchment 55S: CB55**

Runoff = 3.25 cfs @ 12.10 hrs, Volume= 0.241 af, Depth= 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.500     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 1.200     | 64 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.500     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.0      | 14            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 60S: CB60**

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.090 af, Depth= 3.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.140     | 39 | >75% Grass cover, Good, HSG A |
| 0.330     | 73 | Weighted Average              |
| 0.140     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 13            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 13            | Total         |                   |                |   |

**Subcatchment 61S: CB61**

Runoff = 1.27 cfs @ 12.11 hrs, Volume= 0.097 af, Depth= 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.200     | 98 | Paved parking & roofs         |
| 0.300     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 63 | Weighted Average              |
| 0.300     |    | Pervious Area                 |
| 0.200     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.8      | 24            | 0.0833        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 141           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 26            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 58            | 0.0600        | 1.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 42            | 0.0240        | 1.08              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 170           | 0.0300        | 3.52              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 11            | 0.0120        | 4.97              | 3.90           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.7      | 472           | Total         |                   |                |   |

**Subcatchment 62S: CB62**

Runoff = 0.98 cfs @ 12.10 hrs, Volume= 0.071 af, Depth= 3.06"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.280     | 71 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.1      | 14            | Total         |                   |                |   |

**Subcatchment 63S: CB63**

Runoff = 1.06 cfs @ 12.22 hrs, Volume= 0.135 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.280     | 98 | Paved parking & roofs         |
| 0.870     | 39 | >75% Grass cover, Good, HSG A |
| 0.550     | 30 | Woods, Good, HSG A            |
| 1.700     | 46 | Weighted Average              |
| 1.420     |    | Pervious Area                 |
| 0.280     |    | Impervious Area               |

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Type III 24-hr 50yr Rainfall=6.20"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 8.5         | 36               | 0.0260           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 1.1         | 51               | 0.0260           | 0.81                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.1         | 14               | 0.2860           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2         | 40               | 0.3500           | 4.14                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 35               | 0.0570           | 1.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.0         | 71               | 0.0290           | 1.19                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 59               | 0.0250           | 3.21                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 32               | 0.0630           | 5.10                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 30               | 0.0400           | 4.06                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 6                | 0.0233           | 6.92                 | 5.44              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 11.7        | 374              | Total            |                      |                   |   |

**Subcatchment 70S: 70S**

Runoff = 3.14 cfs @ 12.13 hrs, Volume= 0.285 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.168     | 98 | Paved parking & roofs         |
| 1.924     | 39 | >75% Grass cover, Good, HSG A |
| 0.358     | 98 | POND                          |
| 2.450     | 52 | Weighted Average              |
| 1.924     |    | Pervious Area                 |
| 0.526     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 3.2      | 31            | 0.0320        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 2.2      | 170           | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 45            | 0.0910        | 2.11              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.3      | 85            | 0.0235        | 1.07              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.5      | 371           | Total         |                   |                |  |

**Subcatchment 71S: 71S**

Runoff = 0.40 cfs @ 12.35 hrs, Volume= 0.080 af, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.630     | 39 | >75% Grass cover, Good, HSG A |
| 1.120     | 30 | Woods, Good, HSG A            |
| 1.910     | 39 | Weighted Average              |
| 1.750     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 2.2      | 33            | 0.0910        | 0.25              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 1.5      | 221           | 0.1270        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 2.0      | 110           | 0.0180        | 0.94              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.6      | 97            | 0.0206        | 1.00              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.7      | 501           | Total         |                   |                |  |

**Subcatchment 72S: 72S**

Runoff = 0.61 cfs @ 12.17 hrs, Volume= 0.076 af, Depth= 0.88"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.200     | 30 | Woods, Good, HSG A              |
| 0.830     | 49 | Desert shrub range, Good, HSG A |
| 1.030     | 45 | Weighted Average                |
| 1.030     |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.4      | 50            | 0.0110        | 0.13              |                | <b>Sheet Flow,</b><br>Range n= 0.130 P2= 3.20"                           |
| 0.4      | 50            | 0.0465        | 2.16              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.1      | 24            | 0.0833        | 2.89              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.0      | 152           | 0.0164        | 1.28              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 8.9      | 276           | Total         |                   |                |  |

**Subcatchment 73S: 73S**

Runoff = 0.93 cfs @ 14.97 hrs, Volume= 0.585 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 50yr Rainfall=6.20"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.171     | 98 | Paved parking & roofs           |
| 0.969     | 39 | >75% Grass cover, Good, HSG A   |
| 53.000    | 30 | Woods, Good, HSG A              |
| 0.960     | 49 | Desert shrub range, Good, HSG A |
| 55.100    | 31 | Weighted Average                |
| 54.929    |    | Pervious Area                   |
| 0.171     |    | Impervious Area                 |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.3      | 36            | 0.0555        | 0.10              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 1.0      | 157           | 0.3000        | 2.74              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.3      | 54            | 0.3890        | 3.12              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 37            | 0.2160        | 3.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps     |
| 0.1      | 23            | 0.1310        | 3.62              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.1      | 185           | 0.0210        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 10.0     | 492           | Total         |                   |                |  |

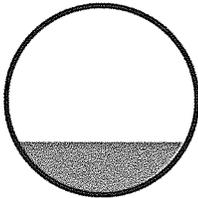
**Reach 1R: DMH1-DMH2**

Inflow Area = 0.900 ac, Inflow Depth = 1.56" for 50yr event  
Inflow = 1.38 cfs @ 12.12 hrs, Volume= 0.117 af  
Outflow = 1.35 cfs @ 12.12 hrs, Volume= 0.117 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 7.55 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.02 fps, Avg. Travel Time= 0.8 min

Peak Storage= 27 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.28'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0500 '/  
Inlet Invert= 214.44', Outlet Invert= 207.04'



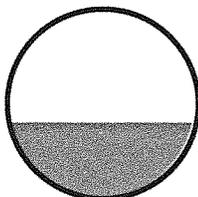
**Reach 2R: DMH2-DMH3**

Inflow Area = 0.900 ac, Inflow Depth = 1.56" for 50yr event  
Inflow = 1.35 cfs @ 12.12 hrs, Volume= 0.117 af  
Outflow = 1.32 cfs @ 12.14 hrs, Volume= 0.117 af, Atten= 2%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.49 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 1.82 fps, Avg. Travel Time= 0.9 min

Peak Storage= 28 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.40'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 95.0' Slope= 0.0120 '/  
Inlet Invert= 207.04', Outlet Invert= 205.90'



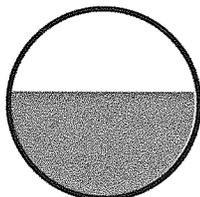
**Reach 3R: DMH3-DMH4**

Inflow Area = 2.630 ac, Inflow Depth = 1.18" for 50yr event  
Inflow = 2.38 cfs @ 12.16 hrs, Volume= 0.259 af  
Outflow = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af, Atten= 3%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.19 fps, Min. Travel Time= 0.7 min  
Avg. Velocity = 2.29 fps, Avg. Travel Time= 1.5 min

Peak Storage= 94 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.56'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 205.0' Slope= 0.0120 '/'  
Inlet Invert= 205.80', Outlet Invert= 203.34'



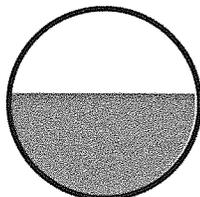
**Reach 4R: DMH4-DMH5**

Inflow Area = 2.630 ac, Inflow Depth = 1.18" for 50yr event  
Inflow = 2.32 cfs @ 12.19 hrs, Volume= 0.259 af  
Outflow = 2.31 cfs @ 12.20 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.18 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.28 fps, Avg. Travel Time= 0.7 min

Peak Storage= 40 cf @ 12.20 hrs, Average Depth at Peak Storage= 0.56'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 90.0' Slope= 0.0120 '/'  
Inlet Invert= 203.24', Outlet Invert= 202.16'



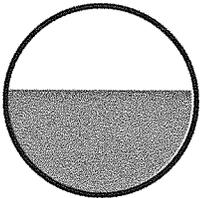
**Reach 5R: DMH5-DMH6**

Inflow Area = 4.426 ac, Inflow Depth = 1.27" for 50yr event  
Inflow = 4.39 cfs @ 12.16 hrs, Volume= 0.468 af  
Outflow = 4.35 cfs @ 12.17 hrs, Volume= 0.468 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.26 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.3 min

Peak Storage= 151 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.70'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 215.0' Slope= 0.0130 '/  
Inlet Invert= 201.91', Outlet Invert= 199.11'



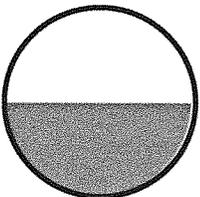
**Reach 6R: DMH6-DMH7**

Inflow Area = 6.776 ac, Inflow Depth = 1.22" for 50yr event  
Inflow = 6.41 cfs @ 12.17 hrs, Volume= 0.691 af  
Outflow = 6.40 cfs @ 12.17 hrs, Volume= 0.691 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.46 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.48 fps, Avg. Travel Time= 0.2 min

Peak Storage= 31 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.62'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 51.0' Slope= 0.0400 '/  
Inlet Invert= 199.01', Outlet Invert= 196.97'



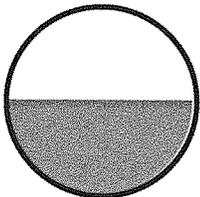
**Reach 7R: DMH7-DMH8**

Inflow Area = 9.586 ac, Inflow Depth = 1.36" for 50yr event  
Inflow = 10.13 cfs @ 12.16 hrs, Volume= 1.083 af  
Outflow = 10.10 cfs @ 12.16 hrs, Volume= 1.083 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.20 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.44 fps, Avg. Travel Time= 0.5 min

Peak Storage= 109 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.76'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 120.0' Slope= 0.0350 '/'  
Inlet Invert= 196.72', Outlet Invert= 192.52'



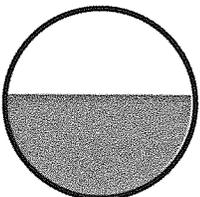
**Reach 8R: DMH8-DMH9**

Inflow Area = 10.306 ac, Inflow Depth = 1.37" for 50yr event  
Inflow = 11.08 cfs @ 12.16 hrs, Volume= 1.179 af  
Outflow = 11.03 cfs @ 12.17 hrs, Volume= 1.179 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.20 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 4.45 fps, Avg. Travel Time= 0.7 min

Peak Storage= 194 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.82'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 196.0' Slope= 0.0330 '/'  
Inlet Invert= 190.52', Outlet Invert= 184.05'



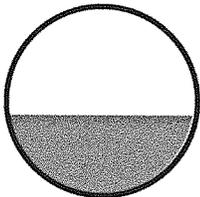
**Reach 9R: DMH9-DMH10**

Inflow Area = 12.206 ac, Inflow Depth = 1.39" for 50yr event  
Inflow = 13.48 cfs @ 12.16 hrs, Volume= 1.412 af  
Outflow = 13.38 cfs @ 12.17 hrs, Volume= 1.412 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.58 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 4.09 fps, Avg. Travel Time= 1.0 min

Peak Storage= 309 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.85'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 242.0' Slope= 0.0250 '/'  
Inlet Invert= 183.55', Outlet Invert= 177.50'



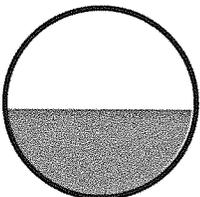
**Reach 10R: DMH10-DMH50**

Inflow Area = 14.316 ac, Inflow Depth = 1.34" for 50yr event  
Inflow = 14.98 cfs @ 12.16 hrs, Volume= 1.594 af  
Outflow = 14.95 cfs @ 12.17 hrs, Volume= 1.594 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.36 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.04 fps, Avg. Travel Time= 0.2 min

Peak Storage= 72 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.94'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 50.0' Slope= 0.0220 '/'  
Inlet Invert= 177.40', Outlet Invert= 176.30'



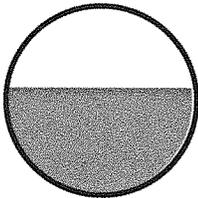
**Reach 11R: DMH11-DMH12**

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event  
Inflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af  
Outflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.78 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 2.16 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 2.0' Slope= 0.0100 '/'  
Inlet Invert= 173.95', Outlet Invert= 173.93'



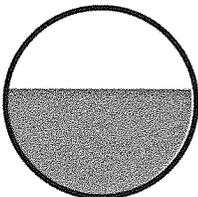
**Reach 12R: DMH12-DMH13**

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event  
Inflow = 2.21 cfs @ 12.15 hrs, Volume= 0.277 af  
Outflow = 2.22 cfs @ 12.17 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.78 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.14 fps, Avg. Travel Time= 1.2 min

Peak Storage= 69 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0100 '/'  
Inlet Invert= 173.83', Outlet Invert= 172.35'



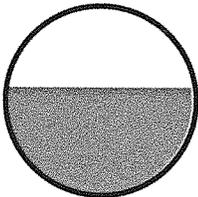
**Reach 13R: DMH13-FES**

Inflow Area = 2.550 ac, Inflow Depth = 1.31" for 50yr event  
Inflow = 2.22 cfs @ 12.17 hrs, Volume= 0.277 af  
Outflow = 2.21 cfs @ 12.17 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.77 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.13 fps, Avg. Travel Time= 0.2 min

Peak Storage= 12 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.57'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 25.0' Slope= 0.0100 '/'  
Inlet Invert= 172.25', Outlet Invert= 172.00'



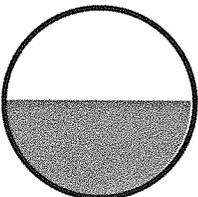
**Reach 50R: DMH50-DMH51**

Inflow Area = 15.996 ac, Inflow Depth = 1.34" for 50yr event  
Inflow = 16.68 cfs @ 12.16 hrs, Volume= 1.782 af  
Outflow = 16.60 cfs @ 12.17 hrs, Volume= 1.782 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.28 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.48 fps, Avg. Travel Time= 0.7 min

Peak Storage= 230 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.03'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 142.0' Slope= 0.0200 '/'  
Inlet Invert= 176.30', Outlet Invert= 173.46'



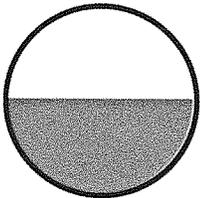
**Reach 51R: DMH51-DMH55**

Inflow Area = 15.996 ac, Inflow Depth = 1.34" for 50yr event  
Inflow = 16.60 cfs @ 12.17 hrs, Volume= 1.782 af  
Outflow = 16.59 cfs @ 12.17 hrs, Volume= 1.782 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.25 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.47 fps, Avg. Travel Time= 0.1 min

Peak Storage= 24 cf @ 12.17 hrs, Average Depth at Peak Storage= 1.02'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 15.0' Slope= 0.0200 '/  
Inlet Invert= 173.36', Outlet Invert= 173.06'



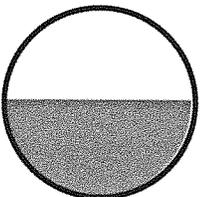
**Reach 52R: DMH52-DMH55**

Inflow Area = 2.470 ac, Inflow Depth = 2.62" for 50yr event  
Inflow = 7.24 cfs @ 12.10 hrs, Volume= 0.540 af  
Outflow = 7.19 cfs @ 12.11 hrs, Volume= 0.540 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.32 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.91 fps, Avg. Travel Time= 0.4 min

Peak Storage= 59 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.65'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 92.0' Slope= 0.0450 '/  
Inlet Invert= 177.95', Outlet Invert= 173.81'



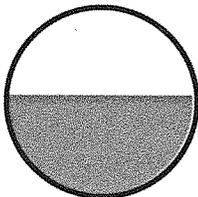
**Reach 53R: DMH53-DMH52**

Inflow Area = 1.800 ac, Inflow Depth = 2.44" for 50yr event  
Inflow = 4.92 cfs @ 12.10 hrs, Volume= 0.366 af  
Outflow = 4.87 cfs @ 12.11 hrs, Volume= 0.366 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.44 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.42 fps, Avg. Travel Time= 0.5 min

Peak Storage= 61 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.54'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 143.0' Slope= 0.0600 '/'  
Inlet Invert= 186.78', Outlet Invert= 178.20'



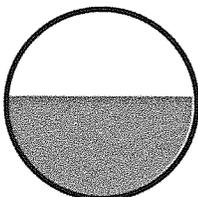
**Reach 54R: DMH54-DMH53**

Inflow Area = 1.800 ac, Inflow Depth = 2.44" for 50yr event  
Inflow = 4.94 cfs @ 12.10 hrs, Volume= 0.366 af  
Outflow = 4.92 cfs @ 12.10 hrs, Volume= 0.366 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.46 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.44 fps, Avg. Travel Time= 0.4 min

Peak Storage= 43 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.54'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 100.0' Slope= 0.0600 '/'  
Inlet Invert= 192.88', Outlet Invert= 186.88'



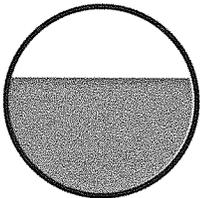
**Reach 55R: DMH55-DMH56**

Inflow Area = 18.466 ac, Inflow Depth = 1.51" for 50yr event  
Inflow = 22.79 cfs @ 12.15 hrs, Volume= 2.322 af  
Outflow = 22.75 cfs @ 12.15 hrs, Volume= 2.322 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.06 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.75 fps, Avg. Travel Time= 0.3 min

Peak Storage= 157 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.25'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 76.0' Slope= 0.0200 '/  
Inlet Invert= 172.96', Outlet Invert= 171.44'



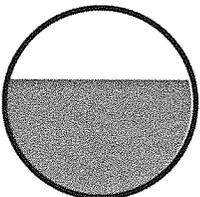
**Reach 56R: DMH56-FES**

Inflow Area = 18.466 ac, Inflow Depth = 1.51" for 50yr event  
Inflow = 22.75 cfs @ 12.15 hrs, Volume= 2.322 af  
Outflow = 22.73 cfs @ 12.15 hrs, Volume= 2.322 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.06 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.75 fps, Avg. Travel Time= 0.1 min

Peak Storage= 66 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.25'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 32.0' Slope= 0.0200 '/  
Inlet Invert= 171.34', Outlet Invert= 170.70'



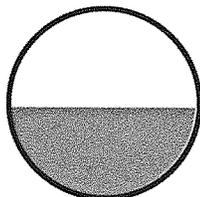
**Reach 60R: DMH60-DMH7**

Inflow Area = 2.810 ac, Inflow Depth = 1.68" for 50yr event  
Inflow = 4.04 cfs @ 12.12 hrs, Volume= 0.392 af  
Outflow = 4.03 cfs @ 12.12 hrs, Volume= 0.392 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.85 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.32 fps, Avg. Travel Time= 0.1 min

Peak Storage= 12 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.48'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 33.0' Slope= 0.0600 '/'  
Inlet Invert= 199.20', Outlet Invert= 197.22'



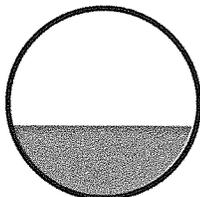
**Reach 61R: DMH61-DMH60**

Inflow Area = 1.980 ac, Inflow Depth = 1.25" for 50yr event  
Inflow = 1.73 cfs @ 12.16 hrs, Volume= 0.206 af  
Outflow = 1.72 cfs @ 12.17 hrs, Volume= 0.206 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.31 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.69 fps, Avg. Travel Time= 1.1 min

Peak Storage= 49 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.38'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 180.0' Slope= 0.0250 '/'  
Inlet Invert= 203.80', Outlet Invert= 199.30'



**Pond 1P: POND 1**

Inflow Area = 23.466 ac, Inflow Depth = 1.45" for 50yr event  
 Inflow = 28.06 cfs @ 12.16 hrs, Volume= 2.845 af  
 Outflow = 7.20 cfs @ 12.73 hrs, Volume= 2.845 af, Atten= 74%, Lag= 34.1 min  
 Discarded = 7.20 cfs @ 12.73 hrs, Volume= 2.845 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 170.01' @ 12.73 hrs Surf.Area= 0.357 ac Storage= 0.649 af

Plug-Flow detention time= 27.7 min calculated for 2.841 af (100% of inflow)  
 Center-of-Mass det. time= 27.6 min ( 911.3 - 883.7 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 168.00' | 1.427 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 168.00           | 0.290             | 0.000                 | 0.000                 |
| 170.00           | 0.357             | 0.647                 | 0.647                 |
| 172.00           | 0.423             | 0.780                 | 1.427                 |

| Device | Routing   | Invert | Outlet Devices                              |
|--------|-----------|--------|---|
| #1     | Discarded | 0.00'  | 20.000 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=7.20 cfs @ 12.73 hrs HW=170.01' (Free Discharge)  
 1=Exfiltration (Exfiltration Controls 7.20 cfs)

**Pond 12P: SFB 10**

Inflow Area = 21.016 ac, Inflow Depth = 1.48" for 50yr event  
 Inflow = 24.93 cfs @ 12.15 hrs, Volume= 2.600 af  
 Outflow = 25.02 cfs @ 12.16 hrs, Volume= 2.560 af, Atten= 0%, Lag= 0.3 min  
 Primary = 25.02 cfs @ 12.16 hrs, Volume= 2.560 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 171.35' @ 12.16 hrs Surf.Area= 0.036 ac Storage= 0.057 af

Plug-Flow detention time= 13.1 min calculated for 2.557 af (98% of inflow)  
 Center-of-Mass det. time= 4.9 min ( 883.5 - 878.6 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 169.00' | 0.083 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 169.00           | 0.015             | 0.000                 | 0.000                 |
| 170.00           | 0.022             | 0.018                 | 0.018                 |
| 172.00           | 0.042             | 0.064                 | 0.083                 |

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 170.80' | <b>20.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

Primary OutFlow Max=24.65 cfs @ 12.16 hrs HW=171.35' (Free Discharge)  
 ↑1=Broad-Crested Rectangular Weir (Weir Controls 24.65 cfs @ 2.25 fps)

### Link 74L: COMBINE-HYDROGRAPHS

Inflow Area = 58.040 ac, Inflow Depth = 0.15" for 50yr event  
 Inflow = 1.13 cfs @ 14.82 hrs, Volume= 0.741 af  
 Primary = 1.13 cfs @ 14.82 hrs, Volume= 0.741 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

**100 YR POST-DEVELOPMENT**

**Subcatchment 1S: CB1**

Runoff = 0.54 cfs @ 12.10 hrs, Volume= 0.040 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.070     | 98 | Paved parking & roofs         |
| 0.110     | 39 | >75% Grass cover, Good, HSG A |
| 0.180     | 62 | Weighted Average              |
| 0.110     |    | Pervious Area                 |
| 0.070     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 2S: CB2**

Runoff = 1.22 cfs @ 12.12 hrs, Volume= 0.104 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.180     | 98 | Paved parking & roofs         |
| 0.400     | 39 | >75% Grass cover, Good, HSG A |
| 0.140     | 30 | Woods, Good, HSG A            |
| 0.720     | 52 | Weighted Average              |
| 0.540     |    | Pervious Area                 |
| 0.180     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.7      | 26            | 0.0380        | 0.08              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.2      | 49            | 0.4760        | 3.45              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.3      | 48            | 0.1460        | 2.67              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 21            | 0.0470        | 1.52              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 100           | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.3      | 273           | Total         |                   |                |   |

**Subcatchment 3S: CB3**

Runoff = 0.83 cfs @ 12.22 hrs, Volume= 0.090 af, Depth= 1.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.480     | 39 | >75% Grass cover, Good, HSG A |
| 0.070     | 30 | Woods, Good, HSG A            |
| 0.690     | 50 | Weighted Average              |
| 0.550     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 12.3     | 50            | 0.0200        | 0.07              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.6      | 50            | 0.0400        | 1.40              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 11            | 0.0550        | 4.76              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.9      | 236           | 0.0500        | 4.54              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 13.8     | 354           | Total         |                   |                |   |

### Subcatchment 4S: CB4

Runoff = 0.82 cfs @ 12.16 hrs, Volume= 0.092 af, Depth= 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 0.350     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 30 | Woods, Good, HSG A            |
| 1.040     | 44 | Weighted Average              |
| 0.870     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 4.8      | 26            | 0.0560        | 0.09              |                | Sheet Flow,<br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.4      | 67            | 0.3000        | 2.74              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 0.7      | 72            | 0.1290        | 1.80              |                | Shallow Concentrated Flow,<br>Woodland Kv= 5.0 fps   |
| 1.7      | 154           | 0.0455        | 1.49              |                | Shallow Concentrated Flow,<br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 24            | 0.0833        | 5.86              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.6      | 95            | 0.0158        | 2.55              |                | Shallow Concentrated Flow,<br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | Circular Channel (pipe),<br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.4      | 453           | Total         |                   |                |  |

### Subcatchment 5S: CB5

Runoff = 1.03 cfs @ 12.10 hrs, Volume= 0.084 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.130     | 98 | Paved parking & roofs         |
| 0.450     | 39 | >75% Grass cover, Good, HSG A |
| 0.580     | 52 | Weighted Average              |
| 0.450     |    | Pervious Area                 |
| 0.130     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 6S: CB6**

Runoff = 2.08 cfs @ 12.12 hrs, Volume= 0.175 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.276     | 98 | Paved parking & roofs         |
| 0.940     | 39 | >75% Grass cover, Good, HSG A |
| 1.216     | 52 | Weighted Average              |
| 0.940     |    | Pervious Area                 |
| 0.276     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.8      | 14            | 0.2140        | 0.30              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 34            | 0.0588        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.8      | 104           | 0.0192        | 0.97              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 25            | 0.0800        | 1.98              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 19            | 0.0526        | 1.61              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.1      | 136           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.1      | 361           | Total         |                   |                |   |

**Subcatchment 7S: CB7**

Runoff = 1.14 cfs @ 12.13 hrs, Volume= 0.109 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.790     | 39 | >75% Grass cover, Good, HSG A |
| 0.940     | 48 | Weighted Average              |
| 0.790     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.5      | 13            | 0.0380        | 0.15              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 14            | 0.1430        | 2.65              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 29            | 0.0690        | 1.84              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 88            | 0.0227        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 6             | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0225        | 1.05              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.4      | 127           | 0.0157        | 0.88              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 61            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.6      | 434           | Total         |                   |                |   |

**Subcatchment 8S: CB6**

Runoff = 1.69 cfs @ 12.18 hrs, Volume= 0.173 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 1.180     | 39 | >75% Grass cover, Good, HSG A |
| 1.410     | 49 | Weighted Average              |
| 1.180     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.5      | 20            | 0.0250        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 4.0      | 30            | 0.0168        | 0.12              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 1.6      | 89            | 0.0168        | 0.91              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 63            | 0.0317        | 1.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 19            | 0.0667        | 5.24              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 14            | 0.0667        | 1.81              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 171           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 10.8     | 435           | Total         |                   |                |   |

**Subcatchment 9S: CB9**

Runoff = 0.62 cfs @ 12.10 hrs, Volume= 0.046 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.080     | 98 | Paved parking & roofs         |
| 0.120     | 39 | >75% Grass cover, Good, HSG A |
| 0.200     | 63 | Weighted Average              |
| 0.120     |    | Pervious Area                 |
| 0.080     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 10S: CB10**

Runoff = 0.86 cfs @ 12.11 hrs, Volume= 0.071 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.410     | 39 | >75% Grass cover, Good, HSG A |
| 0.520     | 51 | Weighted Average              |
| 0.410     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 3.3      | 32            | 0.0310        | 0.16              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.4      | 40            | 0.0500        | 1.57              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5      | 47            | 0.0430        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 28            | 0.0350        | 1.31              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 35            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 211           | Total         |                   |                |   |

**Subcatchment 11S: CB11**

Runoff = 1.69 cfs @ 12.14 hrs, Volume= 0.148 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.230     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 0.930     | 54 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.230     |    | Impervious Area               |

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Type III 24-hr 100yr Rainfall=6.80"

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| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 7.4         | 50               | 0.0100           | 0.11                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2         | 7                | 0.0100           | 0.70                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 45               | 0.0440           | 1.47                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 28               | 0.0650           | 1.78                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.5         | 138              | 0.0600           | 4.97                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 7                | 0.0210           | 6.57                 | 5.16              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 8.9         | 275              | Total            |                      |                   |   |

**Subcatchment 12S: CB12**

Runoff = 1.73 cfs @ 12.10 hrs, Volume= 0.140 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.760     | 39 | >75% Grass cover, Good, HSG A |
| 0.970     | 52 | Weighted Average              |
| 0.760     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 4.0      | 50            | 0.0480        | 0.21              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 10            | 0.0480        | 1.53              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 27            | 0.2220        | 3.30              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 23            | 0.0870        | 2.06              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 80            | 0.0250        | 3.21              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 5             | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.2      | 9             | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 45            | 0.0600        | 4.97              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 0.7      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 264           | Total         |                   |                |   |

**Subcatchment 13S: CB13**

Runoff = 0.95 cfs @ 12.12 hrs, Volume= 0.095 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.890     | 39 | >75% Grass cover, Good, HSG A |
| 1.000     | 45 | Weighted Average              |
| 0.890     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.0      | 34            | 0.1230        | 0.28              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.0      | 6             | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 12            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.5      | 94            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3      | 45            | 0.1330        | 2.55              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 2.0      | 194           | 0.0520        | 1.60              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 110           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 7             | 0.0210        | 6.57              | 5.16           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area='0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.6      | 502           | Total         |                   |                |   |

**Subcatchment 14S: CB14**

Runoff = 1.62 cfs @ 12.10 hrs, Volume= 0.136 af, Depth= 1.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.920     | 39 | >75% Grass cover, Good, HSG A |
| 1.110     | 49 | Weighted Average              |
| 0.920     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.6      | 50            | 0.5000        | 0.54              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.1      | 17            | 0.5000        | 4.95              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 30            | 0.2000        | 3.13              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.4      | 36            | 0.0560        | 1.66              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 51            | 0.0390        | 1.38              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 32            | 0.1030        | 2.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 16            | 0.0200        | 2.87              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 17            | 0.0200        | 0.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 107           | 0.0150        | 2.49              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1      | 15            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 1.0      |               |               |                   |                | <b>Direct Entry, MIN. TC.</b>   |
| 5.3      | 371           | Total         |                   |                |   |

**Subcatchment 15S: CB15**

Runoff = 0.83 cfs @ 12.10 hrs, Volume= 0.061 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.110     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.240     | 66 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.110     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 5             | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 5             | Total         |                   |                |   |

**Subcatchment 16S: CB16**

Runoff = 1.13 cfs @ 12.10 hrs, Volume= 0.087 af, Depth= 2.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.360     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 56 | Weighted Average              |
| 0.360     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 11            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 11            | Total         |                   |                |   |

**Subcatchment 17S: CB17**

Runoff = 1.64 cfs @ 12.25 hrs, Volume= 0.197 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.340     | 98 | Paved parking & roofs         |
| 0.900     | 39 | >75% Grass cover, Good, HSG A |
| 0.570     | 30 | Woods, Good, HSG A            |
| 1.810     | 47 | Weighted Average              |
| 1.470     |    | Pervious Area                 |
| 0.340     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 10.0     | 31            | 0.0130        | 0.05              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 0.7      | 73            | 0.1370        | 1.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 1.4      | 70            | 0.0286        | 0.85              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 33            | 0.3030        | 2.75              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2      | 57            | 0.3030        | 3.85              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 10            | 0.0100        | 0.70              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 22            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.3      | 83            | 0.0720        | 5.45              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.8      | 102           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.7      | 134           | 0.0050        | 3.21              | 2.52           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 14.7     | 615           | Total         |                   |                |   |

**Subcatchment 50S: CB50**

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 5.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.140     | 98 | Paved parking & roofs         |
| 0.030     | 39 | >75% Grass cover, Good, HSG A |
| 0.170     | 88 | Weighted Average              |
| 0.030     |    | Pervious Area                 |
| 0.140     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 51S: CB51**

Runoff = 1.53 cfs @ 12.14 hrs, Volume= 0.154 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.170     | 98 | Paved parking & roofs         |
| 1.340     | 39 | >75% Grass cover, Good, HSG A |
| 1.510     | 46 | Weighted Average              |
| 1.340     |    | Pervious Area                 |
| 0.170     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 2.8      | 22            | 0.0230        | 0.13              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 0.2      | 36            | 0.1670        | 2.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.0      | 12            | 0.3330        | 4.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 74            | 0.0810        | 1.99              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.4      | 89            | 0.0220        | 1.04              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.7      | 55            | 0.0360        | 1.33              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.9      | 111           | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 7.4      | 468           | Total         |                   |                |   |

**Subcatchment 52S: CB52**

Runoff = 1.56 cfs @ 12.09 hrs, Volume= 0.114 af, Depth= 4.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.210     | 98 | Paved parking & roofs         |
| 0.100     | 39 | >75% Grass cover, Good, HSG A |
| 0.310     | 79 | Weighted Average              |
| 0.100     |    | Pervious Area                 |
| 0.210     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 7             | 0.0466        | 9.79              | 7.69           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 7             | Total         |                   |                |   |

**Subcatchment 53S: CB53**

Runoff = 1.21 cfs @ 12.10 hrs, Volume= 0.088 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.200     | 39 | >75% Grass cover, Good, HSG A |
| 0.360     | 65 | Weighted Average              |
| 0.200     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 5.9      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 54S: CB54**

Runoff = 2.01 cfs @ 12.10 hrs, Volume= 0.147 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.260     | 98 | Paved parking & roofs         |
| 0.340     | 39 | >75% Grass cover, Good, HSG A |
| 0.600     | 65 | Weighted Average              |
| 0.340     |    | Pervious Area                 |
| 0.260     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 6             | 0.0233        | 6.92              | 5.44           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 6             | Total         |                   |                |   |

**Subcatchment 55S: CB55**

Runoff = 3.88 cfs @ 12.10 hrs, Volume= 0.285 af, Depth= 2.85"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.500     | 98 | Paved parking & roofs         |
| 0.700     | 39 | >75% Grass cover, Good, HSG A |
| 1.200     | 64 | Weighted Average              |
| 0.700     |    | Pervious Area                 |
| 0.500     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 0.0      | 14            | 0.0200        | 6.42              | 5.04           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 6.0      | 14            | Total         |                   |                |   |

**Subcatchment 60S: CB60**

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.190     | 98 | Paved parking & roofs         |
| 0.140     | 39 | >75% Grass cover, Good, HSG A |
| 0.330     | 73 | Weighted Average              |
| 0.140     |    | Pervious Area                 |
| 0.190     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.0      | 13            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.0      | 13            | Total         |                   |                |   |

**Subcatchment 61S: CB61**

Runoff = 1.52 cfs @ 12.11 hrs, Volume= 0.115 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.200     | 98 | Paved parking & roofs         |
| 0.300     | 39 | >75% Grass cover, Good, HSG A |
| 0.500     | 63 | Weighted Average              |
| 0.300     |    | Pervious Area                 |
| 0.200     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 1.8      | 24            | 0.0833        | 0.23              |                | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"   |
| 2.7      | 141           | 0.0150        | 0.86              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.2      | 26            | 0.0100        | 2.03              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.6      | 58            | 0.0600        | 1.71              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.6      | 42            | 0.0240        | 1.08              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.8      | 170           | 0.0300        | 3.52              |                | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0      | 11            | 0.0120        | 4.97              | 3.90           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.7      | 472           | Total         |                   |                |   |

**Subcatchment 62S: CB62**

Runoff = 1.14 cfs @ 12.09 hrs, Volume= 0.083 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

**uc987-2020POST**

Type III 24-hr 100yr Rainfall=6.80"

Prepared by CAQ/rrg

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| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.150     | 98 | Paved parking & roofs         |
| 0.130     | 39 | >75% Grass cover, Good, HSG A |
| 0.280     | 71 | Weighted Average              |
| 0.130     |    | Pervious Area                 |
| 0.150     |    | Impervious Area               |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description   |
|----------|---------------|---------------|-------------------|----------------|---|
| 6.0      |               |               |                   |                | <b>Direct Entry, MIN. TC</b>  |
| 0.1      | 14            | 0.0100        | 4.54              | 3.56           | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 6.1      | 14            | Total         |                   |                |   |

**Subcatchment 63S: CB63**

Runoff = 1.51 cfs @ 12.21 hrs, Volume= 0.173 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.280     | 98 | Paved parking & roofs         |
| 0.870     | 39 | >75% Grass cover, Good, HSG A |
| 0.550     | 30 | Woods, Good, HSG A            |
| 1.700     | 46 | Weighted Average              |
| 1.420     |    | Pervious Area                 |
| 0.280     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description   |
|-------------|------------------|------------------|----------------------|-------------------|---|
| 8.5         | 36               | 0.0260           | 0.07                 |                   | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"  |
| 1.1         | 51               | 0.0260           | 0.81                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.1         | 14               | 0.2860           | 2.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps   |
| 0.2         | 40               | 0.3500           | 4.14                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 35               | 0.0570           | 1.67                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 1.0         | 71               | 0.0290           | 1.19                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps  |
| 0.3         | 59               | 0.0250           | 3.21                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 32               | 0.0630           | 5.10                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.1         | 30               | 0.0400           | 4.06                 |                   | <b>Shallow Concentrated Flow,</b><br>Paved Kv= 20.3 fps   |
| 0.0         | 6                | 0.0233           | 6.92                 | 5.44              | <b>Circular Channel (pipe),</b><br>Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25'<br>n= 0.013 Concrete pipe, bends & connections |
| 11.7        | 374              | Total            |                      |                   |   |

**Subcatchment 70S: 70S**

Runoff = 4.13 cfs @ 12.12 hrs, Volume= 0.353 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.168     | 98 | Paved parking & roofs         |
| 1.924     | 39 | >75% Grass cover, Good, HSG A |
| 0.358     | 98 | POND                          |
| 2.450     | 52 | Weighted Average              |
| 1.924     |    | Pervious Area                 |
| 0.526     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 3.2         | 31               | 0.0320           | 0.16                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 2.2         | 170              | 0.0350           | 1.31                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 45               | 0.0910           | 2.11                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.3         | 85               | 0.0235           | 1.07                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.5         | 371              | Total            |                      |                   |  |

### Subcatchment 71S: 71S

Runoff = 0.65 cfs @ 12.28 hrs, Volume= 0.111 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                   |
|-----------|----|-------------------------------|
| 0.160     | 98 | Paved parking & roofs         |
| 0.630     | 39 | >75% Grass cover, Good, HSG A |
| 1.120     | 30 | Woods, Good, HSG A            |
| 1.910     | 39 | Weighted Average              |
| 1.750     |    | Pervious Area                 |
| 0.160     |    | Impervious Area               |

| Tc<br>(min) | Length<br>(feet) | Slope<br>(ft/ft) | Velocity<br>(ft/sec) | Capacity<br>(cfs) | Description  |
|-------------|------------------|------------------|----------------------|-------------------|--|
| 2.2         | 33               | 0.0910           | 0.25                 |                   | <b>Sheet Flow,</b><br>Grass: Short n= 0.150 P2= 3.20"                |
| 1.5         | 221              | 0.1270           | 2.49                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 0.4         | 40               | 0.0500           | 1.57                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 2.0         | 110              | 0.0180           | 0.94                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 1.6         | 97               | 0.0206           | 1.00                 |                   | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps |
| 7.7         | 501              | Total            |                      |                   |  |

### Subcatchment 72S: 72S

Runoff = 0.90 cfs @ 12.16 hrs, Volume= 0.098 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.200     | 30 | Woods, Good, HSG A              |
| 0.830     | 49 | Desert shrub range, Good, HSG A |
| 1.030     | 45 | Weighted Average                |
| 1.030     |    | Pervious Area                   |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.4      | 50            | 0.0110        | 0.13              |                | <b>Sheet Flow,</b><br>Range n= 0.130 P2= 3.20"                           |
| 0.4      | 50            | 0.0465        | 2.16              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 0.1      | 24            | 0.0833        | 2.89              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.0      | 152           | 0.0164        | 1.28              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 8.9      | 276           | Total         |                   |                |  |

**Subcatchment 73S: 73S**

Runoff = 1.71 cfs @ 13.75 hrs, Volume= 1.029 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Type III 24-hr 100yr Rainfall=6.80"

| Area (ac) | CN | Description                     |
|-----------|----|---------------------------------|
| 0.171     | 98 | Paved parking & roofs           |
| 0.969     | 39 | >75% Grass cover, Good, HSG A   |
| 53.000    | 30 | Woods, Good, HSG A              |
| 0.960     | 49 | Desert shrub range, Good, HSG A |
| 55.100    | 31 | Weighted Average                |
| 54.929    |    | Pervious Area                   |
| 0.171     |    | Impervious Area                 |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description  |
|----------|---------------|---------------|-------------------|----------------|--|
| 6.3      | 36            | 0.0555        | 0.10              |                | <b>Sheet Flow,</b><br>Woods: Light underbrush n= 0.400 P2= 3.20"         |
| 1.0      | 157           | 0.3000        | 2.74              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.3      | 54            | 0.3890        | 3.12              |                | <b>Shallow Concentrated Flow,</b><br>Woodland Kv= 5.0 fps                |
| 0.2      | 37            | 0.2160        | 3.25              |                | <b>Shallow Concentrated Flow,</b><br>Short Grass Pasture Kv= 7.0 fps     |
| 0.1      | 23            | 0.1310        | 3.62              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 2.1      | 185           | 0.0210        | 1.45              |                | <b>Shallow Concentrated Flow,</b><br>Nearly Bare & Untilled Kv= 10.0 fps |
| 10.0     | 492           | Total         |                   |                |  |

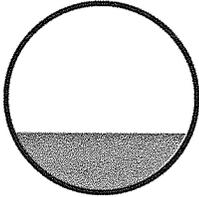
**Reach 1R: DMH1-DMH2**

Inflow Area = 0.900 ac, Inflow Depth = 1.92" for 100yr event  
Inflow = 1.75 cfs @ 12.11 hrs, Volume= 0.144 af  
Outflow = 1.72 cfs @ 12.12 hrs, Volume= 0.144 af, Atten= 2%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 8.09 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 3.16 fps, Avg. Travel Time= 0.8 min

Peak Storage= 32 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.32'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 7.97 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0500 '/'  
Inlet Invert= 214.44', Outlet Invert= 207.04'



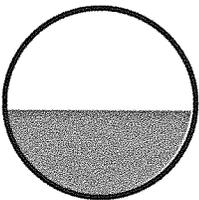
**Reach 2R: DMH2-DMH3**

Inflow Area = 0.900 ac, Inflow Depth = 1.92" for 100yr event  
Inflow = 1.72 cfs @ 12.12 hrs, Volume= 0.144 af  
Outflow = 1.68 cfs @ 12.14 hrs, Volume= 0.144 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 4.77 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 1.90 fps, Avg. Travel Time= 0.8 min

Peak Storage= 34 cf @ 12.13 hrs, Average Depth at Peak Storage= 0.46'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 95.0' Slope= 0.0120 '/'  
Inlet Invert= 207.04', Outlet Invert= 205.90'



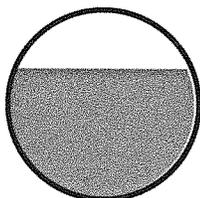
**Reach 3R: DMH3-DMH4**

Inflow Area = 2.630 ac, Inflow Depth = 1.49" for 100yr event  
Inflow = 3.20 cfs @ 12.16 hrs, Volume= 0.326 af  
Outflow = 3.11 cfs @ 12.18 hrs, Volume= 0.326 af, Atten= 3%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.54 fps, Min. Travel Time= 0.6 min  
Avg. Velocity = 2.39 fps, Avg. Travel Time= 1.4 min

Peak Storage= 119 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 205.0' Slope= 0.0120 '/'  
Inlet Invert= 205.80', Outlet Invert= 203.34'



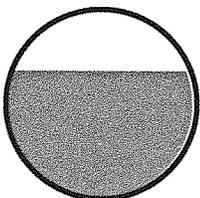
**Reach 4R: DMH4-DMH5**

Inflow Area = 2.630 ac, Inflow Depth = 1.49" for 100yr event  
Inflow = 3.11 cfs @ 12.18 hrs, Volume= 0.326 af  
Outflow = 3.10 cfs @ 12.19 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.51 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 2.39 fps, Avg. Travel Time= 0.6 min

Peak Storage= 51 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.68'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.90 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 90.0' Slope= 0.0120 '/'  
Inlet Invert= 203.24', Outlet Invert= 202.16'



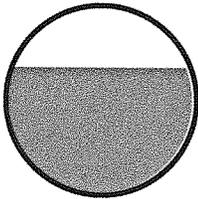
**Reach 5R: DMH5-DMH6**

Inflow Area = 4.426 ac, Inflow Depth = 1.58" for 100yr event  
 Inflow = 5.84 cfs @ 12.15 hrs, Volume= 0.584 af  
 Outflow = 5.78 cfs @ 12.17 hrs, Volume= 0.584 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 6.66 fps, Min. Travel Time= 0.5 min  
 Avg. Velocity = 2.80 fps, Avg. Travel Time= 1.3 min

Peak Storage= 189 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.84'  
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.37 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
 Length= 215.0' Slope= 0.0130 '/'  
 Inlet Invert= 201.91', Outlet Invert= 199.11'

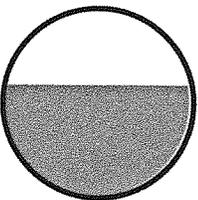
**Reach 6R: DMH6-DMH7**

Inflow Area = 6.776 ac, Inflow Depth = 1.53" for 100yr event  
 Inflow = 8.59 cfs @ 12.17 hrs, Volume= 0.866 af  
 Outflow = 8.57 cfs @ 12.17 hrs, Volume= 0.866 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 11.24 fps, Min. Travel Time= 0.1 min  
 Avg. Velocity = 4.69 fps, Avg. Travel Time= 0.2 min

Peak Storage= 39 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.74'  
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 12.92 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
 Length= 51.0' Slope= 0.0400 '/'  
 Inlet Invert= 199.01', Outlet Invert= 196.97'



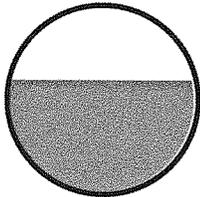
**Reach 7R: DMH7-DMH8**

Inflow Area = 9.586 ac, Inflow Depth = 1.68" for 100yr event  
Inflow = 13.29 cfs @ 12.15 hrs, Volume= 1.341 af  
Outflow = 13.25 cfs @ 12.16 hrs, Volume= 1.341 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.94 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.63 fps, Avg. Travel Time= 0.4 min

Peak Storage= 134 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.90'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.65 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 120.0' Slope= 0.0350 '/'  
Inlet Invert= 196.72', Outlet Invert= 192.52'



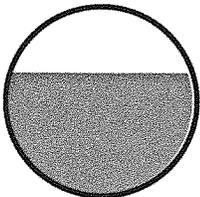
**Reach 8R: DMH8-DMH9**

Inflow Area = 10.306 ac, Inflow Depth = 1.70" for 100yr event  
Inflow = 14.50 cfs @ 12.15 hrs, Volume= 1.458 af  
Outflow = 14.43 cfs @ 12.16 hrs, Volume= 1.458 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.88 fps, Min. Travel Time= 0.3 min  
Avg. Velocity = 4.64 fps, Avg. Travel Time= 0.7 min

Peak Storage= 240 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.98'  
Bank-Full Depth= 1.50', Capacity at Bank-Full= 19.09 cfs

18.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 196.0' Slope= 0.0330 '/'  
Inlet Invert= 190.52', Outlet Invert= 184.05'



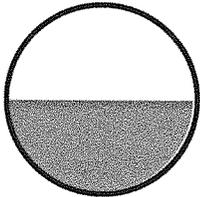
**Reach 9R: DMH9-DMH10**

Inflow Area = 12.206 ac, Inflow Depth = 1.72" for 100yr event  
Inflow = 17.57 cfs @ 12.15 hrs, Volume= 1.745 af  
Outflow = 17.46 cfs @ 12.16 hrs, Volume= 1.745 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.34 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 4.26 fps, Avg. Travel Time= 0.9 min

Peak Storage= 376 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.99'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 35.77 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 242.0' Slope= 0.0250 '/'  
Inlet Invert= 183.55', Outlet Invert= 177.50'



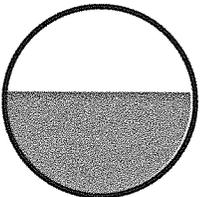
**Reach 10R: DMH10-DMH50**

Inflow Area = 14.316 ac, Inflow Depth = 1.66" for 100yr event  
Inflow = 19.65 cfs @ 12.16 hrs, Volume= 1.977 af  
Outflow = 19.62 cfs @ 12.16 hrs, Volume= 1.977 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.09 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.22 fps, Avg. Travel Time= 0.2 min

Peak Storage= 89 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.10'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 33.55 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 50.0' Slope= 0.0220 '/'  
Inlet Invert= 177.40', Outlet Invert= 176.30'



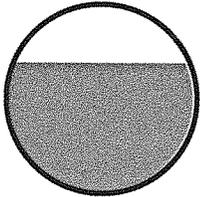
**Reach 11R: DMH11-DMH12**

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event  
Inflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af  
Outflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.07 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 2.25 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.15 hrs, Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 2.0' Slope= 0.0100 '/'  
Inlet Invert= 173.95', Outlet Invert= 173.93'



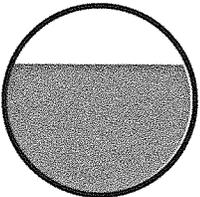
**Reach 12R: DMH12-DMH13**

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event  
Inflow = 2.93 cfs @ 12.15 hrs, Volume= 0.345 af  
Outflow = 2.94 cfs @ 12.17 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.07 fps, Min. Travel Time= 0.5 min  
Avg. Velocity = 2.23 fps, Avg. Travel Time= 1.1 min

Peak Storage= 86 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 148.0' Slope= 0.0100 '/'  
Inlet Invert= 173.83', Outlet Invert= 172.35'



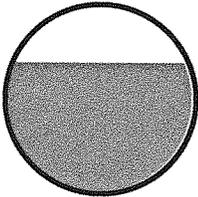
**Reach 13R: DMH13-FES**

Inflow Area = 2.550 ac, Inflow Depth = 1.62" for 100yr event  
Inflow = 2.94 cfs @ 12.17 hrs, Volume= 0.345 af  
Outflow = 2.93 cfs @ 12.17 hrs, Volume= 0.345 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 5.06 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 2.23 fps, Avg. Travel Time= 0.2 min

Peak Storage= 14 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.69'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 3.56 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 25.0' Slope= 0.0100 '/  
Inlet Invert= 172.25', Outlet Invert= 172.00'



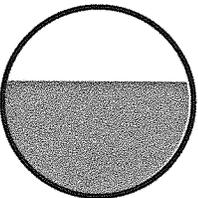
**Reach 50R: DMH50-DMH51**

Inflow Area = 15.996 ac, Inflow Depth = 1.66" for 100yr event  
Inflow = 21.89 cfs @ 12.16 hrs, Volume= 2.207 af  
Outflow = 21.80 cfs @ 12.16 hrs, Volume= 2.207 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.96 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 3.63 fps, Avg. Travel Time= 0.7 min

Peak Storage= 284 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.22'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 142.0' Slope= 0.0200 '/  
Inlet Invert= 176.30', Outlet Invert= 173.46'



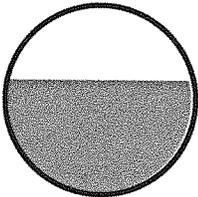
**Reach 51R: DMH51-DMH55**

Inflow Area = 15.996 ac, Inflow Depth = 1.66" for 100yr event  
Inflow = 21.80 cfs @ 12.16 hrs, Volume= 2.207 af  
Outflow = 21.79 cfs @ 12.16 hrs, Volume= 2.207 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 10.94 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.64 fps, Avg. Travel Time= 0.1 min

Peak Storage= 30 cf @ 12.16 hrs, Average Depth at Peak Storage= 1.21'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 15.0' Slope= 0.0200 '/  
Inlet Invert= 173.36', Outlet Invert= 173.06'



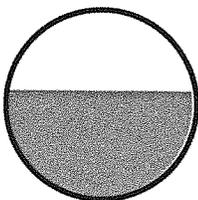
**Reach 52R: DMH52-DMH55**

Inflow Area = 2.470 ac, Inflow Depth = 3.08" for 100yr event  
Inflow = 8.56 cfs @ 12.10 hrs, Volume= 0.635 af  
Outflow = 8.51 cfs @ 12.10 hrs, Volume= 0.635 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.78 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.05 fps, Avg. Travel Time= 0.4 min

Peak Storage= 67 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.72'  
Bank-Full Depth= 1.25', Capacity at Bank-Full= 13.70 cfs

15.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 92.0' Slope= 0.0450 '/  
Inlet Invert= 177.95', Outlet Invert= 173.81'



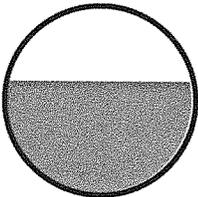
**Reach 53R: DMH53-DMH52**

Inflow Area = 1.800 ac, Inflow Depth = 2.88" for 100yr event  
Inflow = 5.86 cfs @ 12.10 hrs, Volume= 0.432 af  
Outflow = 5.81 cfs @ 12.11 hrs, Volume= 0.432 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.92 fps, Min. Travel Time= 0.2 min  
Avg. Velocity = 4.59 fps, Avg. Travel Time= 0.5 min

Peak Storage= 70 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.60'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 143.0' Slope= 0.0600 '/  
Inlet Invert= 186.78', Outlet Invert= 178.20'



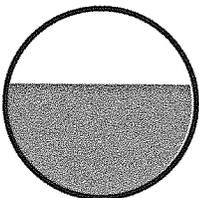
**Reach 54R: DMH54-DMH53**

Inflow Area = 1.800 ac, Inflow Depth = 2.88" for 100yr event  
Inflow = 5.89 cfs @ 12.10 hrs, Volume= 0.432 af  
Outflow = 5.86 cfs @ 12.10 hrs, Volume= 0.432 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.93 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 4.62 fps, Avg. Travel Time= 0.4 min

Peak Storage= 49 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.60'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 100.0' Slope= 0.0600 '/  
Inlet Invert= 192.88', Outlet Invert= 186.88'



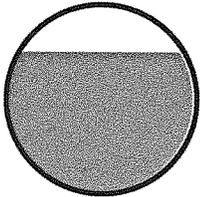
**Reach 55R: DMH55-DMH56**

Inflow Area = 18.466 ac, Inflow Depth = 1.85" for 100yr event  
Inflow = 29.19 cfs @ 12.14 hrs, Volume= 2.842 af  
Outflow = 29.15 cfs @ 12.15 hrs, Volume= 2.842 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.54 fps, Min. Travel Time= 0.1 min  
Avg. Velocity = 3.93 fps, Avg. Travel Time= 0.3 min

Peak Storage= 192 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.50'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 76.0' Slope= 0.0200 '/'  
Inlet Invert= 172.96', Outlet Invert= 171.44'



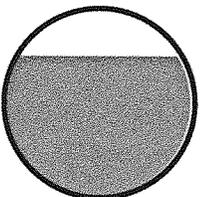
**Reach 56R: DMH56-FES**

Inflow Area = 18.466 ac, Inflow Depth = 1.85" for 100yr event  
Inflow = 29.15 cfs @ 12.15 hrs, Volume= 2.842 af  
Outflow = 29.13 cfs @ 12.15 hrs, Volume= 2.842 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.54 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 3.92 fps, Avg. Travel Time= 0.1 min

Peak Storage= 81 cf @ 12.15 hrs, Average Depth at Peak Storage= 1.50'  
Bank-Full Depth= 2.00', Capacity at Bank-Full= 31.99 cfs

24.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 32.0' Slope= 0.0200 '/'  
Inlet Invert= 171.34', Outlet Invert= 170.70'



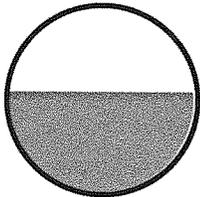
**Reach 60R: DMH60-DMH7**

Inflow Area = 2.810 ac, Inflow Depth = 2.03" for 100yr event  
Inflow = 5.02 cfs @ 12.12 hrs, Volume= 0.475 af  
Outflow = 5.01 cfs @ 12.12 hrs, Volume= 0.475 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 11.45 fps, Min. Travel Time= 0.0 min  
Avg. Velocity = 4.49 fps, Avg. Travel Time= 0.1 min

Peak Storage= 14 cf @ 12.12 hrs, Average Depth at Peak Storage= 0.54'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 8.73 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 33.0' Slope= 0.0600 '/'  
Inlet Invert= 199.20', Outlet Invert= 197.22'



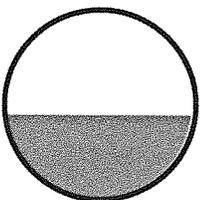
**Reach 61R: DMH61-DMH60**

Inflow Area = 1.980 ac, Inflow Depth = 1.55" for 100yr event  
Inflow = 2.33 cfs @ 12.16 hrs, Volume= 0.256 af  
Outflow = 2.31 cfs @ 12.17 hrs, Volume= 0.256 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
Max. Velocity= 6.83 fps, Min. Travel Time= 0.4 min  
Avg. Velocity = 2.81 fps, Avg. Travel Time= 1.1 min

Peak Storage= 61 cf @ 12.16 hrs, Average Depth at Peak Storage= 0.45'  
Bank-Full Depth= 1.00', Capacity at Bank-Full= 5.63 cfs

12.0" Diameter Pipe, n= 0.013 Concrete pipe, bends & connections  
Length= 180.0' Slope= 0.0250 '/'  
Inlet Invert= 203.80', Outlet Invert= 199.30'



**Pond 1P: POND 1**

Inflow Area = 23.466 ac, Inflow Depth = 1.79" for 100yr event  
 Inflow = 36.09 cfs @ 12.15 hrs, Volume= 3.501 af  
 Outflow = 7.71 cfs @ 12.81 hrs, Volume= 3.501 af, Atten= 79%, Lag= 39.6 min  
 Discarded = 7.71 cfs @ 12.81 hrs, Volume= 3.501 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 170.76' @ 12.81 hrs Surf.Area= 0.382 ac Storage= 0.928 af

Plug-Flow detention time= 41.5 min calculated for 3.501 af (100% of inflow)  
 Center-of-Mass det. time= 41.5 min ( 918.4 - 876.9 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 168.00' | 1.427 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 168.00           | 0.290             | 0.000                 | 0.000                 |
| 170.00           | 0.357             | 0.647                 | 0.647                 |
| 172.00           | 0.423             | 0.780                 | 1.427                 |

| Device | Routing   | Invert | Outlet Devices                              |
|--------|-----------|--------|---|
| #1     | Discarded | 0.00'  | 20.000 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=7.71 cfs @ 12.81 hrs HW=170.76' (Free Discharge)  
 ↑=1=Exfiltration (Exfiltration Controls 7.71 cfs)

**Pond 12P: SFB 10**

Inflow Area = 21.016 ac, Inflow Depth = 1.82" for 100yr event  
 Inflow = 32.04 cfs @ 12.15 hrs, Volume= 3.187 af  
 Outflow = 32.16 cfs @ 12.16 hrs, Volume= 3.148 af, Atten= 0%, Lag= 0.3 min  
 Primary = 32.16 cfs @ 12.16 hrs, Volume= 3.148 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs  
 Peak Elev= 171.44' @ 12.16 hrs Surf.Area= 0.036 ac Storage= 0.061 af

Plug-Flow detention time= 11.2 min calculated for 3.148 af (99% of inflow)  
 Center-of-Mass det. time= 4.3 min ( 876.8 - 872.5 )

| Volume | Invert  | Avail.Storage | Storage Description                                 |
|--------|---------|---------------|---|
| #1     | 169.00' | 0.083 af      | Custom Stage Data (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (acres) | Inc.Store (acre-feet) | Cum.Store (acre-feet) |
|------------------|-------------------|-----------------------|-----------------------|
| 169.00           | 0.015             | 0.000                 | 0.000                 |
| 170.00           | 0.022             | 0.018                 | 0.018                 |
| 172.00           | 0.042             | 0.064                 | 0.083                 |

| Device | Routing | Invert  | Outlet Devices  |
|--------|---------|---------|---|
| #1     | Primary | 170.80' | <b>20.0' long x 0.5' breadth Broad-Crested Rectangular Weir</b><br>Head (feet) 0.20 0.40 0.60 0.80 1.00<br>Coef. (English) 2.80 2.92 3.08 3.30 3.32 |

Primary OutFlow Max=31.83 cfs @ 12.16 hrs HW=171.44' (Free Discharge)  
 ↳1=Broad-Crested Rectangular Weir (Weir Controls 31.83 cfs @ 2.49 fps)

**Link 74L: COMBINE-HYDROGRAPHS**

Inflow Area = 58.040 ac, Inflow Depth = 0.26" for 100yr event  
 Inflow = 2.04 cfs @ 13.66 hrs, Volume= 1.238 af  
 Primary = 2.04 cfs @ 13.66 hrs, Volume= 1.238 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-36.00 hrs, dt= 0.05 hrs

## APPENDIX E

**INSTRUCTIONS:**

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table
2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings
3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row
4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row
5. Total TSS Removal = Sum All Values in Column D

Non-automated: Mar. 4, 2008

Location: Lawrence St. North

| A                       | B                             | C                  | D                    | E                    |
|-------------------------|-------------------------------|--------------------|----------------------|----------------------|
| BMP <sup>1</sup>        | TSS Removal Rate <sup>1</sup> | Starting TSS Load* | Amount Removed (B*C) | Remaining Load (C-D) |
| Deep Sump<br>Wooded Cbs | 25%                           | 1.00               | 25%                  | 75%                  |
| Sod: ment<br>Pore bay   | 25%                           | 75%                | 19%                  | 56%                  |
| Infiltration<br>Basin   | 80%                           | 56%                | 44%                  | 12%                  |
|                         |                               |                    |                      |                      |
|                         |                               |                    |                      |                      |

**TSS Removal Calculation Worksheet**

Separate Form Needs to be Completed for Each Outlet or BMP Train

**Total TSS Removal =**

88%

Project: Abbeville  
 Prepared By: R.P.B.  
 Date: 12/2/19

\*Equals remaining load from previous BMP (E) which enters the BMP

## APPENDIX F

Sediment Forebay Sizing:

0.1-inch/impervious acre

Impervious Area = 5.45 acres

$5.45 \times 0.083 \times 0.1 = 0.454$  acre feet required

0.0464 acre feet of storage provided.

## **APPENDIX G**

## Hydrograph for Pond 1P: POND 1

| Time<br>(hours) | Inflow<br>(cfs) | Storage<br>(acre-feet) | Elevation<br>(feet) | Discarded<br>(cfs) |
|-----------------|-----------------|------------------------|---------------------|--------------------|
| 1.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 2.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 3.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 4.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 5.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 6.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 7.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 8.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 9.00            | 0.00            | 0.000                  | 168.00              | 0.00               |
| 10.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 11.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 12.00           | <b>13.91</b>    | <b>0.049</b>           | <b>168.17</b>       | <b>5.96</b>        |
| 13.00           | <b>6.41</b>     | <b>0.918</b>           | <b>170.73</b>       | <b>7.69</b>        |
| 14.00           | 4.16            | 0.709                  | 170.17              | 7.31               |
| 15.00           | 3.24            | 0.428                  | 169.37              | 6.77               |
| 16.00           | 2.37            | 0.126                  | 168.43              | 6.14               |
| 17.00           | 1.89            | 0.004                  | 168.01              | 1.90               |
| 18.00           | 1.49            | 0.003                  | 168.01              | 1.50               |
| 19.00           | 1.31            | 0.003                  | 168.01              | 1.32               |
| 20.00           | 1.19            | 0.002                  | 168.01              | 1.20               |
| 21.00           | 1.10            | 0.002                  | 168.01              | 1.10               |
| 22.00           | 1.00            | 0.002                  | 168.01              | 1.01               |
| 23.00           | 0.91            | 0.002                  | 168.01              | 0.91               |
| 24.00           | 0.81            | 0.002                  | 168.01              | 0.81               |
| 25.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 26.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 27.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 28.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 29.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 30.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 31.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 32.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 33.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 34.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 35.00           | 0.00            | 0.000                  | 168.00              | 0.00               |
| 36.00           | 0.00            | 0.000                  | 168.00              | 0.00               |

## APPENDIX H

**Long Term Operation & Maintenance Plan  
Stormwater Management Systems  
The Preserve at Abbyville – Lawrence St., Norfolk, MA**

The Stormwater Management System (SWMS) for parcels 9, 10, 12 and 14, Map 6 Block 2, Lawrence Street in Norfolk, MA has been designed to mitigate impacts to the quality and quantity of Stormwater flowing from the site. In order to ensure that the Stormwater management facility performs adequately, a regular schedule of maintenance is required.

**General Information**

Project Name: The Preserve at Abbyville  
Project Type: Housing  
Address: Lawrence Street

SWMS: Lawrence Street – Map 6 Block 2 Parcels 9, 10, 12 and 14  
Off Lawrence Street, Norfolk, MA

Responsible Party: Abbyville Development, LLC  
850 Franklin Street – Wrentham, MA

Contact: Thomas DiPlacido, Jr.

It shall be the responsibility of the Owner to provide a revised plan to the Board of Appeal, indicating any changes of ownership or responsibly party.

**BMP Inspection and Maintenance Procedures**

Effectiveness of Best Management Practices (BMP's) are maximized when properly maintained. The following inspections schedule and maintenance required of BMP's for this project shall be outlined and documents below.

- 1. Pavement Sweeping:** Paved areas shall be swept annually, on or prior to April 1, to remove excess sediments. This will result in a reduced sediment load that the drainage system will have to remove from the runoff. Use salt for roadway deicing purposes, shall be kept to a minimum, to reduce the need for removal and treatment.
- 2. Deed Sump Hooded Catch Basins:** Shall be checked periodically and cleaned as necessary to maintain clear operations of the hoods.
- 3. Detention Forebays:** Shall be checked periodically and following heavy rainfalls to verify that the inverts and outlet openings are not clogged with debris. Debris shall be removed. Forebays shall be inspected on an annual basis and if necessary, bottom area, should be noted during inspections. Repair and replace damaged materials.
- 4. Detention / Infiltration Pond:** The pond bottom shall be inspected annually. Debris and sediment accumulated shall be removed. Disposal shall be in accordance with applicable Local, State and Federal guidelines and regulations.
- 5. Maintenance Responsibilities:** All post-construction maintenance activities shall be documented, on the following form, kept on file and made available to the Board of Appeals, upon request. All post-construction maintenance activities shall run with the title of the property.

**Public Safety Features:**

1. Provide Police detail for extended occupation of roadway, if traffic dictates.
2. All excavations and entry into closed structures will be completed in accordance with OSHA requirements.

Approximate Maintenance Budget:

Inspection and maintenance for this site is estimated as follows:

|                   |            |
|-------------------|------------|
| Inspections:      | \$400.00   |
| Street Sweeping   | \$2,500.00 |
| DSHCB's           | \$2,500.00 |
| Forebays          | \$200.00   |
| Infiltration Pond | \$400.00   |
| <br>              |            |
| Annual Cost       | \$6,000.00 |

**Long Term Operation & Maintenance Plan  
Stormwater Management System  
The Preserve at Abbyville – Lawrence St., Norfolk, MA**

**BMP Inspection and Maintenance Documentation Form**

Inspection Number: \_\_\_\_\_ Date: \_\_\_\_\_ Weather: \_\_\_\_\_

Date & Amount of Last Precipitation Event: \_\_\_\_\_

Inspector's Name: \_\_\_\_\_ Inspector's Signature: \_\_\_\_\_

| BMP                          | Condition/Stability | Comments & Recommendations | Date Corrected |
|------------------------------|---------------------|----------------------------|----------------|
| Street Sweeping              |                     |                            |                |
| Forebays                     |                     |                            |                |
| Detention/Infiltration Ponds |                     |                            |                |
| Catch Basin Sumps            |                     |                            |                |
| Other                        |                     |                            |                |
|                              |                     |                            |                |
| Additional Comments          |                     |                            |                |

## **APPENDIX I**