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OC DANA POINT HARBOR REVITALIZATION PROJECT

HYDROLOGY AND HYDRAULIC REPORT BOAT STORAGE PARKING LOT INTERIM DRAINAGE CONDITION (LINE D - INTERIM)

City of Dana Point
County of Orange, California

Prepared For:

Orange County Dana Point Harbor
24650 Dana Point Harbor Drive
Dana Point, CA 92629

Prepared By:

Fuscoe Engineering, Inc.
16795 Von Karman, Suite 100
Irvine, California 92606
949.474.1960
www.fuscoe.com

Date Prepared: March 27, 2014
Job Number: 307-008-01

full circle thinking®

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1.0 INTRODUCTION

The County of Orange, OC Dana Point Harbor is planning for the Revitalization of Dana Point Harbor. The first Project of this Revitalization will be the Harbor's Commercial Core (the Project), which includes the commercial/retail, Day-Use and boat storage areas of the Harbor. The Commercial Core is located in the northeast portion of the Harbor in Planning Areas 1, 2, and a portion of Planning Area 3 (see Exhibit 1). Exhibits 2 and 3 were extracted from the Project EIR (circa 2006) and identify existing conditions and master plan improvements respectively. Exhibit 4 identifies current site plan improvements for Planning Area 1a, Planning Area 2, and Planning Area 3a.

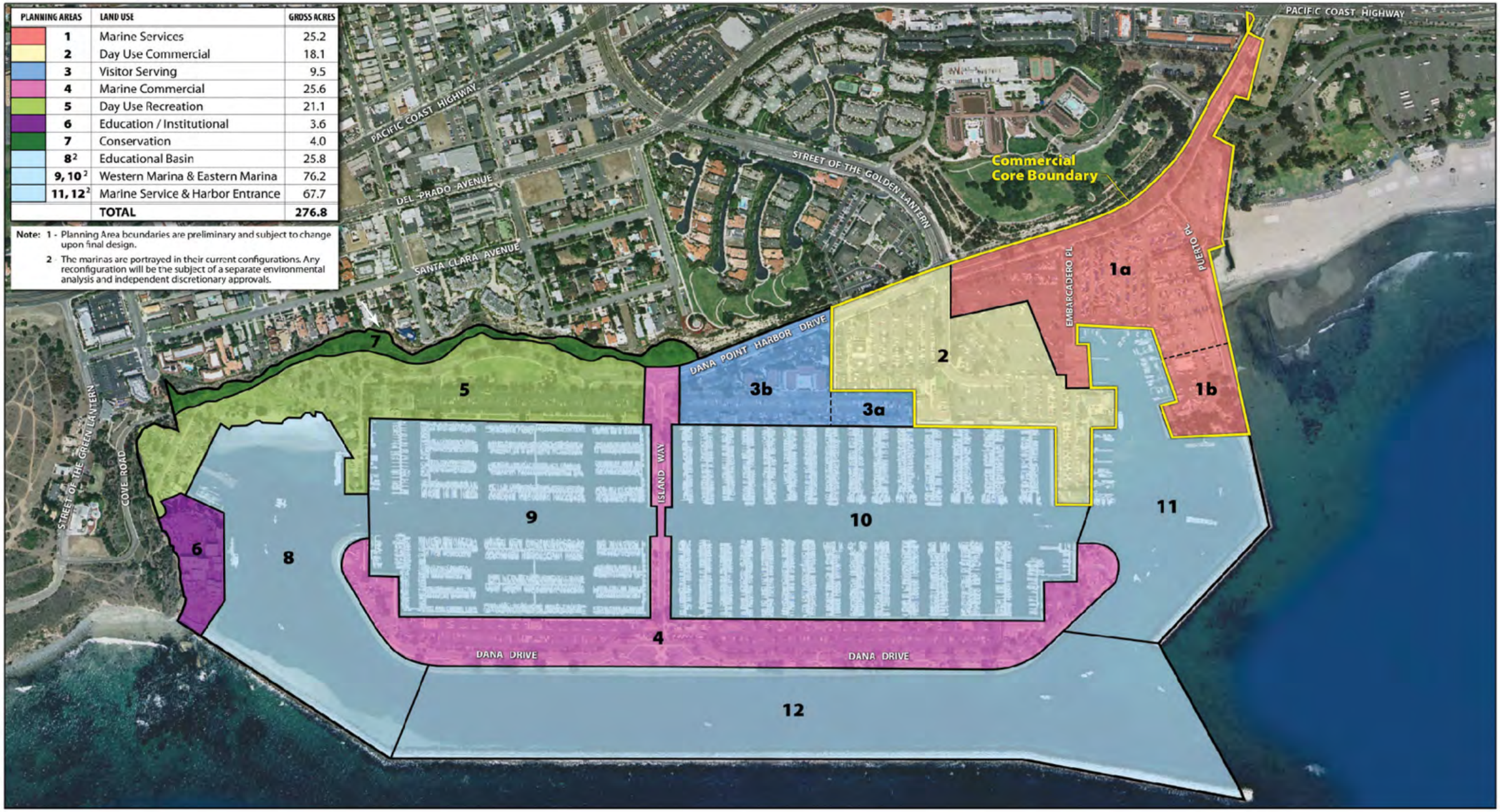
Regulations for improving the Commercial Core require the Project to obtain approval through the City of Dana Point by securing a Coastal Development Permit (CDP 1), with the exception of the Dry Stack Boat Storage Building in PA 1 and related infrastructure. This area will require a separate Coastal Development Permit (CDP 2) through the California Coastal Commission. None of the improvements covered by CDP 1 will include modifications to the existing sea wall or anything located on the water side of the sea wall, e.g., all improvements will be to the "land" side of the sea wall. CDP 2 will include the Dry Stack Boat Storage Building and related docks and infrastructure needed for the building, including the relocation of an existing 18-inch storm drain, which is presently located below the footprint of the proposed building. The existing 18-inch storm drain originates off-site, collecting runoff from the City's Lantern Bay Park and Dana Point Harbor Drive, before traversing through the project site, collecting site runoff from portions of the existing boat storage parking lot, and outletting into the Harbor's East Marina (see Exhibit 5).

The existing storm drain is 18-inch in diameter and hydraulic modeling of the storm drain indicates it does not have adequate capacity to convey existing and/or proposed condition runoff per Orange County Public Works drainage requirements. Accordingly, when CDP2 is obtained and the Dry Stack Boat Storage Building is constructed, the existing 18-inch storm drain will be relocated and upsized to a diameter that is adequate to meet Orange County Public Works drainage and hydraulic requirements, and a new outlet will be constructed through the sea wall at the storm drains' relocated position. However, if CDP1 improvements move forward prior to the CDP2 permit being obtained, proposed condition runoff in the boat storage parking lot will need to be conveyed through the hydraulically deficient existing 18-inch storm drain. If this situation occurs, detention storage will be integrated into the storm drain system to reduce peak flow rates thereby improving the existing storm drains hydraulic efficiency to a level that will meet Orange County Public Works requirements. This "interim" drainage condition is the subject of this report's analysis and evaluation.

PLANNING AREAS		LAND USE	GROSS ACRES
	1	Marine Services	25.2
	2	Day Use Commercial	18.1
	3	Visitor Serving	9.5
	4	Marine Commercial	25.6
	5	Day Use Recreation	21.1
	6	Education / Institutional	3.6
	7	Conservation	4.0
	8[2]	Educational Basin	25.8
	9, 10[2]	Western Marina & Eastern Marina	76.2
	11, 12[2]	Marine Service & Harbor Entrance	67.7
		TOTAL	**276.8**

Note: 1 - Planning Area boundaries are preliminary and subject to change upon final design.

2 - The marinas are portrayed in their current configurations. Any reconfiguration will be the subject of a separate environmental analysis and independent discretionary approvals.



Source: RBF Consulting, August 1, 2005.

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PLANNING AREA OVERVIEW

DANA POINT HARBOR REVITALIZATION PROJECT
PROGRAM ENVIRONMENTAL IMPACT REPORT

EXHIBIT 1

Harbor Entry Monument Sign
PCH
Doheny State Beach
Mariners Village
Mariners Alley
PUERTO PLACE
DANA POINT HARBOR DRIVE
EMBARCADERO PLACE
County Operations Maintenance Yard
Embarcadero Marina Building (Boater Service Building X)
Embarcadero Docks
Ship Yard Building
Ship Yard Slips
Boat Launch
Catalina Express Dock
Fuel Dock
Dana Wharf
Sport Fishing Docks
Charter Fishing Slips
Restaurant
Bait Receiver
Harbor Patrol
East Breakwater
Commercial Fishing Slips/ Harbor Patrol Docks
Restaurant
Boater Service Buildings
EAST MARINA
ISLAND WAY
WEST MARINA
Boater Service Buildings
DANA DRIVE
DANA DRIVE
Island Park
Dana West Yacht Club
Dana Point Yacht Club
Dana Point Yacht Club Slips
Spirit of Dana Point & RV/Sea Explorer Dock
Pilgrim Dock
Ocean Institute
Fishing Pier
Youth & Group Facility
Baby Beach
COVE ROAD
The Old Cove Marine Preserve
The Old Cove Native Plant Preserve
West Breakwater
PACIFIC OCEAN
Picnic Areas
Youth & Group Docks
Guest Slips
County Dana Point Harbor Department
Marina Inn
CASITAS PLACE
STREET OF THE GOLDEN LANTERN
DANA POINT HARBOR DRIVE
1
2
3
4
5
6
7
8
9
10
11
12
0 200 400 800

Source: RBF Consulting, August 1, 2005.

EXISTING CONDITIONS

DANA POINT HARBOR REVITALIZATION PROJECT
PROGRAM ENVIRONMENTAL IMPACT REPORT

EXHIBIT 2

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PLANNING AREAS [1]		LAND USE	GROSS ACRES
	1	Marine Services	25.2
	2	Day Use Commercial	18.1
	3	Visitor Serving	9.5
	4	Marine Commercial	25.6
	5	Day Use Recreation	21.1
	6	Education / Institutional	3.6
	7	Conservation	4.0
	8 [2]	Educational Basin	25.8
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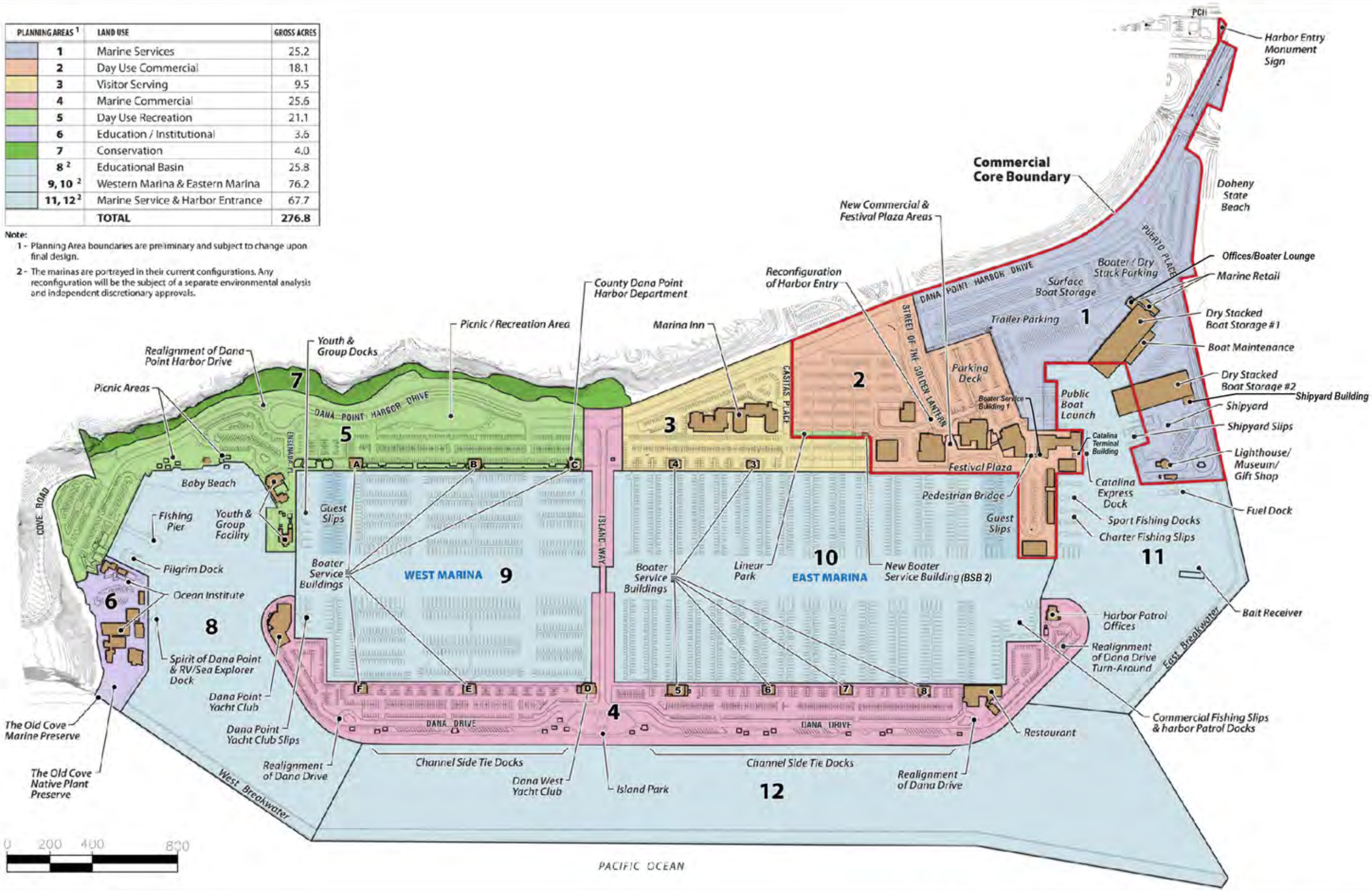

Source: RBF Consulting, August 1, 2005.

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DANA POINT HARBOR REVITALIZATION PROPOSED PLAN

DANA POINT HARBOR REVITALIZATION PROJECT
PROGRAM ENVIRONMENTAL IMPACT REPORT

EXHIBIT 3

DANA POINT HARBOR REVITALIZATION
COMMERCIAL CORE PROJECT

COUNTY OF ORANGE
DANA POINT HARBOR DRIVE
DANA POINT, CALIFORNIA

Project Dimensions

DATE: 4-25-13
PROJECT #:
SCALE: 1" = 50'
0
NORTH
SHEET #:

PROPOSED PLAN

Source: MVE Institutional

DANA POINT HARBOR REVITALIZATION PLAN

PLANNING AREAS 1a, 2, AND 3a PROPOSED SITE PLAN

EXHIBIT 4

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P:\PROJECTS\307\08\ENG_FILE CABINET\REPORTS\HYDROLOGY\INSURANCE POLICY HHR\REPORT FIGURES\EXHIBIT 4-SITE PLAN.DWG (03-27-14 4:54:1 Plotted by: Soojin Shim

LANTERN BAY PARK

DANA POINT HARBOR DRIVE

PUERTO PLACE

GOLDEN LANTERN

WATERSHED AREA 'D'

EX. 18" RCP

EX. 18" RCP

EAST BASIN

SD

DANA POINT HARBOR REVITALIZATION PLAN

WATERSHED 'D' OVERVIEW

EXHIBIT 5

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LEGEND

- PROPOSED WATERSHED 'D' BOUNDARY
- EXISTING WATERSHED 'D' BOUNDARY
- EXISTING STORM DRAIN

P:\PROJECTS\307\08\ENG_FILE CABINET\REPORTS\HYDROLOGY\INSURANCE POLICY HH\REPORT FIGURES\EXHIBIT 5-WATERSHED D OVERVIEW.DWG (03-2 Plotted by: Soojin Shim

LANTERN BAY PARK

DANA POINT HARBOR DRIVE

PUERTO PLACE

GOLDEN LANTERN

EX. 18" RCP

POC

DETENTION BASIN #5

DETENTION BASIN #6

DETENTION BASIN #7

DETENTION BASIN #8

DAY USE AND BOAT

STORAGE PARKING

VEHICLE PARKING STRUCTURE

LAT 'D-1'

LAT 'D-2'

LAT 'D-3'

LAT 'D-4'

LAT 'D-5'

LAT 'D-6'

LAT 'D-7'

LAT 'D-8'

LAT 'D-9'

LINE 'D'

SD

POC

EX. 18" RCP

EXISTING OUTLET D (18" DIA. OPENING @ SEA WALL)

DANA POINT HARBOR REVITALIZATION PLAN

WATERSHED 'D' PROPOSED INTERIM DRAINAGE SYSTEM LAYOUT

EXHIBIT 6

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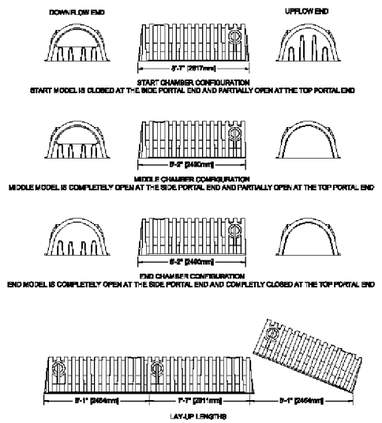
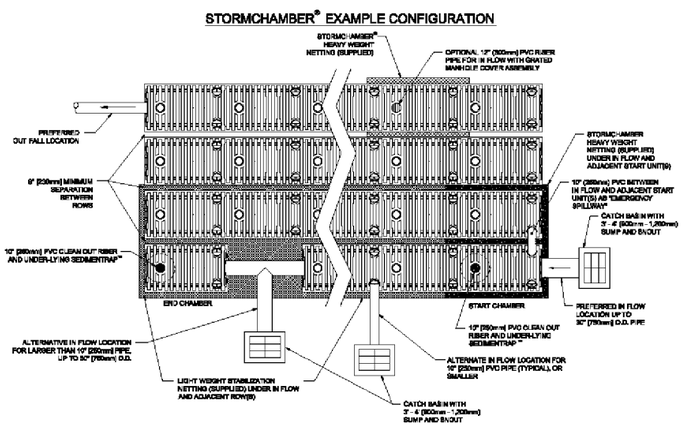
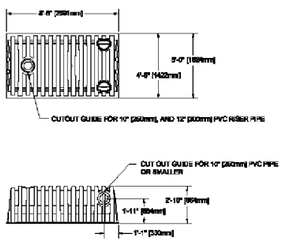
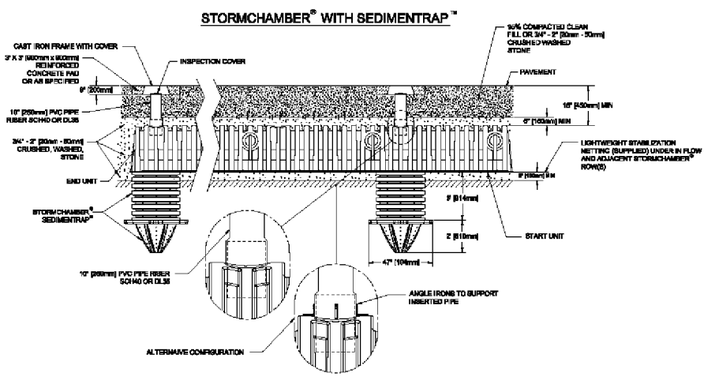
LEGEND

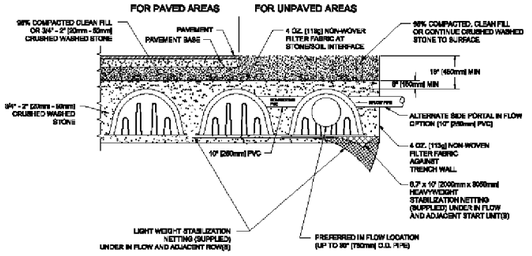
- PROPOSED WATERSHED 'D' BOUNDARY
- PROPOSED STORM DRAIN
- EXISTING STORM DRAIN
- PROPOSED INLET LOCATION

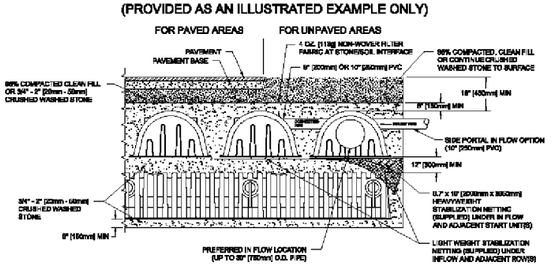












INSTALLATION OF STORMCHAMBER SYSTEMS (can be downloaded and printed from www.stormchambers.com)

TRENCH PREPARATION

1. Do not excavate trench until dry weather is forecast long enough to allow at least cover-age of the StormChamber system with filter fabric prior to raining.
2. Excavate to a width and length sufficient to accommodate the number of StormChambers plus a minimum one foot border around the entire bed. The bottom of the bed must be level, unless otherwise specified.
3. Do not use heavy equipment on the excavated trench bed in order to avoid soil compaction.
4. If use of heavy equipment on the excavated trench bed can not be avoided, scarify the trench bottom and break up soil clumps and till smooth before adding the stone base.
5. Line trench walls with a 4-ounce [113g] non-woven filter fabric such as Mirafi 140N or 140NC, Synthetic Industries 4ol, or AMOCO0 4545 or 4535. Overlap adjacent filter fabric by at least 2' [600mm]. Do not place filter fabric under the StormChambers.
6. Unless otherwise specified, place 9" [150mm] of crushed, washed, 3/4" - 2" [20mm - 50mm] hard, non-calcitous stone on the bottom of the trench. The base must be level and at a zero grade.
7. If it becomes impractical to level the stone base by hand, use a low pressure, tracked dozer, not exceeding 1,100 lbs/ft² [5366g/M], maintaining at least 6" [150mm] of stone under the tracks at all times.

STORMCHAMBER INSTALLATION

1. You may need assistance in separating the StormChambers. Based on weather and trench conditions, sometimes the StormChambers become tightly compacted. Separate StormChambers using two 2 x 4 studs along one side of the stack for leverage. Do not use any damaged units - contact StormChamber immediately.
2. Start building the StormChamber system with the Start Unit StormChambers at the inflow end of the StormChamber system. The Start Units are completely closed at the end with the two side portals.
3. Roll out two rows of StormChamber light weight stabilization netting (provided with the StormChambers) perpendicular to the rows of where the Start Unit StormChambers will be placed. Overlap the rows by approximately 1' [300mm]. Keep the netting flat, if wrinkled, straighten and flatten out.
4. Place one piece of the StormChamber heavy weight stabilization netting (provided with the StormChambers) under each StormChamber that will be receiving inlet storm drain pipes. Cut a hole in the netting to fit snugly around the exposed top of the SedimanTrap. Place on top of the light weight netting and extend beyond all edges of the StormChamber. The purpose of heavy weight stabilization netting is to function as a "splash pan", preventing excavation of the underlying stone and soil, while allowing infiltration to occur.
5. Place the Start Unit StormChambers (completely closed at the end with the two side portals), spaced a minimum of 6" 9" [178mm] apart at the corner ribs of the end walls (9" [230mm] apart at the base). Position the closed ends at least 1' [300mm] from the trench wall.
6. Cut open the side portals for the inflow storm drain pipes (size and location specified on the plans) and lateral connecting pipes between StormChamber Start Units (8" [200mm] or 10" [250mm] Schedule 40 or SDR 35 PVC, 8" [200mm] or 10" [250mm] HDPE will not fit) with a reciprocating saw, router bit or a drill, or keyhole saw along the defined indented circle. 12" [300mm] PVC pipe is the largest diameter pipe that can fit into the side portals. If the inflow storm drain pipe is specified to enter the closed end wall, place a piece of the pipe against the end wall. Trace the diameter of the pipe on the end wall and cut out the circle. The maximum pipe size that can be inserted into the end wall is 36" [750mm] O.D.
7. If is cut extends more than 6 5" [13cm] beyond the intended diameter, place a piece of the StormChamber non-woven filter fabric over the hole, cut an "X" just short of the width of the opening, and insert the pipe.
8. Mark the midpoints of 8" [200mm] or 10" [250mm] PVC pipe and insert into the adjacent StormChamber Start Units where specified so that the marked midpoint is centered between the two adjacent StormChambers. Pipe length should be sufficient to extend 6" [150mm] - 12" [300mm] into both adjacent StormChambers (about 1' [1000mm]). In order to facilitate placement, install the lateral connecting pipes in the specified StormChambers before attaching the next StormChambers in the row.
9. If the locations of row - connecting PVC pipes are not specified, add 8" [200mm] or 10" [250mm] PVC pipes to connect all the Start Unit StormChambers of each row.
10. Roll out additional StormChamber light weight stabilization netting, over-laying the previous sheet by 1' [300mm] and place the first rib of a Middle Unit (can plecely open at side portal and partially open at top portal end) over the last rib of each of the Start Unit StormChambers.
11. Screw the StormChambers together at their bases on both sides with regular 3" [75mm] dry wall screws. One screw on each side is sufficient to temporarily hold the StormChambers together until the stone is place. The gap between the two StormChambers near their base must be closed enough to prevent stone from ingrecting into them to prevent potential surface subsidence.
12. Continue placing and screwing the rest of the StormChambers, one at a time, leaving at least 1' [300mm] between the end of the End Unit (completely open at the side portal end, completely closed at the top portal end) and the trench wall.
13. For large StormChamber systems it is advisable to install and backfill a few StormChambers of all rows at a time as you continue to install the rest of the chambers.
14. Deposit 3/4" - 2" [20mm - 50mm] crushed, washed, hard stone directly along the centerline of the StormChambers to evenly flow down each side to keep the StormChambers in proper alignment. DO NOT use limestone. Limestone gets pasty when wet and will tend to reduce the void spaces in the stone. Do not place the stone directly against the closed end walls at the start and end of the rows. Add stone to 9" [150mm] above the StormChambers, unless otherwise specified.
15. Level the stone cover with a vibratory compactor, not to exceed a dynamic force of 10,000 pounds [4536kg], or with a low pressure, tracked vehicle not exceeding 1,100 lbs/ft² [5366g/M].

IMPORTANT: If a low pressure, tracked dozer is used, do not run the dozer on anything less than 9" [150mm] of stone above the StormChambers. Spread stone in small piles to prevent movement of the StormChambers. Caution must be exercised when placing stone on top of the StormChambers so that excessive pressure is not applied directly on the StormChambers by equipment "buckets".

16. Cover the stone with StormChamber non-woven filter fabric. Overlap adjacent sheets by at least 2' [600mm].

BACKFILLING

1. Backfill soil must be free from large stones and large organic material (eg. tree limbs and root stumps), and be capable of being compacted to at least 90% of the Standard Proctor Test (AASHTO Method T-99). If not, crusher run or other suitable backfill material must be used. The stone surrounding the StormChambers can also be extended up to the pavement subgrade, if desired.
2. Compaction of the soil backfill must be achieved in 9" [150mm] - 9" [200mm] lifts. Grading of lifts should start in one corner of the system with a low pressure, tracked dozer, with a pressure not exceeding 1,100 lbs/ft² [5366g/M], leaving at least 1' [300mm] of fill in front of the blade at all times. Compact lifts to 95% Standard Proctor with tracked vehicles not exceeding 1,100 lbs/ft² [5366g/M], or with a hand operated compactor or vibratory roller not exceeding a dynamic force of 20,000 lbs [9071kg].
3. Keep the StormChamber system closed or protected from receiving sediment until the site is completely stabilized (grass growing and all pavement placed).

IMPORTANT: After completion of backfill and setting of final grade, avoid parking on or traversing over the StormChamber installation with heavily loaded trucks and heavy equipment until paved.

IMPORTANT: These instructions assume accepted construction procedures and trucks that do not exceed specified DOT load limits. Unnecessary loads or improper load distributions by vehicles may require additional cover. Contact StormChamber for installation under abnormal conditions. Installations not in compliance with these instructions will void warranty.

PRODUCT ENGINEERING SPECIFICATIONS FOR STORMCHAMBER

Each chamber will be formed from high molecular weight high density polyethylene.
Each chamber will be composed of at least 40% recycled materials.
The stone base that the chambers are placed on will not be compacted in order to avoid compaction of the stone-soil interface, which restricts soil infiltration.
The chamber system will be designed without filter fabric under the chambers in order to avoid restriction of soil infiltration, which occurs from the normal clogging of the filter fabric from sediment and debris deposition.
Use of filter fabric between the soil and stone backfill layer and lining the side walls of the excavated area will be required to prevent intrusion of soil or silt into the chambers and surrounding stone.
Each chamber will be capable of supporting a minimum of 24,000 pounds [10,886kg] per square foot (i.e., three times the AASHTO H-20 Wheel Load Rating).
Each chamber will be capable of being installed with a minimum of 25 feet [762mm] of cover above the crown of the chamber.
Each chamber system will be capable of being installed in at least two layers, providing a minimum of 6.8 cubic feet of storage per square foot of surface area.
Each chamber system will be capable of being installed with a minimum of six inches [150mm] of stone base.
Each chamber will be 34.04" [864mm] high, 60" [1,524mm] wide and 102.5" [2591mm] long.
Lay-up length will be 8.1' [2464mm] (start and end unit) and 7.6' [2311mm] (middle unit).
Each chamber will have 14 ribs at approximately 3.5" [91.4mm] in height, 3.5" [88.9mm] wide at the top and tapering to 4.4" [112mm] at the bottom.
Spacing of the ribs at the bottom of the chamber will be approximately 4.9" [124mm] and approximately 3.2" [81.3mm] at the top. One smaller rib sized dimensionally to effectively seal under and interlock to connect units will be 2.9" [73.7mm] high, 3.3" [83.8] wide at the top of the rib, and 4.1" [104mm] wide at the base.
Overall height to the inside rib will be 30.44" [864.62mm]. Overall height to the outside rib will be 34.04" [773.18mm].
Each chamber will have a defined top portal which is structurally enhanced to compensate for loss of structural integrity when apertures are cut open to receive pipe. Each open portal will be capable to receive up to a 12" [300mm] PVC pipe.
Each chamber will have defined side portals on opposing sides which are structurally enhanced to compensate for loss of structural integrity when apertures are cut open to receive pipe.
Invert height for a 10" [250mm] PVC pipe through a defined side portal will be 17.49" [444.25mm]. Invert height for an 8" [200mm] PVC pipe through a defined side portal will be 18.49" [469.65mm].
Each chamber will be capable to accept an 8" [200 mm] or 10" [250mm] PVC feed pipe through a defined side portal.
Each chamber will be capable to accept up to a 30" [750mm] OD pipe through its end wall.
Each chamber will be capable of storing at least 9 cubic feet per lineal foot with 6" [150mm] or stone above and below the chamber.
Each chamber system will be designed without utilizing a header pipe manifold system.
Stone diameter will be 3/4" - 2" [20mm - 50mm].

For Availibility and Pricing Please Call:
StormChamber
TOLL FREE: 1-877-626-9130
e-mail: info@stormchamber.com

DRAWING REVISION 10-08-16-13 | NOT TO SCALE DRAWINGS

P:\PROJECTS\307\08\ENG_FILE CABINET\REPORTS\HYDROLOGY\INSURANCE POLICY HH\REPORT FIGURES\EXHIBIT 7-STORMCHAMBER SYSTEM.DWG (03-27 Plotted by: Soojin Shim

DANA POINT HARBOR REVITALIZATION PLAN

STORMCHAMBER DETENTION FACILITY CUT SHEET

EXHIBIT 7

FUSCOE ENGINEERING
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2.0 METHODOLOGY

A drainage "system" analysis has been utilized to evaluate the hydraulic performance of the interim Line 'D' storm drain system. The interim system layout is defined as utilizing the existing 18" storm drain outlet at the Harbor's East Basin sea wall just east of the existing boat launch ramp area, constructing new storm drain piping throughout the boat storage parking lot (upstream of the outlet) to fit proposed improvements constructed with the CDP1 permit, constructing detention storage facilities into the parking lot system to reduce peak flow discharges tributary to the system thus making the system hydraulically efficient, and connecting to the existing off-site drainage system entering the project site from Dana Point Harbor Drive midway between Street of the Golden Lantern and Puerto Place. The storm drain system layout is shown on Exhibit 6 and on the project hydrology map in Appendix G.

The detention storage facility chosen for use in the project is the "Storm Chamber" system manufactured by Hydrologic Solutions Incorporated. This type of facility was selected primarily because of its low profile benefits fitting with the vertically constrained site conditions. The Storm Chamber is also an attractive option because there are no length x width ratio requirements for the facility. A cut sheet of a typical Storm Chamber unit is included in Exhibit 7.

The procedure utilized to develop watershed discharge values and evaluate system hydraulics is as follows:

1. The storm drain system layout was determined to extend to drainage pickup locations, to allow for strategic positioning of detention units, to allow for water quality system interface, to connect to the existing system outlet location at the East Basin sea wall, and to connect to the existing system inflow location at Dana Point Harbor Drive.
2. Sub-watershed boundaries were established and sub-area acreages were calculated for input into AES Rational Method software.
3. AES Rational Method modeling was performed to estimate sub-area Times of Concentration (TC's). A 10-Year storm event level was selected consistent with Orange County Public Works criteria.
4. AES Sub-Area Average Loss Rates (F_m) and Low Loss Fraction $\overline{Y}$ estimations were developed.
5. AES Small Area Unit Hydrographs were developed for use as inflow hydrographs into HydroCAD detention modeling and for hydrograph routing input into flood routing analysis.

6. HydroCAD detention modeling was performed to establish required detention volume sizing, to verify peak water surface elevations inside detention facilities, and to develop Stage-Storage and Stage-Discharge curves for input into flood routing analysis.
7. AES Flood Routing analysis was performed to develop mitigated peak flow discharge values.
8. Water Surface Pressure Gradient (WSPG) modeling was performed to establish drainage system hydraulic grade lines (HGL) and to evaluate HGL results with Orange County Public Works drainage requirements.

3.0 RESULTS AND CONCLUSIONS

Drainage system hydrologic and hydraulic modeling results can be found in Appendices A-F respectively. Drainage Watershed D 10-Year Event Hydrology Map can be found in Appendix G. The following conclusions can be drawn from the modeling results found in the respective Appendices.

1) Four (4) Storm Chamber detention chamber facilities have been integrated into the storm drain system to reduce 10-year peak discharges. Table 1 shows the metrics of each detention basin facility.

Table 1: Detention Basin Hydraulic Metrics

Basin No.	Storage Volume Provided (ACA)	Floor Elevation (FT)	Peak WS Elevation (FT)	Outlet Pipe Diameter (Inches)	Peak Inflow Discharge (cfs)	Peak Outflow Discharge (cfs)
5	0.200	8.50	10.39	8	7.2	1.4
6	0.200	6.10	8.02	6	6.9	1.4
7	0.216	7.00	9.45	8	10.4	2.3
8	0.200	6.40	7.94	6	5.6	1.0

Table 1 results indicate peak outflow discharge exiting each basin will be significantly reduced, thus reducing peak flow discharges throughout the drainage system.

2) The interim drainage system layout will utilize the existing 18-inch outlet at the Harbor East Basin sea wall and will retain approximately 50-linear feet of existing 18-inch pipe upstream of the sea wall. At that location, a connection will be made to the existing 18-inch RCP storm drain, and new 30-inch RCP will be installed between the point of connection and Basin 7. The larger diameter mainline pipe will reduce friction losses in the piping system which will benefit hydraulic grade line levels.

3) The interim drainage system will retain all existing off-site facilities in their current configuration.

4) Detention basin flow elevations and cover will be modified slightly during final design to provide appropriate tolerances.

5) WSPG hydraulic modeling results indicate that system hydraulic grade lines provide a minimum of 0.5-feet of freeboard at all inlet locations. These results meet Orange County Public Works requirements.

4.0 REFERENCES

1. Orange County Hydrology Manual, October, 1986
2. Orange County Local Drainage Manual, January, 1986
3. Dana Point Harbor Revitalization Project Program EIR No. 591 (SCH No. 2003101142), RBF Consulting, January, 2006

APPENDIX A.

AES 10-Year Proposed Condition Rational Method Hydrology Analysis

```
**************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
         (c) Copyright 1983-2012 Advanced Engineering Software (aes)
             Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                              Fuscoe Engineering, Inc.
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                                Irvine, California 92606
                           PH: 949-474-1960    Fax: 949-474-5315

 ************************* DESCRIPTION OF STUDY *************************
* Dana Point Harbor Insurance Policy                                     *
* Area D 10-Year Rational Method Hydrology                               *
* 3/20/14                                                                *
 **************************************************************************

  FILE NAME: DPHIP1.DAT
  TIME/DATE OF STUDY: 15:47 03/21/2014
==========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
==========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)     SIDE / SIDE/ WAY    (FT)    (FT)  (FT)   (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.67 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint = 10.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

**************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
--------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =     92.00  DOWNSTREAM(FEET) =     66.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.713
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.167
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                C        0.27      0.25      0.850    69    7.71
  PUBLIC PARK                D        0.05      0.20      0.850    75    7.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.32   PEAK FLOW RATE(CFS) =      0.85

**************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
--------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     66.00  DOWNSTREAM(FEET) =     52.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0538
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.014
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                C        0.10      0.25      0.850    69
 PUBLIC PARK                D        0.17      0.20      0.850    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
 AVERAGE FLOW DEPTH(FEET) =   0.31   TRAVEL TIME(MIN.) =   0.70
 Tc(MIN.) =    8.41
 SUBAREA AREA(ACRES) =     0.27       SUBAREA RUNOFF(CFS) =    0.69
 EFFECTIVE AREA(ACRES) =      0.59     AREA-AVERAGED Fm(INCH/HR) =   0.20
 AREA-AVERAGED Fp(INCH/HR) =   0.23  AREA-AVERAGED Ap =   0.85
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =       1.50

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.34   FLOW VELOCITY(FEET/SEC.) =   6.53
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =     560.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    8.41
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.014
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                D        0.36      0.20      0.850    75
 PUBLIC PARK                C        0.06      0.25      0.850    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.42       SUBAREA RUNOFF(CFS) =    1.07
 EFFECTIVE AREA(ACRES) =      1.01   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =        1.0         PEAK FLOW RATE(CFS) =       2.57

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     52.00  DOWNSTREAM(FEET) =     22.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    45.00   CHANNEL SLOPE =  0.6667
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.006
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                C        0.44      0.25      0.850    69
 PUBLIC PARK                D        0.43      0.20      0.850    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  21.13
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   0.04
 Tc(MIN.) =    8.44
 SUBAREA AREA(ACRES) =     0.87       SUBAREA RUNOFF(CFS) =    2.20
 EFFECTIVE AREA(ACRES) =      1.88     AREA-AVERAGED Fm(INCH/HR) =   0.19
 AREA-AVERAGED Fp(INCH/HR) =   0.22  AREA-AVERAGED Ap =   0.85
 TOTAL AREA(ACRES) =        1.9         PEAK FLOW RATE(CFS) =       4.77

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
 DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =  22.53
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    104.00 =     605.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    16.30  DOWNSTREAM(FEET) =    16.00
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.77
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.56
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    108.00 =     641.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.56
 RAINFALL INTENSITY(INCH/HR) =   2.98
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.85
 EFFECTIVE STREAM AREA(ACRES) =       1.88
 TOTAL STREAM AREA(ACRES) =       1.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.77

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     29.00  DOWNSTREAM(FEET) =     25.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.059
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.332
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.30      0.25      0.100    69    7.06
 PUBLIC PARK                 C        0.10      0.25      0.850    69   11.22
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.287
 SUBAREA RUNOFF(CFS) =      1.17
 TOTAL AREA(ACRES) =      0.40   PEAK FLOW RATE(CFS) =      1.17

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =   25.00  DOWNSTREAM ELEVATION(FEET) =   22.00
 STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 30.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.018
 OUTSIDE STREET CROSSFALL(DECIMAL) =  0.018

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL) =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
    **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.07
    STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
    STREET FLOW DEPTH(FEET) =  0.39
    HALFSTREET FLOOD WIDTH(FEET) =   12.46
    AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.94
    PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   4.12   Tc(MIN.) =   11.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.560
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/      SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 C        0.66      0.25      0.100    69
  COMMERCIAL                 D        0.66      0.20      0.100    75
  PUBLIC PARK                C        0.18      0.25      0.850    69
  PUBLIC PARK                D        0.17      0.20      0.850    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.257
  SUBAREA AREA(ACRES) =    1.67      SUBAREA RUNOFF(CFS) =    3.76
  EFFECTIVE AREA(ACRES) =      2.07    AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       4.66

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.96
  FLOW VELOCITY(FEET/SEC.) =  2.12   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    107.00 =     780.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    17.00  DOWNSTREAM(FEET) =    16.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.66
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.66
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   11.27
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    108.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.27
  RAINFALL INTENSITY(INCH/HR) =   2.55
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.23
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =       2.07
  TOTAL STREAM AREA(ACRES) =       2.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.66

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        4.77    8.56    2.983  0.22( 0.19) 0.85       1.9      101.00
      2        4.66   11.27    2.549  0.23( 0.06) 0.26       2.1      105.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        8.92    8.56    2.983  0.22( 0.13) 0.58       3.5      101.00
      2        8.68   11.27    2.549  0.23( 0.12) 0.54       3.9      105.00
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.92    Tc(MIN.) =     8.56
 EFFECTIVE AREA(ACRES) =       3.45   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =        3.9
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    108.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    108.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    16.00  DOWNSTREAM(FEET) =    15.50
 FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.17
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.92
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    8.71
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    112.00 =     874.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.71
 RAINFALL INTENSITY(INCH/HR) =   2.95
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.58
 EFFECTIVE STREAM AREA(ACRES) =       3.45
 TOTAL STREAM AREA(ACRES) =       3.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.92

****************************************************************************
 FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     27.20  DOWNSTREAM(FEET) =     24.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.755
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.157
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.34      0.25      0.100    69    7.75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.96
 TOTAL AREA(ACRES) =      0.34   PEAK FLOW RATE(CFS) =      0.96

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =   24.70  DOWNSTREAM ELEVATION(FEET) =   22.90
 STREET LENGTH(FEET) =   275.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 30.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.018
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018
```

```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.34
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =    8.28
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.66
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
 STREET FLOW TRAVEL TIME(MIN.) =   2.76   Tc(MIN.) =   10.52
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.651
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  C        0.32      0.25      0.100    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA AREA(ACRES) =     0.32      SUBAREA RUNOFF(CFS) =     0.76
 EFFECTIVE AREA(ACRES) =      0.66     AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.56

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   8.97
 FLOW VELOCITY(FEET/SEC.) =  1.71   DEPTH*VELOCITY(FT*FT/SEC.) =   0.55
 LONGEST FLOWPATH FROM NODE    109.00 TO NODE    111.00 =     575.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    17.90  DOWNSTREAM(FEET) =    15.50
 FLOW LENGTH(FEET) =   125.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.36
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.56
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   10.91
 LONGEST FLOWPATH FROM NODE    109.00 TO NODE    112.00 =     700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.91
 RAINFALL INTENSITY(INCH/HR) =   2.60
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.25
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       0.66
 TOTAL STREAM AREA(ACRES) =       0.66
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.56

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1        8.92    8.71    2.954  0.22( 0.13) 0.58       3.5     101.00
     1        8.68   11.41    2.530  0.23( 0.12) 0.54       3.9     105.00
     2        1.56   10.91    2.596  0.25( 0.03) 0.10       0.7     109.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)     Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
```

```
                                                    DPHIP1
      1       10.34     8.71     2.954  0.23( 0.12) 0.52       4.0      101.00
      2       10.29    10.91     2.596  0.23( 0.11) 0.48       4.5      109.00
      3       10.20    11.41     2.530  0.23( 0.11) 0.48       4.6      105.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      10.34    Tc(MIN.) =      8.71
  EFFECTIVE AREA(ACRES) =       3.98   AREA-AVERAGED Fm(INCH/HR) =  0.12
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.52
  TOTAL AREA(ACRES) =        4.6
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    112.00 =     874.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    112.00 TO NODE    113.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    15.50  DOWNSTREAM(FEET) =      7.15
  FLOW LENGTH(FEET) =    18.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   7.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  27.57
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.34
  PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    8.72
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    113.00 =     892.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    113.00 TO NODE    114.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.15  DOWNSTREAM(FEET) =      7.00
  FLOW LENGTH(FEET) =    14.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  12.5 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.92
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.34
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    8.75
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    114.00 =     906.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    114.00 TO NODE    126.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.00  DOWNSTREAM(FEET) =      4.40
  FLOW LENGTH(FEET) =   220.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.98
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      10.34
  PIPE TRAVEL TIME(MIN.) =   0.53    Tc(MIN.) =    9.28
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    115.00 TO NODE    116.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =     25.00  DOWNSTREAM(FEET) =     23.50

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.589
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.977
```

```
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  A        1.56      0.40      0.100    32    8.59
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      4.12
 TOTAL AREA(ACRES) =      1.56   PEAK FLOW RATE(CFS) =      4.12

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     23.50  DOWNSTREAM(FEET) =     21.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0095
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.786
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        1.12      0.40      0.100    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      5.51
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.32
 AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   1.05
 Tc(MIN.) =    9.64
 SUBAREA AREA(ACRES) =     1.12      SUBAREA RUNOFF(CFS) =    2.77
 EFFECTIVE AREA(ACRES) =      2.68     AREA-AVERAGED Fm(INCH/HR) =   0.04
 AREA-AVERAGED Fp(INCH/HR) =   0.40  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =       2.7        PEAK FLOW RATE(CFS) =       6.62

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   3.46
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =     510.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    11.50  DOWNSTREAM(FEET) =    11.00
 FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.85
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.62
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.66
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    118.00 =     520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    118.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    9.66
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.784
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 A        0.27      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.27      SUBAREA RUNOFF(CFS) =    0.59
 EFFECTIVE AREA(ACRES) =      2.95   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.17
 TOTAL AREA(ACRES) =       2.9        PEAK FLOW RATE(CFS) =       7.21

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  31
```

```
------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
========================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    11.00  DOWNSTREAM(FEET) =     9.60
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.05
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.75
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    119.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     9.60  DOWNSTREAM(FEET) =     8.50
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   10.01
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    120.00 =     670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     8.50  DOWNSTREAM(FEET) =     4.60
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =   11.07
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    125.00 =    1060.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.07
  RAINFALL INTENSITY(INCH/HR) =   2.57
  AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.40
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =       2.95
  TOTAL STREAM AREA(ACRES) =       2.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.21

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =    16.00  DOWNSTREAM(FEET) =    11.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.957
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.359
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
  COMMERCIAL                  A        0.39      0.40     0.100     32    6.96
  PUBLIC PARK                 A        0.03      0.40     0.850     32   11.05
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.154
  SUBAREA RUNOFF(CFS) =      1.25
  TOTAL AREA(ACRES) =      0.42   PEAK FLOW RATE(CFS) =      1.25

****************************************************************************
  FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     11.70  DOWNSTREAM(FEET) =     10.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0057
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.034
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        1.80      0.40     0.100     32
  COMMERCIAL                  C        0.20      0.25     0.100     69
  PUBLIC PARK                 C        0.18      0.25     0.850     69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.162
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.17
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.59
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.35
  Tc(MIN.) =    8.31
  SUBAREA AREA(ACRES) =     2.18       SUBAREA RUNOFF(CFS) =    5.85
  EFFECTIVE AREA(ACRES) =      2.60     AREA-AVERAGED Fm(INCH/HR) =   0.05
  AREA-AVERAGED Fp(INCH/HR) =   0.34  AREA-AVERAGED Ap =   0.16
  TOTAL AREA(ACRES) =        2.6         PEAK FLOW RATE(CFS) =       6.97

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   2.89
  LONGEST FLOWPATH FROM NODE    121.00 TO NODE    123.00 =     510.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    123.00 TO NODE    124.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.50  DOWNSTREAM(FEET) =     6.90
  FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.74
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =    8.70
  LONGEST FLOWPATH FROM NODE    121.00 TO NODE    124.00 =     620.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    124.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     6.90  DOWNSTREAM(FEET) =     4.60
  FLOW LENGTH(FEET) =   113.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.1 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.91
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       6.97
  PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    8.93
  LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =     733.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.93
 RAINFALL INTENSITY(INCH/HR) =   2.91
 AREA-AVERAGED Fm(INCH/HR) =  0.05
 AREA-AVERAGED Fp(INCH/HR) =  0.34
 AREA-AVERAGED Ap =  0.16
 EFFECTIVE STREAM AREA(ACRES) =       2.60
 TOTAL STREAM AREA(ACRES) =       2.60
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       6.97

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1        7.21   11.07    2.575  0.40( 0.07) 0.17       2.9     115.00
     2        6.97    8.93    2.911  0.34( 0.05) 0.16       2.6     121.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       13.58    8.93    2.911  0.37( 0.06) 0.16       5.0     121.00
     2       13.36   11.07    2.575  0.37( 0.06) 0.16       5.6     115.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =      13.58    Tc(MIN.) =     8.93
 EFFECTIVE AREA(ACRES) =       4.98   AREA-AVERAGED Fm(INCH/HR) =  0.06
 AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  0.16
 TOTAL AREA(ACRES) =        5.6
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    125.00 =    1060.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    126.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     4.60  DOWNSTREAM(FEET) =     4.40
 FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.46
 ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      13.58
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    9.06
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    126.00 =    1100.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       13.58    9.06    2.888  0.37( 0.06) 0.16       5.0     121.00
     2       13.36   11.19    2.558  0.37( 0.06) 0.16       5.6     115.00
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    126.00 =    1100.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       10.34    9.28    2.849  0.23( 0.12) 0.52       4.0     101.00
     2       10.29   11.48    2.521  0.23( 0.11) 0.48       4.5     109.00
     3       10.20   11.98    2.460  0.23( 0.11) 0.48       4.6     105.00
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       23.82    9.06    2.888  0.27( 0.09) 0.32       8.9     121.00
```

```
    2       23.89    9.28    2.849  0.27( 0.09) 0.32       9.0      101.00
    3       23.66   11.19    2.558  0.27( 0.08) 0.31      10.0      115.00
    4       23.45   11.48    2.521  0.27( 0.08) 0.31      10.1      109.00
    5       23.04   11.98    2.460  0.27( 0.08) 0.31      10.2      105.00
  TOTAL AREA(ACRES) =         10.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       23.89  Tc(MIN.) =    9.278
 EFFECTIVE AREA(ACRES) =      9.02  AREA-AVERAGED Fm(INCH/HR) =  0.09
 AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.31
 TOTAL AREA(ACRES) =      10.2
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    127.00 TO NODE    128.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   208.00
 ELEVATION DATA: UPSTREAM(FEET) =     21.50  DOWNSTREAM(FEET) =     14.20

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.024
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.048
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D        0.09      0.20      0.100    75    5.02
 COMMERCIAL                  C        0.08      0.25      0.100    69    5.02
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.62
 TOTAL AREA(ACRES) =      0.17   PEAK FLOW RATE(CFS) =      0.62

****************************************************************************
 FLOW PROCESS FROM NODE    128.00 TO NODE    129.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     9.50  DOWNSTREAM(FEET) =     8.20
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.57
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.62
 PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    5.54
 LONGEST FLOWPATH FROM NODE    127.00 TO NODE    129.00 =     318.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    129.00 TO NODE    129.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    5.54
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.829
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp          Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  D        0.07      0.20      0.100    75
 COMMERCIAL                  C        0.17      0.25      0.100    69
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA AREA(ACRES) =     0.24      SUBAREA RUNOFF(CFS) =     0.82
 EFFECTIVE AREA(ACRES) =      0.41   AREA-AVERAGED Fm(INCH/HR) =  0.02
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        0.4       PEAK FLOW RATE(CFS) =       1.40

****************************************************************************
 FLOW PROCESS FROM NODE    129.00 TO NODE    133.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     8.20  DOWNSTREAM(FEET) =     7.00
 FLOW LENGTH(FEET) =   225.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.25
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.40
 PIPE TRAVEL TIME(MIN.) =   1.15    Tc(MIN.) =    6.69
 LONGEST FLOWPATH FROM NODE    127.00 TO NODE    133.00 =     543.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.69
 RAINFALL INTENSITY(INCH/HR) =   3.44
 AREA-AVERAGED Fm(INCH/HR) =  0.02
 AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       0.41
 TOTAL STREAM AREA(ACRES) =       0.41
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.40

****************************************************************************
 FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     15.50  DOWNSTREAM(FEET) =     11.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.926
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.368
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D        0.19      0.20      0.100    75    6.93
 COMMERCIAL                  C        0.38      0.25      0.100    69    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.72
 TOTAL AREA(ACRES) =       0.57   PEAK FLOW RATE(CFS) =       1.72

****************************************************************************
 FLOW PROCESS FROM NODE    131.00 TO NODE    132.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     11.10  DOWNSTREAM(FEET) =     10.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   120.00   CHANNEL SLOPE =  0.0033
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.111
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
COMMERCIAL                  D        0.10      0.20     0.100     75
COMMERCIAL                  C        0.90      0.25     0.100     69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.94
AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.03
Tc(MIN.) =    7.95
SUBAREA AREA(ACRES) =     1.00       SUBAREA RUNOFF(CFS) =    2.78
EFFECTIVE AREA(ACRES) =      1.57     AREA-AVERAGED Fm(INCH/HR) =   0.02
AREA-AVERAGED Fp(INCH/HR) =   0.24  AREA-AVERAGED Ap =   0.10
TOTAL AREA(ACRES) =        1.6          PEAK FLOW RATE(CFS) =       4.36

END OF SUBAREA CHANNEL FLOW HYDRAULICS:
DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =   2.13
LONGEST FLOWPATH FROM NODE    130.00 TO NODE    132.00 =     420.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    132.00 TO NODE    133.00 IS CODE =  31
----------------------------------------------------------------------------
>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
ELEVATION DATA: UPSTREAM(FEET) =     7.70  DOWNSTREAM(FEET) =     7.00
FLOW LENGTH(FEET) =    98.00   MANNING'S N =  0.013
DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) =   4.73
ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
PIPE-FLOW(CFS) =       4.36
PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =    8.30
LONGEST FLOWPATH FROM NODE    130.00 TO NODE    133.00 =     518.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
>>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
TOTAL NUMBER OF STREAMS =  2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
TIME OF CONCENTRATION(MIN.) =    8.30
RAINFALL INTENSITY(INCH/HR) =   3.04
AREA-AVERAGED Fm(INCH/HR) =  0.02
AREA-AVERAGED Fp(INCH/HR) =  0.24
AREA-AVERAGED Ap =  0.10
EFFECTIVE STREAM AREA(ACRES) =       1.57
TOTAL STREAM AREA(ACRES) =       1.57
PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.36

** CONFLUENCE DATA **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1        1.40    6.69    3.435  0.23( 0.02) 0.10        0.4     127.00
    2        4.36    8.30    3.036  0.24( 0.02) 0.10        1.6     130.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
CONFLUENCE FORMULA USED FOR  2 STREAMS.

** PEAK FLOW RATE TABLE **
 STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
 NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
    1        5.39    6.69    3.435  0.24( 0.02) 0.10        1.7     127.00
    2        5.60    8.30    3.036  0.24( 0.02) 0.10        2.0     130.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) =       5.60    Tc(MIN.) =     8.30
EFFECTIVE AREA(ACRES) =       1.98   AREA-AVERAGED Fm(INCH/HR) =  0.02
AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.10
TOTAL AREA(ACRES) =        2.0
LONGEST FLOWPATH FROM NODE    127.00 TO NODE    133.00 =     543.00 FEET.

****************************************************************************
FLOW PROCESS FROM NODE    133.00 TO NODE    134.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.00  DOWNSTREAM(FEET) =     6.90
  FLOW LENGTH(FEET) =     8.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.60
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.32
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    134.00 =     551.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    126.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     6.40  DOWNSTREAM(FEET) =     4.40
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.15
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       5.60
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    8.77
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    126.00 =     716.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        5.39    7.16    3.304  0.24( 0.02) 0.10        1.7      127.00
      2        5.60    8.77    2.942  0.24( 0.02) 0.10        2.0      130.00
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    126.00 =     716.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       23.82    9.06    2.888  0.27( 0.09) 0.32        8.9      121.00
      2       23.89    9.28    2.849  0.27( 0.09) 0.32        9.0      101.00
      3       23.66   11.19    2.558  0.27( 0.08) 0.31       10.0      115.00
      4       23.45   11.48    2.521  0.27( 0.08) 0.31       10.1      109.00
      5       23.04   11.98    2.460  0.27( 0.08) 0.31       10.2      105.00
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       27.02    7.16    3.304  0.26( 0.07) 0.28        8.7      127.00
      2       29.10    8.77    2.942  0.26( 0.07) 0.28       10.6      130.00
      3       29.31    9.06    2.888  0.26( 0.07) 0.28       10.8      121.00
      4       29.32    9.28    2.849  0.26( 0.07) 0.28       11.0      101.00
      5       28.52   11.19    2.558  0.27( 0.07) 0.27       12.0      115.00
      6       28.25   11.48    2.521  0.27( 0.07) 0.27       12.0      109.00
      7       27.72   11.98    2.460  0.27( 0.07) 0.27       12.1      105.00
    TOTAL AREA(ACRES) =        12.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       29.32  Tc(MIN.) =    9.278
  EFFECTIVE AREA(ACRES) =     11.00  AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =       12.1
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
================================================================================
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    126.00 TO NODE    135.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     4.40  DOWNSTREAM(FEET) =     3.13
 FLOW LENGTH(FEET) =   161.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.90
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.32
 PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    9.62
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    135.00 =    1287.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    135.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.13  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =    93.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.88
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.32
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    9.81
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    137.00 TO NODE    138.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =    11.40  DOWNSTREAM(FEET) =     8.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.339
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.543
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.02      0.25      0.100    69    6.34
 COMMERCIAL                  A        0.60      0.40      0.100    32    6.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      0.62   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    6.34
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.543
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 A        0.43      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.43      SUBAREA RUNOFF(CFS) =    1.24
 EFFECTIVE AREA(ACRES) =      1.05   AREA-AVERAGED Fm(INCH/HR) =  0.16
```

```
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.41
 TOTAL AREA(ACRES) =        1.0       PEAK FLOW RATE(CFS) =       3.19

****************************************************************************
 FLOW PROCESS FROM NODE    138.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     5.70  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.57
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.19
 PIPE TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =    7.07
 LONGEST FLOWPATH FROM NODE    137.00 TO NODE    136.00 =     465.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1        3.19    7.07    3.328  0.40( 0.16) 0.41        1.0     137.00
 LONGEST FLOWPATH FROM NODE    137.00 TO NODE    136.00 =     465.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1       27.02    7.71    3.168  0.26( 0.07) 0.28        8.7     127.00
     2       29.10    9.31    2.844  0.26( 0.07) 0.28       10.6     130.00
     3       29.31    9.59    2.795  0.26( 0.07) 0.28       10.8     121.00
     4       29.32    9.81    2.758  0.26( 0.07) 0.28       11.0     101.00
     5       28.52   11.73    2.490  0.27( 0.07) 0.27       12.0     115.00
     6       28.25   12.02    2.456  0.27( 0.07) 0.27       12.0     109.00
     7       27.72   12.53    2.399  0.27( 0.07) 0.27       12.1     105.00
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
     1       29.27    7.07    3.328  0.29( 0.08) 0.29        9.0     137.00
     2       30.05    7.71    3.168  0.28( 0.08) 0.29        9.7     127.00
     3       31.81    9.31    2.844  0.28( 0.08) 0.29       11.6     130.00
     4       31.97    9.59    2.795  0.28( 0.08) 0.29       11.9     121.00
     5       31.94    9.81    2.758  0.28( 0.08) 0.29       12.1     101.00
     6       30.87   11.73    2.490  0.28( 0.08) 0.29       13.0     115.00
     7       30.56   12.02    2.456  0.28( 0.08) 0.28       13.1     109.00
     8       29.97   12.53    2.399  0.28( 0.08) 0.28       13.2     105.00
   TOTAL AREA(ACRES) =        13.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       31.97  Tc(MIN.) =    9.593
 EFFECTIVE AREA(ACRES) =     11.90  AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.29
 TOTAL AREA(ACRES) =       13.2
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```

```
 ****************************************************************************
  FLOW PROCESS FROM NODE    139.00 TO NODE    140.00 IS CODE =  21
 ----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
 ============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =     11.70  DOWNSTREAM(FEET) =      9.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.108
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.077
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  A        0.35      0.40      0.100    32    8.11
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =       0.96
  TOTAL AREA(ACRES) =      0.35   PEAK FLOW RATE(CFS) =      0.96

 ****************************************************************************
  FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  51
 ----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =      9.70  DOWNSTREAM(FEET) =      8.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   140.00   CHANNEL SLOPE =  0.0121
  CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.917
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  A        1.01      0.40      0.100    32
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.27
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.94
  AVERAGE FLOW DEPTH(FEET) =   0.28   TRAVEL TIME(MIN.) =   0.79
  Tc(MIN.) =    8.90
  SUBAREA AREA(ACRES) =     1.01      SUBAREA RUNOFF(CFS) =    2.62
  EFFECTIVE AREA(ACRES) =      1.36     AREA-AVERAGED Fm(INCH/HR) =   0.04
  AREA-AVERAGED Fp(INCH/HR) =   0.40  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =       1.4        PEAK FLOW RATE(CFS) =      3.52

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   3.22
  LONGEST FLOWPATH FROM NODE    139.00 TO NODE    141.00 =     440.00 FEET.

 ****************************************************************************
  FLOW PROCESS FROM NODE    141.00 TO NODE    145.00 IS CODE =  31
 ----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
 ============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     5.00  DOWNSTREAM(FEET) =     3.50
  FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.9 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.42
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       3.52
  PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    9.11
  LONGEST FLOWPATH FROM NODE    139.00 TO NODE    145.00 =     522.00 FEET.

 ****************************************************************************
  FLOW PROCESS FROM NODE    145.00 TO NODE    145.00 IS CODE =   1
 ----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 ============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =    9.11
```

```
 RAINFALL INTENSITY(INCH/HR) =   2.88
 AREA-AVERAGED Fm(INCH/HR) =  0.04
 AREA-AVERAGED Fp(INCH/HR) =  0.40
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       1.36
 TOTAL STREAM AREA(ACRES) =       1.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.52

****************************************************************************
 FLOW PROCESS FROM NODE    142.00 TO NODE    143.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
 ELEVATION DATA: UPSTREAM(FEET) =      8.40  DOWNSTREAM(FEET) =      4.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.060
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                 A        0.10      0.40      0.100    32    5.00
 PUBLIC PARK                A        0.03      0.40      0.850    32    6.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.273
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.13   PEAK FLOW RATE(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE    143.00 TO NODE    144.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     4.50  DOWNSTREAM(FEET) =     3.70
 FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.47
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.46
 PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =    5.98
 LONGEST FLOWPATH FROM NODE    142.00 TO NODE    144.00 =     260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    5.98
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.664
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 A        0.34      0.40      0.100    32
 PUBLIC PARK                A        0.03      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.161
 SUBAREA AREA(ACRES) =    0.37     SUBAREA RUNOFF(CFS) =    1.20
 EFFECTIVE AREA(ACRES) =      0.50   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.19
 TOTAL AREA(ACRES) =        0.5       PEAK FLOW RATE(CFS) =       1.61

****************************************************************************
 FLOW PROCESS FROM NODE    144.00 TO NODE    145.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.70  DOWNSTREAM(FEET) =     3.50
 FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.44
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =        1.61
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    6.15
 LONGEST FLOWPATH FROM NODE    142.00 TO NODE    145.00 =     295.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    145.00 TO NODE    145.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.15
 RAINFALL INTENSITY(INCH/HR) =   3.61
 AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.40
 AREA-AVERAGED Ap =  0.19
 EFFECTIVE STREAM AREA(ACRES) =       0.50
 TOTAL STREAM AREA(ACRES) =       0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.61

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1        3.52    9.11    2.878  0.40( 0.04) 0.10        1.4      139.00
     2        1.61    6.15    3.606  0.40( 0.08) 0.19        0.5      142.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1        4.60    6.15    3.606  0.40( 0.05) 0.13        1.4      142.00
     2        4.80    9.11    2.878  0.40( 0.05) 0.12        1.9      139.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =        4.80    Tc(MIN.) =     9.11
 EFFECTIVE AREA(ACRES) =        1.86   AREA-AVERAGED Fm(INCH/HR) =  0.05
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.12
 TOTAL AREA(ACRES) =         1.9
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    145.00 =     522.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    145.00 TO NODE    146.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.50  DOWNSTREAM(FEET) =     2.60
 FLOW LENGTH(FEET) =    11.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.29
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =        4.80
 PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    9.13
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    146.00 =     533.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    146.00 TO NODE    146.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    9.13
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.875
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                A        0.22      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.22      SUBAREA RUNOFF(CFS) =    0.50
 EFFECTIVE AREA(ACRES) =      2.08   AREA-AVERAGED Fm(INCH/HR) =  0.08
```

```
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.20
 TOTAL AREA(ACRES) =        2.1       PEAK FLOW RATE(CFS) =       5.23

****************************************************************************
 FLOW PROCESS FROM NODE    146.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     2.60  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =    28.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       5.23
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.22
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    136.00 =     561.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1        5.17    6.26    3.569  0.40( 0.09) 0.23        1.6     142.00
     2        5.23    9.22    2.858  0.40( 0.08) 0.20        2.1     139.00
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    136.00 =     561.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       29.27    7.07    3.328  0.29( 0.08) 0.29        9.0     137.00
     2       30.05    7.71    3.168  0.28( 0.08) 0.29        9.7     127.00
     3       31.81    9.31    2.844  0.28( 0.08) 0.29       11.6     130.00
     4       31.97    9.59    2.795  0.28( 0.08) 0.29       11.9     121.00
     5       31.94    9.81    2.758  0.28( 0.08) 0.29       12.1     101.00
     6       30.87   11.73    2.490  0.28( 0.08) 0.29       13.0     115.00
     7       30.56   12.02    2.456  0.28( 0.08) 0.28       13.1     109.00
     8       29.97   12.53    2.399  0.28( 0.08) 0.28       13.2     105.00
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1       33.00    6.26    3.569  0.30( 0.09) 0.28        9.6     142.00
     2       34.46    7.07    3.328  0.30( 0.08) 0.28       10.8     137.00
     3       35.25    7.71    3.168  0.30( 0.08) 0.28       11.6     127.00
     4       36.95    9.22    2.858  0.30( 0.08) 0.28       13.6     139.00
     5       37.02    9.31    2.844  0.29( 0.08) 0.28       13.7     130.00
     6       37.08    9.59    2.795  0.29( 0.08) 0.28       14.0     121.00
     7       36.98    9.81    2.758  0.29( 0.08) 0.28       14.1     101.00
     8       35.41   11.73    2.490  0.29( 0.08) 0.27       15.1     115.00
     9       35.04   12.02    2.456  0.29( 0.08) 0.27       15.2     109.00
    10       34.34   12.53    2.399  0.29( 0.08) 0.27       15.3     105.00
   TOTAL AREA(ACRES) =        15.3

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       37.08  Tc(MIN.) =    9.593
 EFFECTIVE AREA(ACRES) =     13.98  AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.28
 TOTAL AREA(ACRES) =       15.3
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    147.00 IS CODE =  31
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     2.40  DOWNSTREAM(FEET) =     0.10
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.28
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       37.08
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    9.62
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    147.00 =    1411.00 FEET.
==============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       15.3  TC(MIN.) =      9.62
  EFFECTIVE AREA(ACRES) =     13.98  AREA-AVERAGED Fm(INCH/HR)=  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap = 0.277
  PEAK FLOW RATE(CFS)    =      37.08

  ** PEAK FLOW RATE TABLE **
   STREAM       Q       Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1       33.00    6.29    3.560  0.30( 0.09) 0.28       9.6      142.00
      2       34.46    7.10    3.321  0.30( 0.08) 0.28      10.8      137.00
      3       35.25    7.73    3.162  0.30( 0.08) 0.28      11.6      127.00
      4       36.95    9.25    2.854  0.30( 0.08) 0.28      13.6      139.00
      5       37.02    9.33    2.839  0.29( 0.08) 0.28      13.7      130.00
      6       37.08    9.62    2.790  0.29( 0.08) 0.28      14.0      121.00
      7       36.98    9.84    2.754  0.29( 0.08) 0.28      14.1      101.00
      8       35.41   11.76    2.487  0.29( 0.08) 0.27      15.1      115.00
      9       35.04   12.05    2.453  0.29( 0.08) 0.27      15.2      109.00
     10       34.34   12.55    2.396  0.29( 0.08) 0.27      15.3      105.00
==============================================================================
==============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

APPENDIX A.

AES 10-Year Proposed Condition Rational Method Hydrology Analysis

```
************************************************************************
            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
           (Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
        (c) Copyright 1983-2012 Advanced Engineering Software (aes)
            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                        Analysis prepared by:

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                            Irvine, California 92606
                     PH: 949-474-1960    Fax: 949-474-5315

 ************************* DESCRIPTION OF STUDY *************************
* Dana Point Harbor Insurance Policy                                    *
* Area D 10-Year Rational Method Hydrology                              *
* 3/20/14                                                               *
 ************************************************************************

  FILE NAME: DPHIP1.DAT
  TIME/DATE OF STUDY: 15:47 03/21/2014
========================================================================
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
========================================================================
                    --*TIME-OF-CONCENTRATION MODEL*--

  USER SPECIFIED STORM EVENT(YEAR) =   10.00
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  *DATA BANK RAINFALL USED*
  *ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD*

  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-   CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.    (FT)      (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)   (FT)    (n)
===  =====  =========  =================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.67 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint = 10.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*
  *USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  21
------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
========================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =     92.00  DOWNSTREAM(FEET) =     66.00

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.713
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.167
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE            GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  PUBLIC PARK                C        0.27      0.25      0.850    69    7.71
  PUBLIC PARK                D        0.05      0.20      0.850    75    7.71
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
  SUBAREA RUNOFF(CFS) =      0.85
  TOTAL AREA(ACRES) =      0.32   PEAK FLOW RATE(CFS) =      0.85

************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
```

```
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
================================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     66.00  DOWNSTREAM(FEET) =     52.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   260.00   CHANNEL SLOPE =  0.0538
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.014
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 C        0.10      0.25      0.850    69
 PUBLIC PARK                 D        0.17      0.20      0.850    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.20
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   6.22
 AVERAGE FLOW DEPTH(FEET) =   0.31   TRAVEL TIME(MIN.) =   0.70
 Tc(MIN.) =    8.41
 SUBAREA AREA(ACRES) =     0.27       SUBAREA RUNOFF(CFS) =    0.69
 EFFECTIVE AREA(ACRES) =      0.59     AREA-AVERAGED Fm(INCH/HR) =   0.20
 AREA-AVERAGED Fp(INCH/HR) =   0.23  AREA-AVERAGED Ap =   0.85
 TOTAL AREA(ACRES) =        0.6         PEAK FLOW RATE(CFS) =       1.50

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.34   FLOW VELOCITY(FEET/SEC.) =   6.53
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    103.00 =     560.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    103.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    8.41
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.014
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 D        0.36      0.20      0.850    75
 PUBLIC PARK                 C        0.06      0.25      0.850    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.21
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.42      SUBAREA RUNOFF(CFS) =    1.07
 EFFECTIVE AREA(ACRES) =      1.01   AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.85
 TOTAL AREA(ACRES) =        1.0       PEAK FLOW RATE(CFS) =       2.57

****************************************************************************
 FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     52.00  DOWNSTREAM(FEET) =     22.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =    45.00   CHANNEL SLOPE =  0.6667
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =   2.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.006
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 C        0.44      0.25      0.850    69
 PUBLIC PARK                 D        0.43      0.20      0.850    75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.67
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  21.13
 AVERAGE FLOW DEPTH(FEET) =   0.29   TRAVEL TIME(MIN.) =   0.04
 Tc(MIN.) =    8.44
 SUBAREA AREA(ACRES) =     0.87       SUBAREA RUNOFF(CFS) =    2.20
 EFFECTIVE AREA(ACRES) =      1.88     AREA-AVERAGED Fm(INCH/HR) =   0.19
 AREA-AVERAGED Fp(INCH/HR) =   0.22  AREA-AVERAGED Ap =   0.85
 TOTAL AREA(ACRES) =        1.9         PEAK FLOW RATE(CFS) =       4.77

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
```

```
 DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =  22.53
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    104.00 =     605.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    104.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    16.30  DOWNSTREAM(FEET) =    16.00
 FLOW LENGTH(FEET) =    36.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.12
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =        4.77
 PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    8.56
 LONGEST FLOWPATH FROM NODE    101.00 TO NODE    108.00 =     641.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.56
 RAINFALL INTENSITY(INCH/HR) =   2.98
 AREA-AVERAGED Fm(INCH/HR) =  0.19
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.85
 EFFECTIVE STREAM AREA(ACRES) =       1.88
 TOTAL STREAM AREA(ACRES) =       1.88
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.77

****************************************************************************
 FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     29.00  DOWNSTREAM(FEET) =     25.00

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.059
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.332
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.30      0.25      0.100    69    7.06
 PUBLIC PARK                 C        0.10      0.25      0.850    69   11.22
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.287
 SUBAREA RUNOFF(CFS) =      1.17
 TOTAL AREA(ACRES) =      0.40   PEAK FLOW RATE(CFS) =      1.17

****************************************************************************
 FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =   25.00  DOWNSTREAM ELEVATION(FEET) =   22.00
 STREET LENGTH(FEET) =   480.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 30.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.018
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018

 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200
```

```
   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.07
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.39
   HALFSTREET FLOOD WIDTH(FEET) =   12.46
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.94
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.75
  STREET FLOW TRAVEL TIME(MIN.) =   4.12   Tc(MIN.) =   11.18
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.560
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                 C        0.66      0.25      0.100    69
  COMMERCIAL                 D        0.66      0.20      0.100    75
  PUBLIC PARK                C        0.18      0.25      0.850    69
  PUBLIC PARK                D        0.17      0.20      0.850    75
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.257
  SUBAREA AREA(ACRES) =    1.67      SUBAREA RUNOFF(CFS) =    3.76
  EFFECTIVE AREA(ACRES) =      2.07    AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.26
  TOTAL AREA(ACRES) =        2.1        PEAK FLOW RATE(CFS) =       4.66

  END OF SUBAREA STREET FLOW HYDRAULICS:
  DEPTH(FEET) = 0.43   HALFSTREET FLOOD WIDTH(FEET) =  14.96
  FLOW VELOCITY(FEET/SEC.) =  2.12   DEPTH*VELOCITY(FT*FT/SEC.) =   0.91
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    107.00 =     780.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    108.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    17.00  DOWNSTREAM(FEET) =    16.00
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   7.66
  ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.66
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =   11.27
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    108.00 =     820.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    108.00 TO NODE    108.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.27
  RAINFALL INTENSITY(INCH/HR) =   2.55
  AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.23
  AREA-AVERAGED Ap =  0.26
  EFFECTIVE STREAM AREA(ACRES) =       2.07
  TOTAL STREAM AREA(ACRES) =       2.07
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.66

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1        4.77    8.56    2.983  0.22( 0.19) 0.85       1.9     101.00
      2        4.66   11.27    2.549  0.23( 0.06) 0.26       2.1     105.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1        8.92    8.56    2.983  0.22( 0.13) 0.58       3.5     101.00
      2        8.68   11.27    2.549  0.23( 0.12) 0.54       3.9     105.00
```

```
 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       8.92    Tc(MIN.) =     8.56
 EFFECTIVE AREA(ACRES) =       3.45   AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22  AREA-AVERAGED Ap =  0.58
 TOTAL AREA(ACRES) =        3.9
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    108.00 =     820.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    108.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    16.00  DOWNSTREAM(FEET) =    15.50
 FLOW LENGTH(FEET) =    54.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  13.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.17
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       8.92
 PIPE TRAVEL TIME(MIN.) =   0.15    Tc(MIN.) =    8.71
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    112.00 =     874.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    8.71
 RAINFALL INTENSITY(INCH/HR) =   2.95
 AREA-AVERAGED Fm(INCH/HR) =  0.13
 AREA-AVERAGED Fp(INCH/HR) =  0.22
 AREA-AVERAGED Ap =  0.58
 EFFECTIVE STREAM AREA(ACRES) =       3.45
 TOTAL STREAM AREA(ACRES) =       3.95
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       8.92

****************************************************************************
 FLOW PROCESS FROM NODE    109.00 TO NODE    110.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     27.20  DOWNSTREAM(FEET) =     24.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    7.755
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.157
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.34      0.25      0.100    69    7.75
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.96
 TOTAL AREA(ACRES) =      0.34   PEAK FLOW RATE(CFS) =      0.96

****************************************************************************
 FLOW PROCESS FROM NODE    110.00 TO NODE    111.00 IS CODE =  62
----------------------------------------------------------------------------
 >>>>>COMPUTE STREET FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>(STREET TABLE SECTION #  1 USED)<<<<<
============================================================================
 UPSTREAM ELEVATION(FEET) =   24.70  DOWNSTREAM ELEVATION(FEET) =   22.90
 STREET LENGTH(FEET) =   275.00   CURB HEIGHT(INCHES) =  8.0
 STREET HALFWIDTH(FEET) = 30.00

 DISTANCE FROM CROWN TO CROSSFALL GRADEBREAK(FEET) =  20.00
 INSIDE STREET CROSSFALL(DECIMAL) =  0.018
 OUTSIDE STREET CROSSFALL(DECIMAL)  =  0.018
```

```
 SPECIFIED NUMBER OF HALFSTREETS CARRYING RUNOFF =  1
 STREET PARKWAY CROSSFALL(DECIMAL)  =  0.020
 Manning's FRICTION FACTOR for Streetflow Section(curb-to-curb) =   0.0150
 Manning's FRICTION FACTOR for Back-of-Walk Flow Section =   0.0200

   **TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       1.34
   STREETFLOW MODEL RESULTS USING ESTIMATED FLOW:
   STREET FLOW DEPTH(FEET) =  0.31
   HALFSTREET FLOOD WIDTH(FEET) =    8.28
   AVERAGE FLOW VELOCITY(FEET/SEC.) =    1.66
   PRODUCT OF DEPTH&VELOCITY(FT*FT/SEC.) =    0.51
 STREET FLOW TRAVEL TIME(MIN.) =   2.76   Tc(MIN.) =   10.52
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.651
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                 C        0.32      0.25      0.100    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA AREA(ACRES) =    0.32      SUBAREA RUNOFF(CFS) =    0.76
 EFFECTIVE AREA(ACRES) =      0.66    AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.25  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        0.7        PEAK FLOW RATE(CFS) =       1.56

 END OF SUBAREA STREET FLOW HYDRAULICS:
 DEPTH(FEET) = 0.32   HALFSTREET FLOOD WIDTH(FEET) =   8.97
 FLOW VELOCITY(FEET/SEC.) =  1.71   DEPTH*VELOCITY(FT*FT/SEC.) =   0.55
 LONGEST FLOWPATH FROM NODE    109.00 TO NODE    111.00 =     575.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    111.00 TO NODE    112.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    17.90  DOWNSTREAM(FEET) =    15.50
 FLOW LENGTH(FEET) =   125.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   5.6 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.36
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.56
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =   10.91
 LONGEST FLOWPATH FROM NODE    109.00 TO NODE    112.00 =     700.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    112.00 TO NODE    112.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =   10.91
 RAINFALL INTENSITY(INCH/HR) =   2.60
 AREA-AVERAGED Fm(INCH/HR) =  0.03
 AREA-AVERAGED Fp(INCH/HR) =  0.25
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       0.66
 TOTAL STREAM AREA(ACRES) =       0.66
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.56

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
     1        8.92    8.71    2.954  0.22( 0.13) 0.58       3.5      101.00
     1        8.68   11.41    2.530  0.23( 0.12) 0.54       3.9      105.00
     2        1.56   10.91    2.596  0.25( 0.03) 0.10       0.7      109.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae      HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
```

1	10.34	8.71	2.954	0.23(0.12)	0.52	4.0	101.00
2	10.29	10.91	2.596	0.23(0.11)	0.48	4.5	109.00
3	10.20	11.41	2.530	0.23(0.11)	0.48	4.6	105.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
PEAK FLOW RATE(CFS) = 10.34 Tc(MIN.) = 8.71
EFFECTIVE AREA(ACRES) = 3.98 AREA-AVERAGED Fm(INCH/HR) = 0.12
AREA-AVERAGED Fp(INCH/HR) = 0.23 AREA-AVERAGED Ap = 0.52
TOTAL AREA(ACRES) = 4.6
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 112.00 = 874.00 FEET.

****
FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 15.50 DOWNSTREAM(FEET) = 7.15
FLOW LENGTH(FEET) = 18.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 9.0 INCH PIPE IS 7.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 27.57
ESTIMATED PIPE DIAMETER(INCH) = 9.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 10.34
PIPE TRAVEL TIME(MIN.) = 0.01 Tc(MIN.) = 8.72
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 113.00 = 892.00 FEET.

****
FLOW PROCESS FROM NODE 113.00 TO NODE 114.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 7.15 DOWNSTREAM(FEET) = 7.00
FLOW LENGTH(FEET) = 14.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 21.0 INCH PIPE IS 12.5 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.92
ESTIMATED PIPE DIAMETER(INCH) = 21.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 10.34
PIPE TRAVEL TIME(MIN.) = 0.03 Tc(MIN.) = 8.75
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 114.00 = 906.00 FEET.

****
FLOW PROCESS FROM NODE 114.00 TO NODE 126.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==
ELEVATION DATA: UPSTREAM(FEET) = 7.00 DOWNSTREAM(FEET) = 4.40
FLOW LENGTH(FEET) = 220.00 MANNING'S N = 0.013
DEPTH OF FLOW IN 18.0 INCH PIPE IS 14.1 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.98
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 10.34
PIPE TRAVEL TIME(MIN.) = 0.53 Tc(MIN.) = 9.28
LONGEST FLOWPATH FROM NODE 105.00 TO NODE 126.00 = 1126.00 FEET.

****
FLOW PROCESS FROM NODE 126.00 TO NODE 126.00 IS CODE = 10

>>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==

****
FLOW PROCESS FROM NODE 115.00 TO NODE 116.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==
INITIAL SUBAREA FLOW-LENGTH(FEET) = 300.00
ELEVATION DATA: UPSTREAM(FEET) = 25.00 DOWNSTREAM(FEET) = 23.50

Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) = 8.589
* 10 YEAR RAINFALL INTENSITY(INCH/HR) = 2.977

```
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  A        1.56      0.40      0.100    32    8.59
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       4.12
 TOTAL AREA(ACRES) =      1.56   PEAK FLOW RATE(CFS) =      4.12

****************************************************************************
 FLOW PROCESS FROM NODE    116.00 TO NODE    117.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     23.50  DOWNSTREAM(FEET) =     21.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0095
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.786
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        1.12      0.40      0.100    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.51
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.32
 AVERAGE FLOW DEPTH(FEET) =   0.41   TRAVEL TIME(MIN.) =   1.05
 Tc(MIN.) =    9.64
 SUBAREA AREA(ACRES) =     1.12       SUBAREA RUNOFF(CFS) =    2.77
 EFFECTIVE AREA(ACRES) =      2.68     AREA-AVERAGED Fm(INCH/HR) =   0.04
 AREA-AVERAGED Fp(INCH/HR) =   0.40  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =        2.7         PEAK FLOW RATE(CFS) =       6.62

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.44   FLOW VELOCITY(FEET/SEC.) =   3.46
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    117.00 =     510.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    117.00 TO NODE    118.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =    11.50  DOWNSTREAM(FEET) =    11.00
 FLOW LENGTH(FEET) =    10.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  10.85
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.62
 PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    9.66
 LONGEST FLOWPATH FROM NODE    115.00 TO NODE    118.00 =     520.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    118.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    9.66
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.784
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 A        0.27      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.27       SUBAREA RUNOFF(CFS) =    0.59
 EFFECTIVE AREA(ACRES) =      2.95   AREA-AVERAGED Fm(INCH/HR) =  0.07
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.17
 TOTAL AREA(ACRES) =        2.9         PEAK FLOW RATE(CFS) =       7.21

****************************************************************************
 FLOW PROCESS FROM NODE    118.00 TO NODE    119.00 IS CODE =  31
```

```
------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    11.00  DOWNSTREAM(FEET) =     9.60
  FLOW LENGTH(FEET) =    50.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS   9.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   9.05
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.75
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    119.00 =     570.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    119.00 TO NODE    120.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     9.60  DOWNSTREAM(FEET) =     8.50
  FLOW LENGTH(FEET) =   100.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.0 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.38
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   0.26    Tc(MIN.) =   10.01
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    120.00 =     670.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    120.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     8.50  DOWNSTREAM(FEET) =     4.60
  FLOW LENGTH(FEET) =   390.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  18.0 INCH PIPE IS  11.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.14
  ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       7.21
  PIPE TRAVEL TIME(MIN.) =   1.06    Tc(MIN.) =   11.07
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    125.00 =    1060.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   11.07
  RAINFALL INTENSITY(INCH/HR) =   2.57
  AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.40
  AREA-AVERAGED Ap =  0.17
  EFFECTIVE STREAM AREA(ACRES) =       2.95
  TOTAL STREAM AREA(ACRES) =       2.95
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       7.21

****************************************************************************
  FLOW PROCESS FROM NODE    121.00 TO NODE    122.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
  ELEVATION DATA: UPSTREAM(FEET) =    16.00  DOWNSTREAM(FEET) =    11.70

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.957
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.359
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
```

```
 COMMERCIAL                A        0.39      0.40     0.100    32    6.96
 PUBLIC PARK               A        0.03      0.40     0.850    32   11.05
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.154
 SUBAREA RUNOFF(CFS) =      1.25
 TOTAL AREA(ACRES) =      0.42   PEAK FLOW RATE(CFS) =      1.25

****************************************************************************
 FLOW PROCESS FROM NODE    122.00 TO NODE    123.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     11.70  DOWNSTREAM(FEET) =     10.50
 CHANNEL LENGTH THRU SUBAREA(FEET) =   210.00   CHANNEL SLOPE =  0.0057
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   1.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.034
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        1.80      0.40     0.100    32
 COMMERCIAL                  C        0.20      0.25     0.100    69
 PUBLIC PARK                 C        0.18      0.25     0.850    69
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.33
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.162
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       4.17
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.59
 AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.35
 Tc(MIN.) =    8.31
 SUBAREA AREA(ACRES) =     2.18       SUBAREA RUNOFF(CFS) =    5.85
 EFFECTIVE AREA(ACRES) =      2.60     AREA-AVERAGED Fm(INCH/HR) =   0.05
 AREA-AVERAGED Fp(INCH/HR) =   0.34  AREA-AVERAGED Ap =   0.16
 TOTAL AREA(ACRES) =        2.6         PEAK FLOW RATE(CFS) =       6.97

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.49   FLOW VELOCITY(FEET/SEC.) =   2.89
 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    123.00 =     510.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    123.00 TO NODE    124.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     7.50  DOWNSTREAM(FEET) =     6.90
 FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  14.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   4.74
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.97
 PIPE TRAVEL TIME(MIN.) =   0.39    Tc(MIN.) =    8.70
 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    124.00 =     620.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    124.00 TO NODE    125.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     6.90  DOWNSTREAM(FEET) =     4.60
 FLOW LENGTH(FEET) =   113.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.91
 ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       6.97
 PIPE TRAVEL TIME(MIN.) =   0.24    Tc(MIN.) =    8.93
 LONGEST FLOWPATH FROM NODE    121.00 TO NODE    125.00 =     733.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    125.00 TO NODE    125.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
```

```
================================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =     8.93
  RAINFALL INTENSITY(INCH/HR) =   2.91
  AREA-AVERAGED Fm(INCH/HR) =  0.05
  AREA-AVERAGED Fp(INCH/HR) =  0.34
  AREA-AVERAGED Ap =  0.16
  EFFECTIVE STREAM AREA(ACRES) =        2.60
  TOTAL STREAM AREA(ACRES) =        2.60
  PEAK FLOW RATE(CFS) AT CONFLUENCE =        6.97

  ** CONFLUENCE DATA **
   STREAM        Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1         7.21   11.07    2.575  0.40( 0.07) 0.17        2.9     115.00
      2         6.97    8.93    2.911  0.34( 0.05) 0.16        2.6     121.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        13.58    8.93    2.911  0.37( 0.06) 0.16        5.0     121.00
      2        13.36   11.07    2.575  0.37( 0.06) 0.16        5.6     115.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       13.58    Tc(MIN.) =     8.93
  EFFECTIVE AREA(ACRES) =        4.98   AREA-AVERAGED Fm(INCH/HR) =  0.06
  AREA-AVERAGED Fp(INCH/HR) =  0.37  AREA-AVERAGED Ap =  0.16
  TOTAL AREA(ACRES) =         5.6
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    125.00 =    1060.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    125.00 TO NODE    126.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     4.60  DOWNSTREAM(FEET) =     4.40
  FLOW LENGTH(FEET) =    40.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  24.0 INCH PIPE IS  17.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   5.46
  ESTIMATED PIPE DIAMETER(INCH) =  24.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       13.58
  PIPE TRAVEL TIME(MIN.) =   0.12    Tc(MIN.) =    9.06
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    126.00 =    1100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        13.58    9.06    2.888  0.37( 0.06) 0.16        5.0     121.00
      2        13.36   11.19    2.558  0.37( 0.06) 0.16        5.6     115.00
  LONGEST FLOWPATH FROM NODE    115.00 TO NODE    126.00 =    1100.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM        Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        10.34    9.28    2.849  0.23( 0.12) 0.52        4.0     101.00
      2        10.29   11.48    2.521  0.23( 0.11) 0.48        4.5     109.00
      3        10.20   11.98    2.460  0.23( 0.11) 0.48        4.6     105.00
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q       Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER      (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)     NODE
      1        23.82    9.06    2.888  0.27( 0.09) 0.32        8.9     121.00
```

```
     2       23.89    9.28    2.849  0.27( 0.09) 0.32       9.0      101.00
     3       23.66   11.19    2.558  0.27( 0.08) 0.31      10.0      115.00
     4       23.45   11.48    2.521  0.27( 0.08) 0.31      10.1      109.00
     5       23.04   11.98    2.460  0.27( 0.08) 0.31      10.2      105.00
   TOTAL AREA(ACRES) =         10.2

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       23.89  Tc(MIN.) =    9.278
  EFFECTIVE AREA(ACRES) =      9.02  AREA-AVERAGED Fm(INCH/HR) =  0.09
  AREA-AVERAGED Fp(INCH/HR) =  0.27  AREA-AVERAGED Ap =  0.31
  TOTAL AREA(ACRES) =       10.2
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    127.00 TO NODE    128.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
  >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
  INITIAL SUBAREA FLOW-LENGTH(FEET) =   208.00
  ELEVATION DATA: UPSTREAM(FEET) =     21.50  DOWNSTREAM(FEET) =     14.20

  Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
  SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.024
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.048
  SUBAREA Tc AND LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
  COMMERCIAL                  D        0.09      0.20      0.100    75    5.02
  COMMERCIAL                  C        0.08      0.25      0.100    69    5.02
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.22
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  SUBAREA RUNOFF(CFS) =      0.62
  TOTAL AREA(ACRES) =      0.17   PEAK FLOW RATE(CFS) =      0.62

****************************************************************************
  FLOW PROCESS FROM NODE    128.00 TO NODE    129.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     9.50  DOWNSTREAM(FEET) =     8.20
  FLOW LENGTH(FEET) =   110.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN   9.0 INCH PIPE IS   3.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   3.57
  ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       0.62
  PIPE TRAVEL TIME(MIN.) =   0.51    Tc(MIN.) =    5.54
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    129.00 =     318.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    129.00 TO NODE    129.00 IS CODE =  81
----------------------------------------------------------------------------
  >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
  MAINLINE Tc(MIN.) =    5.54
  *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.829
  SUBAREA LOSS RATE DATA(AMC  II):
   DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
       LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
  COMMERCIAL                  D        0.07      0.20      0.100    75
  COMMERCIAL                  C        0.17      0.25      0.100    69
```

```
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA AREA(ACRES) =     0.24      SUBAREA RUNOFF(CFS) =     0.82
 EFFECTIVE AREA(ACRES) =      0.41   AREA-AVERAGED Fm(INCH/HR) =  0.02
 AREA-AVERAGED Fp(INCH/HR) =  0.23  AREA-AVERAGED Ap =  0.10
 TOTAL AREA(ACRES) =        0.4       PEAK FLOW RATE(CFS) =       1.40

****************************************************************************
 FLOW PROCESS FROM NODE    129.00 TO NODE    133.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     8.20  DOWNSTREAM(FEET) =     7.00
 FLOW LENGTH(FEET) =   225.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.25
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.40
 PIPE TRAVEL TIME(MIN.) =   1.15    Tc(MIN.) =    6.69
 LONGEST FLOWPATH FROM NODE    127.00 TO NODE    133.00 =     543.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.69
 RAINFALL INTENSITY(INCH/HR) =   3.44
 AREA-AVERAGED Fm(INCH/HR) =  0.02
 AREA-AVERAGED Fp(INCH/HR) =  0.23
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       0.41
 TOTAL STREAM AREA(ACRES) =       0.41
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.40

****************************************************************************
 FLOW PROCESS FROM NODE    130.00 TO NODE    131.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     15.50  DOWNSTREAM(FEET) =     11.10

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.926
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.368
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  D        0.19      0.20      0.100    75    6.93
 COMMERCIAL                  C        0.38      0.25      0.100    69    6.93
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.23
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =       1.72
 TOTAL AREA(ACRES) =       0.57   PEAK FLOW RATE(CFS) =       1.72

****************************************************************************
 FLOW PROCESS FROM NODE    131.00 TO NODE    132.00 IS CODE =  51
----------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     11.10  DOWNSTREAM(FEET) =     10.70
 CHANNEL LENGTH THRU SUBAREA(FEET) =   120.00   CHANNEL SLOPE =  0.0033
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.111
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
```

```
                                                DPHIP1
  COMMERCIAL                  D        0.10      0.20     0.100    75
  COMMERCIAL                  C        0.90      0.25     0.100    69
  SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.24
  SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       3.10
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.94
  AVERAGE FLOW DEPTH(FEET) =   0.40   TRAVEL TIME(MIN.) =   1.03
  Tc(MIN.) =    7.95
  SUBAREA AREA(ACRES) =     1.00       SUBAREA RUNOFF(CFS) =    2.78
  EFFECTIVE AREA(ACRES) =      1.57     AREA-AVERAGED Fm(INCH/HR) =   0.02
  AREA-AVERAGED Fp(INCH/HR) =   0.24  AREA-AVERAGED Ap =   0.10
  TOTAL AREA(ACRES) =        1.6         PEAK FLOW RATE(CFS) =       4.36

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.45   FLOW VELOCITY(FEET/SEC.) =   2.13
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    132.00 =     420.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    132.00 TO NODE    133.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.70  DOWNSTREAM(FEET) =     7.00
  FLOW LENGTH(FEET) =    98.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.6 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   4.73
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =       4.36
  PIPE TRAVEL TIME(MIN.) =   0.35    Tc(MIN.) =    8.30
  LONGEST FLOWPATH FROM NODE    130.00 TO NODE    133.00 =     518.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    133.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =    8.30
  RAINFALL INTENSITY(INCH/HR) =   3.04
  AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.24
  AREA-AVERAGED Ap =  0.10
  EFFECTIVE STREAM AREA(ACRES) =       1.57
  TOTAL STREAM AREA(ACRES) =       1.57
  PEAK FLOW RATE(CFS) AT CONFLUENCE =       4.36

  ** CONFLUENCE DATA **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        1.40    6.69    3.435  0.23( 0.02) 0.10       0.4     127.00
      2        4.36    8.30    3.036  0.24( 0.02) 0.10       1.6     130.00

  RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
  CONFLUENCE FORMULA USED FOR  2 STREAMS.

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)     Ap     Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
      1        5.39    6.69    3.435  0.24( 0.02) 0.10       1.7     127.00
      2        5.60    8.30    3.036  0.24( 0.02) 0.10       2.0     130.00

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       5.60    Tc(MIN.) =     8.30
  EFFECTIVE AREA(ACRES) =       1.98   AREA-AVERAGED Fm(INCH/HR) =  0.02
  AREA-AVERAGED Fp(INCH/HR) =  0.24  AREA-AVERAGED Ap =  0.10
  TOTAL AREA(ACRES) =        2.0
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    133.00 =     543.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    133.00 TO NODE    134.00 IS CODE =  31
----------------------------------------------------------------------------
```

```
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     7.00  DOWNSTREAM(FEET) =     6.90
  FLOW LENGTH(FEET) =     8.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.3 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.23
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.60
  PIPE TRAVEL TIME(MIN.) =   0.02    Tc(MIN.) =    8.32
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    134.00 =     551.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    134.00 TO NODE    126.00 IS CODE =  31
----------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
================================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     6.40  DOWNSTREAM(FEET) =     4.40
  FLOW LENGTH(FEET) =   165.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  15.0 INCH PIPE IS  10.4 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =   6.15
  ESTIMATED PIPE DIAMETER(INCH) =  15.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =        5.60
  PIPE TRAVEL TIME(MIN.) =   0.45    Tc(MIN.) =    8.77
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    126.00 =     716.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
================================================================================

  ** MAIN STREAM CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1        5.39    7.16    3.304  0.24( 0.02) 0.10        1.7     127.00
      2        5.60    8.77    2.942  0.24( 0.02) 0.10        2.0     130.00
  LONGEST FLOWPATH FROM NODE    127.00 TO NODE    126.00 =     716.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1       23.82    9.06    2.888  0.27( 0.09) 0.32        8.9     121.00
      2       23.89    9.28    2.849  0.27( 0.09) 0.32        9.0     101.00
      3       23.66   11.19    2.558  0.27( 0.08) 0.31       10.0     115.00
      4       23.45   11.48    2.521  0.27( 0.08) 0.31       10.1     109.00
      5       23.04   11.98    2.460  0.27( 0.08) 0.31       10.2     105.00
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

  ** PEAK FLOW RATE TABLE **
   STREAM        Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
      1       27.02    7.16    3.304  0.26( 0.07) 0.28        8.7     127.00
      2       29.10    8.77    2.942  0.26( 0.07) 0.28       10.6     130.00
      3       29.31    9.06    2.888  0.26( 0.07) 0.28       10.8     121.00
      4       29.32    9.28    2.849  0.26( 0.07) 0.28       11.0     101.00
      5       28.52   11.19    2.558  0.27( 0.07) 0.27       12.0     115.00
      6       28.25   11.48    2.521  0.27( 0.07) 0.27       12.0     109.00
      7       27.72   11.98    2.460  0.27( 0.07) 0.27       12.1     105.00
    TOTAL AREA(ACRES) =        12.1

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =       29.32  Tc(MIN.) =    9.278
  EFFECTIVE AREA(ACRES) =     11.00  AREA-AVERAGED Fm(INCH/HR) =  0.07
  AREA-AVERAGED Fp(INCH/HR) =  0.26  AREA-AVERAGED Ap =  0.28
  TOTAL AREA(ACRES) =       12.1
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    126.00 =    1126.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    126.00 TO NODE    126.00 IS CODE =  12
----------------------------------------------------------------------------
  >>>>>CLEAR MEMORY BANK # 1 <<<<<
================================================================================
```

```
****************************************************************************
 FLOW PROCESS FROM NODE    126.00 TO NODE    135.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     4.40  DOWNSTREAM(FEET) =     3.13
 FLOW LENGTH(FEET) =   161.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.90
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.32
 PIPE TRAVEL TIME(MIN.) =   0.34    Tc(MIN.) =    9.62
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    135.00 =    1287.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    135.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.13  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =    93.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  30.0 INCH PIPE IS  21.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   7.88
 ESTIMATED PIPE DIAMETER(INCH) =  30.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =      29.32
 PIPE TRAVEL TIME(MIN.) =   0.20    Tc(MIN.) =    9.81
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    137.00 TO NODE    138.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   220.00
 ELEVATION DATA: UPSTREAM(FEET) =    11.40  DOWNSTREAM(FEET) =     8.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    6.339
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.543
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  C        0.02      0.25      0.100    69    6.34
 COMMERCIAL                  A        0.60      0.40      0.100    32    6.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      1.96
 TOTAL AREA(ACRES) =      0.62   PEAK FLOW RATE(CFS) =      1.96

****************************************************************************
 FLOW PROCESS FROM NODE    138.00 TO NODE    138.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    6.34
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.543
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 A        0.43      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =    0.43      SUBAREA RUNOFF(CFS) =    1.24
 EFFECTIVE AREA(ACRES) =      1.05   AREA-AVERAGED Fm(INCH/HR) =  0.16
```

```
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.41
 TOTAL AREA(ACRES) =        1.0       PEAK FLOW RATE(CFS) =       3.19

****************************************************************************
 FLOW PROCESS FROM NODE    138.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     5.70  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =   245.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   8.2 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.57
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.19
 PIPE TRAVEL TIME(MIN.) =   0.73    Tc(MIN.) =    7.07
 LONGEST FLOWPATH FROM NODE    137.00 TO NODE    136.00 =     465.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
    1         3.19    7.07    3.328  0.40( 0.16) 0.41       1.0     137.00
 LONGEST FLOWPATH FROM NODE    137.00 TO NODE    136.00 =     465.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       27.02    7.71    3.168  0.26( 0.07) 0.28       8.7     127.00
     2       29.10    9.31    2.844  0.26( 0.07) 0.28      10.6     130.00
     3       29.31    9.59    2.795  0.26( 0.07) 0.28      10.8     121.00
     4       29.32    9.81    2.758  0.26( 0.07) 0.28      11.0     101.00
     5       28.52   11.73    2.490  0.27( 0.07) 0.27      12.0     115.00
     6       28.25   12.02    2.456  0.27( 0.07) 0.27      12.0     109.00
     7       27.72   12.53    2.399  0.27( 0.07) 0.27      12.1     105.00
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       29.27    7.07    3.328  0.29( 0.08) 0.29       9.0     137.00
     2       30.05    7.71    3.168  0.28( 0.08) 0.29       9.7     127.00
     3       31.81    9.31    2.844  0.28( 0.08) 0.29      11.6     130.00
     4       31.97    9.59    2.795  0.28( 0.08) 0.29      11.9     121.00
     5       31.94    9.81    2.758  0.28( 0.08) 0.29      12.1     101.00
     6       30.87   11.73    2.490  0.28( 0.08) 0.29      13.0     115.00
     7       30.56   12.02    2.456  0.28( 0.08) 0.28      13.1     109.00
     8       29.97   12.53    2.399  0.28( 0.08) 0.28      13.2     105.00
   TOTAL AREA(ACRES) =        13.2

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       31.97  Tc(MIN.) =    9.593
 EFFECTIVE AREA(ACRES) =     11.90  AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.28  AREA-AVERAGED Ap =  0.29
 TOTAL AREA(ACRES) =       13.2
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  10
----------------------------------------------------------------------------
 >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```

```
**************************************************************************
 FLOW PROCESS FROM NODE    139.00 TO NODE    140.00 IS CODE =  21
--------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
==========================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   300.00
 ELEVATION DATA: UPSTREAM(FEET) =     11.70  DOWNSTREAM(FEET) =      9.70

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    8.108
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.077
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  A        0.35      0.40      0.100    32    8.11
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 SUBAREA RUNOFF(CFS) =      0.96
 TOTAL AREA(ACRES) =      0.35   PEAK FLOW RATE(CFS) =      0.96

**************************************************************************
 FLOW PROCESS FROM NODE    140.00 TO NODE    141.00 IS CODE =  51
--------------------------------------------------------------------------
 >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
 >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =      9.70  DOWNSTREAM(FEET) =      8.00
 CHANNEL LENGTH THRU SUBAREA(FEET) =   140.00   CHANNEL SLOPE =  0.0121
 CHANNEL BASE(FEET) =    0.00   "Z" FACTOR =  10.000
 MANNING'S FACTOR = 0.015   MAXIMUM DEPTH(FEET) =   2.00
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.917
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        1.01      0.40      0.100    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.100
 TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      2.27
 TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.94
 AVERAGE FLOW DEPTH(FEET) =   0.28   TRAVEL TIME(MIN.) =   0.79
 Tc(MIN.) =    8.90
 SUBAREA AREA(ACRES) =     1.01      SUBAREA RUNOFF(CFS) =    2.62
 EFFECTIVE AREA(ACRES) =      1.36     AREA-AVERAGED Fm(INCH/HR) =   0.04
 AREA-AVERAGED Fp(INCH/HR) =   0.40  AREA-AVERAGED Ap =   0.10
 TOTAL AREA(ACRES) =       1.4         PEAK FLOW RATE(CFS) =      3.52

 END OF SUBAREA CHANNEL FLOW HYDRAULICS:
 DEPTH(FEET) =  0.33   FLOW VELOCITY(FEET/SEC.) =   3.22
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    141.00 =     440.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    141.00 TO NODE    145.00 IS CODE =  31
--------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
==========================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     5.00  DOWNSTREAM(FEET) =     3.50
 FLOW LENGTH(FEET) =    82.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   7.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   6.42
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       3.52
 PIPE TRAVEL TIME(MIN.) =   0.21    Tc(MIN.) =    9.11
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    145.00 =     522.00 FEET.

**************************************************************************
 FLOW PROCESS FROM NODE    145.00 TO NODE    145.00 IS CODE =   1
--------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
==========================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
 TIME OF CONCENTRATION(MIN.) =    9.11
```

```
 RAINFALL INTENSITY(INCH/HR) =   2.88
 AREA-AVERAGED Fm(INCH/HR) =  0.04
 AREA-AVERAGED Fp(INCH/HR) =  0.40
 AREA-AVERAGED Ap =  0.10
 EFFECTIVE STREAM AREA(ACRES) =       1.36
 TOTAL STREAM AREA(ACRES) =       1.36
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       3.52

****************************************************************************
 FLOW PROCESS FROM NODE    142.00 TO NODE    143.00 IS CODE =  21
----------------------------------------------------------------------------
 >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<
============================================================================
 INITIAL SUBAREA FLOW-LENGTH(FEET) =   115.00
 ELEVATION DATA: UPSTREAM(FEET) =      8.40  DOWNSTREAM(FEET) =      4.50

 Tc = K*[(LENGTH** 3.00)/(ELEVATION CHANGE)]**0.20
 SUBAREA ANALYSIS USED MINIMUM Tc(MIN.) =    5.000
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  4.060
 SUBAREA Tc AND LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS   Tc
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN  (MIN.)
 COMMERCIAL                  A        0.10      0.40      0.100    32    5.00
 PUBLIC PARK                 A        0.03      0.40      0.850    32    6.34
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.273
 SUBAREA RUNOFF(CFS) =      0.46
 TOTAL AREA(ACRES) =      0.13   PEAK FLOW RATE(CFS) =      0.46

****************************************************************************
 FLOW PROCESS FROM NODE    143.00 TO NODE    144.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     4.50  DOWNSTREAM(FEET) =     3.70
 FLOW LENGTH(FEET) =   145.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN   9.0 INCH PIPE IS   4.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   2.47
 ESTIMATED PIPE DIAMETER(INCH) =   9.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       0.46
 PIPE TRAVEL TIME(MIN.) =   0.98    Tc(MIN.) =    5.98
 LONGEST FLOWPATH FROM NODE    142.00 TO NODE    144.00 =     260.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    144.00 TO NODE    144.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    5.98
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  3.664
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 COMMERCIAL                  A        0.34      0.40      0.100    32
 PUBLIC PARK                 A        0.03      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.161
 SUBAREA AREA(ACRES) =    0.37      SUBAREA RUNOFF(CFS) =    1.20
 EFFECTIVE AREA(ACRES) =      0.50   AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.19
 TOTAL AREA(ACRES) =        0.5       PEAK FLOW RATE(CFS) =       1.61

****************************************************************************
 FLOW PROCESS FROM NODE    144.00 TO NODE    145.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.70  DOWNSTREAM(FEET) =     3.50
 FLOW LENGTH(FEET) =    35.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   3.44
```

```
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       1.61
 PIPE TRAVEL TIME(MIN.) =   0.17    Tc(MIN.) =    6.15
 LONGEST FLOWPATH FROM NODE    142.00 TO NODE    145.00 =     295.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    145.00 TO NODE    145.00 IS CODE =   1
----------------------------------------------------------------------------
 >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
 TOTAL NUMBER OF STREAMS =  2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
 TIME OF CONCENTRATION(MIN.) =    6.15
 RAINFALL INTENSITY(INCH/HR) =   3.61
 AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.40
 AREA-AVERAGED Ap =  0.19
 EFFECTIVE STREAM AREA(ACRES) =       0.50
 TOTAL STREAM AREA(ACRES) =       0.50
 PEAK FLOW RATE(CFS) AT CONFLUENCE =       1.61

 ** CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1        3.52    9.11    2.878  0.40( 0.04) 0.10        1.4     139.00
     2        1.61    6.15    3.606  0.40( 0.08) 0.19        0.5     142.00

 RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR  2 STREAMS.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)          (ACRES)    NODE
     1        4.60    6.15    3.606  0.40( 0.05) 0.13        1.4     142.00
     2        4.80    9.11    2.878  0.40( 0.05) 0.12        1.9     139.00

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       4.80    Tc(MIN.) =     9.11
 EFFECTIVE AREA(ACRES) =       1.86   AREA-AVERAGED Fm(INCH/HR) =  0.05
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.12
 TOTAL AREA(ACRES) =       1.9
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    145.00 =     522.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    145.00 TO NODE    146.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     3.50  DOWNSTREAM(FEET) =     2.60
 FLOW LENGTH(FEET) =    11.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  12.0 INCH PIPE IS   6.0 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =  12.29
 ESTIMATED PIPE DIAMETER(INCH) =  12.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =       4.80
 PIPE TRAVEL TIME(MIN.) =   0.01    Tc(MIN.) =    9.13
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    146.00 =     533.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    146.00 TO NODE    146.00 IS CODE =  81
----------------------------------------------------------------------------
 >>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
============================================================================
 MAINLINE Tc(MIN.) =    9.13
 *  10 YEAR RAINFALL INTENSITY(INCH/HR) =  2.875
 SUBAREA LOSS RATE DATA(AMC  II):
  DEVELOPMENT TYPE/       SCS SOIL   AREA      Fp         Ap      SCS
      LAND USE             GROUP   (ACRES)  (INCH/HR)  (DECIMAL)  CN
 PUBLIC PARK                 A        0.22      0.40      0.850    32
 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) =  0.40
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap =  0.850
 SUBAREA AREA(ACRES) =     0.22      SUBAREA RUNOFF(CFS) =     0.50
 EFFECTIVE AREA(ACRES) =      2.08   AREA-AVERAGED Fm(INCH/HR) =  0.08
```

```
 AREA-AVERAGED Fp(INCH/HR) =  0.40  AREA-AVERAGED Ap =  0.20
 TOTAL AREA(ACRES) =        2.1       PEAK FLOW RATE(CFS) =       5.23

****************************************************************************
 FLOW PROCESS FROM NODE    146.00 TO NODE    136.00 IS CODE =  31
----------------------------------------------------------------------------
 >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
============================================================================
 ELEVATION DATA: UPSTREAM(FEET) =     2.60  DOWNSTREAM(FEET) =     2.40
 FLOW LENGTH(FEET) =    28.00   MANNING'S N =  0.013
 DEPTH OF FLOW IN  18.0 INCH PIPE IS  10.3 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) =   5.02
 ESTIMATED PIPE DIAMETER(INCH) =  18.00    NUMBER OF PIPES =   1
 PIPE-FLOW(CFS) =        5.23
 PIPE TRAVEL TIME(MIN.) =   0.09    Tc(MIN.) =    9.22
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    136.00 =     561.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  11
----------------------------------------------------------------------------
 >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

 ** MAIN STREAM CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1        5.17    6.26    3.569  0.40( 0.09) 0.23        1.6     142.00
     2        5.23    9.22    2.858  0.40( 0.08) 0.20        2.1     139.00
 LONGEST FLOWPATH FROM NODE    139.00 TO NODE    136.00 =     561.00 FEET.

 ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       29.27    7.07    3.328  0.28( 0.08) 0.29        9.0     137.00
     2       30.05    7.71    3.168  0.28( 0.08) 0.29        9.7     127.00
     3       31.81    9.31    2.844  0.28( 0.08) 0.29       11.6     130.00
     4       31.97    9.59    2.795  0.28( 0.08) 0.29       11.9     121.00
     5       31.94    9.81    2.758  0.28( 0.08) 0.29       12.1     101.00
     6       30.87   11.73    2.490  0.28( 0.08) 0.29       13.0     115.00
     7       30.56   12.02    2.456  0.28( 0.08) 0.28       13.1     109.00
     8       29.97   12.53    2.399  0.28( 0.08) 0.28       13.2     105.00
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

 ** PEAK FLOW RATE TABLE **
  STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
  NUMBER     (CFS)   (MIN.) (INCH/HR) (INCH/HR)           (ACRES)    NODE
     1       33.00    6.26    3.569  0.30( 0.09) 0.28        9.6     142.00
     2       34.46    7.07    3.328  0.30( 0.08) 0.28       10.8     137.00
     3       35.25    7.71    3.168  0.30( 0.08) 0.28       11.6     127.00
     4       36.95    9.22    2.858  0.30( 0.08) 0.28       13.6     139.00
     5       37.02    9.31    2.844  0.29( 0.08) 0.28       13.7     130.00
     6       37.08    9.59    2.795  0.29( 0.08) 0.28       14.0     121.00
     7       36.98    9.81    2.758  0.29( 0.08) 0.28       14.1     101.00
     8       35.41   11.73    2.490  0.29( 0.08) 0.27       15.1     115.00
     9       35.04   12.02    2.456  0.29( 0.08) 0.27       15.2     109.00
    10       34.34   12.53    2.399  0.29( 0.08) 0.27       15.3     105.00
   TOTAL AREA(ACRES) =        15.3

 COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
 PEAK FLOW RATE(CFS) =       37.08  Tc(MIN.) =    9.593
 EFFECTIVE AREA(ACRES) =     13.98  AREA-AVERAGED Fm(INCH/HR) =  0.08
 AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap =  0.28
 TOTAL AREA(ACRES) =       15.3
 LONGEST FLOWPATH FROM NODE    105.00 TO NODE    136.00 =    1380.00 FEET.

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    136.00 IS CODE =  12
----------------------------------------------------------------------------
 >>>>>CLEAR MEMORY BANK # 1 <<<<<
============================================================================

****************************************************************************
 FLOW PROCESS FROM NODE    136.00 TO NODE    147.00 IS CODE =  31
```

```
-------------------------------------------------------------------------------
  >>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
  >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
===============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =     2.40  DOWNSTREAM(FEET) =     0.10
  FLOW LENGTH(FEET) =    31.00   MANNING'S N =  0.013
  DEPTH OF FLOW IN  21.0 INCH PIPE IS  15.7 INCHES
  PIPE-FLOW VELOCITY(FEET/SEC.) =  19.28
  ESTIMATED PIPE DIAMETER(INCH) =  21.00    NUMBER OF PIPES =   1
  PIPE-FLOW(CFS) =      37.08
  PIPE TRAVEL TIME(MIN.) =   0.03    Tc(MIN.) =    9.62
  LONGEST FLOWPATH FROM NODE    105.00 TO NODE    147.00 =    1411.00 FEET.
===============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)      =       15.3  TC(MIN.) =      9.62
  EFFECTIVE AREA(ACRES) =     13.98  AREA-AVERAGED Fm(INCH/HR)=  0.08
  AREA-AVERAGED Fp(INCH/HR) =  0.29  AREA-AVERAGED Ap = 0.277
  PEAK FLOW RATE(CFS)    =      37.08

  ** PEAK FLOW RATE TABLE **
   STREAM       Q      Tc   Intensity   Fp(Fm)      Ap      Ae     HEADWATER
   NUMBER     (CFS)  (MIN.) (INCH/HR) (INCH/HR)          (ACRES)     NODE
      1       33.00    6.29    3.560  0.30( 0.09) 0.28       9.6     142.00
      2       34.46    7.10    3.321  0.30( 0.08) 0.28      10.8     137.00
      3       35.25    7.73    3.162  0.30( 0.08) 0.28      11.6     127.00
      4       36.95    9.25    2.854  0.30( 0.08) 0.28      13.6     139.00
      5       37.02    9.33    2.839  0.29( 0.08) 0.28      13.7     130.00
      6       37.08    9.62    2.790  0.29( 0.08) 0.28      14.0     121.00
      7       36.98    9.84    2.754  0.29( 0.08) 0.28      14.1     101.00
      8       35.41   11.76    2.487  0.29( 0.08) 0.27      15.1     115.00
      9       35.04   12.05    2.453  0.29( 0.08) 0.27      15.2     109.00
     10       34.34   12.55    2.396  0.29( 0.08) 0.27      15.3     105.00
===============================================================================
===============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

♀

APPENDIX B

B. AES Sub-Area Average Loss Rate (F_m) and Low Loss Fraction Y Estimations

B.1 Node 119 (Detention Basin 5)
B.2 Node 124 (Detention Basin 6)
B.3 Node 113 (Detention Basin 7)
B.4 Node 134 (Detention Basin 8)
B.5 Node 138
B.6 Node 141
B.7 Node 144

APPENDIX B.1

B.1 Node 119 (Detention Basin 5)

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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                        Analysis prepared by:

                          Fuscoe Engineering, Inc.
                        16795 Von Karman Ave. Suite 100
                            Irvine, California 92606
                      PH: 949-474-1960    Fax: 949-474-5315

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Parking Garage - Areas 9, 10, and 11
  3/19/14    OS(C:)/aes2012/hydrosft/Ch1/DPH/node119
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA    NUMBER    Fp(in./hr.)    YIELD
         1         2.68        10.00          32.        0.400        0.843
         2         0.24        85.00          32.        0.400        0.140
         3         0.03        85.00          69.        0.250        0.386

    TOTAL AREA (Acres) =      2.95

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.066

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.219
==========================================================================
```

APPENDIX B.2

B.2 Node 124 (Detention Basin 6)

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 11 and 12
  3/20/14    OS(C:)/aes2012/hydrosft/Ch1/DPH/node124
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER      AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)     YIELD
         1         2.19        10.00           32.        0.400        0.843
         2         0.20        10.00           69.        0.250        0.872
         3         0.03        85.00           32.        0.400        0.140
         4         0.18        85.00           69.        0.250        0.386

    TOTAL AREA (Acres) =      2.60

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.054

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.195
==========================================================================
```

APPENDIX B.3

B.3 Node 113 (Detention Basin 7)

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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                            Irvine, California 92606
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**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 1,2,3,4,5,6,7, and 8
  3/21/14   OS(C:)/aes2012/hydrosft/Ch1/DPH/node113
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA    NUMBER    Fp(in./hr.)    YIELD
         1         1.62        10.00          69.        0.250        0.872
         2         0.66        10.00          75.        0.200        0.882
         3         1.15        85.00          69.        0.250        0.386
         4         1.18        85.00          75.        0.200        0.471

    TOTAL AREA (Acres) =      4.61

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.108

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.351
==========================================================================
```

APPENDIX B.4

B.4 Node 134 (Detention Basin 8)

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 13,14,15, and 16
  3/21/14    OS(C:)/aes2012/hydrosft/Ch1/DPH/node134
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA    NUMBER    Fp(in./hr.)    YIELD
         1         1.53        10.00           69.       0.250        0.872
         2         0.45        10.00           75.       0.200        0.882

    TOTAL AREA (Acres) =      1.98

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.024

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.126
==========================================================================
```

APPENDIX B.5

B.5 Node 138

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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                          16795 VON KARMAN
                            SUITE 100
                          IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 18 and 19
  3/25/14    OS(C:)/aes2013/hydrosft/Ch1/DPH/node138
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA    NUMBER    Fp(in./hr.)    YIELD
         1         0.60        10.00          32.        0.400        0.843
         2         0.02        10.00          69.        0.250        0.872
         3         0.43        85.00          32.        0.400        0.140

    TOTAL AREA (Acres) =      1.05

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.163

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.444
==========================================================================
```

APPENDIX B.6

B.6 Node 141

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                   AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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                              SUITE 100
                            IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 20 and 21
  3/25/14    OS(C:)/ aes2013/hydrosft/Ch1/DPH/node141
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER     AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA    NUMBER    Fp(in./hr.)    YIELD
         1         1.36        10.00          32.        0.400        0.843

    TOTAL AREA (Acres) =      1.36

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.040

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.157
==========================================================================
```

APPENDIX B.7

B.7 Node 144

```
**************************************************************************
          NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
                AND LOW LOSS FRACTION ESTIMATIONS
==========================================================================
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                            SUITE 100
                          IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  Drainage Area D - Areas 22 and 23
  3/25/14    OS(C:)/aes2013/hydrosft/Ch1/DPH/node144
==========================================================================
*** NON-HOMOGENEOUS WATERSHED AREA-AVERAGED LOSS RATE (Fm)
    AND LOW LOSS FRACTION ESTIMATIONS FOR AMC II:

    TOTAL 24-HOUR DURATION RAINFALL DEPTH =     3.68 (inches)

    SOIL-COVER      AREA      PERCENT OF    SCS CURVE    LOSS RATE
       TYPE      (Acres)   PERVIOUS AREA     NUMBER    Fp(in./hr.)     YIELD
         1         0.44        10.00           32.        0.400        0.843
         2         0.06        85.00           32.        0.400        0.140

    TOTAL AREA (Acres) =      0.50

    AREA-AVERAGED LOSS RATE, Fm (in./hr.) =  0.076

    AREA-AVERAGED LOW LOSS FRACTION, Y = 0.242
==========================================================================
```

APPENDIX C

C. AES Small Area Unit Hydrograph Models

C.1 Node 119 (Detention Basin 5)
C.2 Node 124 (Detention Basin 6)
C.3 Node 113 (Detention Basin 7)
C.4 Node 134 (Detention Basin 8)
C.5 Node 138
C.6 Node 141
C.7 Node 144

APPENDIX C.1

C.1 Node 119 (Detention Basin 5)

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
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                                Irvine, California 92606
                          PH: 949-474-1960    Fax: 949-474-5315

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node119 (Parking Garage)
  3/19/14     OS(C:)/aes2012/hydrosft/Ch1/DPH/SAUHnode119
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    2.95
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.066
    LOW LOSS FRACTION = 0.219
    TIME OF CONCENTRATION(MIN.) =  9.66
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.67
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.24

**************************************************************************
  TIME      VOLUME        Q    0.        2.5        5.0        7.5       10.0
 (HOURS)     (AF)       (CFS)
--------------------------------------------------------------------------
  0.06       0.0003      0.12  Q          .          .          .          .
  0.22       0.0019      0.12  Q          .          .          .          .
  0.38       0.0034      0.12  Q          .          .          .          .
  0.54       0.0050      0.12  Q          .          .          .          .
```

0.71	0.0066	0.12	Q	.	.	.	.
0.87	0.0083	0.12	Q	.	.	.	.
1.03	0.0099	0.12	Q	.	.	.	.
1.19	0.0115	0.12	Q	.	.	.	.
1.35	0.0132	0.12	Q	.	.	.	.
1.51	0.0148	0.12	Q	.	.	.	.
1.67	0.0165	0.13	Q	.	.	.	.
1.83	0.0182	0.13	Q	.	.	.	.
1.99	0.0198	0.13	Q	.	.	.	.
2.15	0.0215	0.13	Q	.	.	.	.
2.32	0.0233	0.13	Q	.	.	.	.
2.48	0.0250	0.13	Q	.	.	.	.
2.64	0.0267	0.13	Q	.	.	.	.
2.80	0.0285	0.13	Q	.	.	.	.
2.96	0.0303	0.13	Q	.	.	.	.
3.12	0.0320	0.13	Q	.	.	.	.
3.28	0.0338	0.14	Q	.	.	.	.
3.44	0.0356	0.14	Q	.	.	.	.
3.60	0.0375	0.14	Q	.	.	.	.
3.76	0.0393	0.14	Q	.	.	.	.
3.93	0.0412	0.14	Q	.	.	.	.
4.09	0.0430	0.14	Q	.	.	.	.
4.25	0.0449	0.14	Q	.	.	.	.
4.41	0.0468	0.14	Q	.	.	.	.
4.57	0.0487	0.14	Q	.	.	.	.
4.73	0.0507	0.15	Q	.	.	.	.
4.89	0.0526	0.15	Q	.	.	.	.
5.05	0.0546	0.15	Q	.	.	.	.
5.21	0.0566	0.15	Q	.	.	.	.
5.37	0.0586	0.15	Q	.	.	.	.
5.54	0.0606	0.15	Q	.	.	.	.
5.70	0.0626	0.15	Q	.	.	.	.
5.86	0.0647	0.16	Q	.	.	.	.
6.02	0.0668	0.16	Q	.	.	.	.
6.18	0.0689	0.16	Q	.	.	.	.
6.34	0.0710	0.16	Q	.	.	.	.
6.50	0.0732	0.16	Q	.	.	.	.
6.66	0.0753	0.16	Q	.	.	.	.
6.82	0.0775	0.17	Q	.	.	.	.
6.98	0.0798	0.17	Q	.	.	.	.
7.14	0.0820	0.17	Q	.	.	.	.
7.31	0.0843	0.17	Q	.	.	.	.
7.47	0.0866	0.17	Q	.	.	.	.
7.63	0.0889	0.18	Q	.	.	.	.
7.79	0.0912	0.18	Q	.	.	.	.
7.95	0.0936	0.18	Q	.	.	.	.
8.11	0.0960	0.18	Q	.	.	.	.
8.27	0.0985	0.18	Q	.	.	.	.
8.43	0.1009	0.19	Q	.	.	.	.
8.59	0.1034	0.19	Q	.	.	.	.
8.76	0.1060	0.19	Q	.	.	.	.
8.92	0.1085	0.19	Q	.	.	.	.

9.08	0.1112	0.20	Q	.	.	.	.
9.24	0.1138	0.20	Q	.	.	.	.
9.40	0.1165	0.20	Q	.	.	.	.
9.56	0.1192	0.21	Q	.	.	.	.
9.72	0.1220	0.21	Q	.	.	.	.
9.88	0.1248	0.21	Q	.	.	.	.
10.04	0.1276	0.22	Q	.	.	.	.
10.20	0.1306	0.22	Q	.	.	.	.
10.37	0.1335	0.22	Q	.	.	.	.
10.53	0.1365	0.23	Q	.	.	.	.
10.69	0.1396	0.23	Q	.	.	.	.
10.85	0.1427	0.24	Q	.	.	.	.
11.01	0.1459	0.24	Q	.	.	.	.
11.17	0.1491	0.25	Q	.	.	.	.
11.33	0.1524	0.25	.Q	.	.	.	.
11.49	0.1558	0.26	.Q	.	.	.	.
11.65	0.1593	0.26	.Q	.	.	.	.
11.81	0.1628	0.27	.Q	.	.	.	.
11.98	0.1664	0.28	.Q	.	.	.	.
12.14	0.1703	0.30	.Q	.	.	.	.
12.30	0.1747	0.37	.Q	.	.	.	.
12.46	0.1796	0.37	.Q	.	.	.	.
12.62	0.1846	0.38	.Q	.	.	.	.
12.78	0.1898	0.39	.Q	.	.	.	.
12.94	0.1950	0.40	.Q	.	.	.	.
13.10	0.2005	0.41	.Q	.	.	.	.
13.26	0.2060	0.43	.Q	.	.	.	.
13.42	0.2118	0.44	.Q	.	.	.	.
13.59	0.2177	0.46	.Q	.	.	.	.
13.75	0.2238	0.47	.Q	.	.	.	.
13.91	0.2302	0.49	.Q	.	.	.	.
14.07	0.2368	0.50	. Q	.	.	.	.
14.23	0.2437	0.53	. Q	.	.	.	.
14.39	0.2509	0.55	. Q	.	.	.	.
14.55	0.2584	0.59	. Q	.	.	.	.
14.71	0.2664	0.61	. Q	.	.	.	.
14.87	0.2750	0.68	. Q	.	.	.	.
15.03	0.2843	0.72	. Q	.	.	.	.
15.20	0.2946	0.83	. Q	.	.	.	.
15.36	0.3060	0.90	. Q	.	.	.	.
15.52	0.3181	0.91	. Q	.	.	.	.
15.68	0.3311	1.05	. Q	.	.	.	.
15.84	0.3491	1.65	. Q	.	.	.	.
16.00	0.3755	2.31	. Q.	.	.	.	.
16.16	0.4388	7.21	.	.	.	Q	.
16.32	0.4952	1.26	. Q	.	.	.	.
16.48	0.5099	0.94	. Q	.	.	.	.
16.64	0.5213	0.77	. Q	.	.	.	.
16.81	0.5306	0.64	. Q	.	.	.	.
16.97	0.5387	0.57	. Q	.	.	.	.
17.13	0.5459	0.52	. Q	.	.	.	.
17.29	0.5525	0.48	.Q	.	.	.	.

17.45	0.5586	0.45	.Q	.	.	.	.
17.61	0.5644	0.42	.Q	.	.	.	.
17.77	0.5698	0.40	.Q	.	.	.	.
17.93	0.5750	0.38	.Q	.	.	.	.
18.09	0.5799	0.36	.Q	.	.	.	.
18.25	0.5841	0.27	.Q	.	.	.	.
18.42	0.5876	0.26	.Q	.	.	.	.
18.58	0.5910	0.25	Q	.	.	.	.
18.74	0.5942	0.24	Q	.	.	.	.
18.90	0.5974	0.23	Q	.	.	.	.
19.06	0.6004	0.22	Q	.	.	.	.
19.22	0.6033	0.21	Q	.	.	.	.
19.38	0.6061	0.21	Q	.	.	.	.
19.54	0.6088	0.20	Q	.	.	.	.
19.70	0.6115	0.20	Q	.	.	.	.
19.86	0.6140	0.19	Q	.	.	.	.
20.02	0.6165	0.19	Q	.	.	.	.
20.19	0.6190	0.18	Q	.	.	.	.
20.35	0.6213	0.18	Q	.	.	.	.
20.51	0.6237	0.17	Q	.	.	.	.
20.67	0.6259	0.17	Q	.	.	.	.
20.83	0.6282	0.16	Q	.	.	.	.
20.99	0.6303	0.16	Q	.	.	.	.
21.15	0.6325	0.16	Q	.	.	.	.
21.31	0.6345	0.16	Q	.	.	.	.
21.47	0.6366	0.15	Q	.	.	.	.
21.64	0.6386	0.15	Q	.	.	.	.
21.80	0.6406	0.15	Q	.	.	.	.
21.96	0.6425	0.14	Q	.	.	.	.
22.12	0.6444	0.14	Q	.	.	.	.
22.28	0.6463	0.14	Q	.	.	.	.
22.44	0.6481	0.14	Q	.	.	.	.
22.60	0.6499	0.13	Q	.	.	.	.
22.76	0.6517	0.13	Q	.	.	.	.
22.92	0.6534	0.13	Q	.	.	.	.
23.08	0.6552	0.13	Q	.	.	.	.
23.24	0.6569	0.13	Q	.	.	.	.
23.41	0.6586	0.13	Q	.	.	.	.
23.57	0.6602	0.12	Q	.	.	.	.
23.73	0.6618	0.12	Q	.	.	.	.
23.89	0.6635	0.12	Q	.	.	.	.
24.05	0.6650	0.12	Q	.	.	.	.
24.21	0.6658	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
==========	=========

0%	1449.0
10%	96.6
20%	29.0
30%	19.3
40%	9.7
50%	9.7
60%	9.7
70%	9.7
80%	9.7
90%	9.7

APPENDIX C.2

C.2 Node 124 (Detention Basin 6)

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                            Fuscoe Engineering, Inc.
                          16795 Von Karman Ave. Suite 100
                              Irvine, California 92606
                       PH: 949-474-1960    Fax: 949-474-5315

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 124
  3/20/14    OS(C:)/aes2012/hydrosft/Ch1/DPH/ SAUHnode124
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.92
    TOTAL CATCHMENT AREA(ACRES) =    2.60
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.054
    LOW LOSS FRACTION = 0.195
    TIME OF CONCENTRATION(MIN.) =  8.70
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.62
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.18

**************************************************************************
  TIME      VOLUME        Q    0.        2.5        5.0        7.5       10.0
 (HOURS)     (AF)      (CFS)
--------------------------------------------------------------------------
  0.05      0.0000      0.00  Q          .          .          .          .
  0.20      0.0007      0.11  Q          .          .          .          .
  0.34      0.0020      0.11  Q          .          .          .          .
  0.49      0.0033      0.11  Q          .          .          .          .
```

0.63	0.0046	0.11	Q	.	.	.	.
0.78	0.0060	0.11	Q	.	.	.	.
0.92	0.0073	0.11	Q	.	.	.	.
1.07	0.0087	0.11	Q	.	.	.	.
1.21	0.0101	0.11	Q	.	.	.	.
1.36	0.0114	0.12	Q	.	.	.	.
1.50	0.0128	0.12	Q	.	.	.	.
1.65	0.0142	0.12	Q	.	.	.	.
1.79	0.0156	0.12	Q	.	.	.	.
1.94	0.0170	0.12	Q	.	.	.	.
2.08	0.0185	0.12	Q	.	.	.	.
2.23	0.0199	0.12	Q	.	.	.	.
2.37	0.0213	0.12	Q	.	.	.	.
2.52	0.0228	0.12	Q	.	.	.	.
2.66	0.0242	0.12	Q	.	.	.	.
2.81	0.0257	0.12	Q	.	.	.	.
2.95	0.0272	0.12	Q	.	.	.	.
3.10	0.0287	0.12	Q	.	.	.	.
3.24	0.0302	0.13	Q	.	.	.	.
3.39	0.0317	0.13	Q	.	.	.	.
3.53	0.0332	0.13	Q	.	.	.	.
3.68	0.0347	0.13	Q	.	.	.	.
3.82	0.0363	0.13	Q	.	.	.	.
3.97	0.0378	0.13	Q	.	.	.	.
4.11	0.0394	0.13	Q	.	.	.	.
4.26	0.0410	0.13	Q	.	.	.	.
4.40	0.0426	0.13	Q	.	.	.	.
4.55	0.0442	0.13	Q	.	.	.	.
4.69	0.0458	0.14	Q	.	.	.	.
4.84	0.0474	0.14	Q	.	.	.	.
4.98	0.0491	0.14	Q	.	.	.	.
5.12	0.0507	0.14	Q	.	.	.	.
5.27	0.0524	0.14	Q	.	.	.	.
5.42	0.0541	0.14	Q	.	.	.	.
5.56	0.0558	0.14	Q	.	.	.	.
5.71	0.0575	0.14	Q	.	.	.	.
5.85	0.0592	0.14	Q	.	.	.	.
6.00	0.0610	0.15	Q	.	.	.	.
6.14	0.0627	0.15	Q	.	.	.	.
6.29	0.0645	0.15	Q	.	.	.	.
6.43	0.0663	0.15	Q	.	.	.	.
6.57	0.0681	0.15	Q	.	.	.	.
6.72	0.0699	0.15	Q	.	.	.	.
6.87	0.0718	0.15	Q	.	.	.	.
7.01	0.0736	0.16	Q	.	.	.	.
7.16	0.0755	0.16	Q	.	.	.	.
7.30	0.0774	0.16	Q	.	.	.	.
7.45	0.0793	0.16	Q	.	.	.	.
7.59	0.0813	0.16	Q	.	.	.	.
7.74	0.0832	0.16	Q	.	.	.	.
7.88	0.0852	0.17	Q	.	.	.	.
8.02	0.0872	0.17	Q	.	.	.	.

8.17	0.0892	0.17	Q	.	.	.	.
8.32	0.0913	0.17	Q	.	.	.	.
8.46	0.0934	0.17	Q	.	.	.	.
8.60	0.0955	0.18	Q	.	.	.	.
8.75	0.0976	0.18	Q	.	.	.	.
8.90	0.0997	0.18	Q	.	.	.	.
9.04	0.1019	0.18	Q	.	.	.	.
9.19	0.1041	0.19	Q	.	.	.	.
9.33	0.1063	0.19	Q	.	.	.	.
9.48	0.1086	0.19	Q	.	.	.	.
9.62	0.1109	0.19	Q	.	.	.	.
9.77	0.1132	0.20	Q	.	.	.	.
9.91	0.1156	0.20	Q	.	.	.	.
10.05	0.1180	0.20	Q	.	.	.	.
10.20	0.1204	0.20	Q	.	.	.	.
10.35	0.1229	0.21	Q	.	.	.	.
10.49	0.1254	0.21	Q	.	.	.	.
10.64	0.1280	0.22	Q	.	.	.	.
10.78	0.1306	0.22	Q	.	.	.	.
10.93	0.1332	0.22	Q	.	.	.	.
11.07	0.1359	0.23	Q	.	.	.	.
11.22	0.1386	0.23	Q	.	.	.	.
11.36	0.1414	0.23	Q	.	.	.	.
11.51	0.1443	0.24	Q	.	.	.	.
11.65	0.1472	0.24	Q	.	.	.	.
11.80	0.1501	0.25	.Q	.	.	.	.
11.94	0.1531	0.25	.Q	.	.	.	.
12.09	0.1564	0.29	.Q	.	.	.	.
12.23	0.1601	0.33	.Q	.	.	.	.
12.38	0.1642	0.34	.Q	.	.	.	.
12.52	0.1683	0.35	.Q	.	.	.	.
12.66	0.1726	0.36	.Q	.	.	.	.
12.81	0.1769	0.36	.Q	.	.	.	.
12.95	0.1813	0.38	.Q	.	.	.	.
13.10	0.1859	0.38	.Q	.	.	.	.
13.24	0.1905	0.40	.Q	.	.	.	.
13.39	0.1953	0.40	.Q	.	.	.	.
13.53	0.2003	0.42	.Q	.	.	.	.
13.68	0.2053	0.43	.Q	.	.	.	.
13.82	0.2106	0.45	.Q	.	.	.	.
13.97	0.2160	0.46	.Q	.	.	.	.
14.12	0.2216	0.48	.Q	.	.	.	.
14.26	0.2275	0.49	.Q	.	.	.	.
14.40	0.2335	0.52	. Q	.	.	.	.
14.55	0.2399	0.54	. Q	.	.	.	.
14.70	0.2467	0.59	. Q	.	.	.	.
14.84	0.2539	0.62	. Q	.	.	.	.
14.98	0.2617	0.68	. Q	.	.	.	.
15.13	0.2701	0.72	. Q	.	.	.	.
15.27	0.2794	0.82	. Q	.	.	.	.
15.42	0.2897	0.89	. Q	.	.	.	.
15.57	0.3005	0.91	. Q	.	.	.	.

15.71	0.3122	1.05	. Q	.	.	.	.
15.85	0.3282	1.62	. Q	.	.	.	.
16.00	0.3514	2.25	. Q.	.	.	.	.
16.15	0.4065	6.94	.	.	. Q	.	.
16.29	0.4557	1.27	. Q	.	.	.	.
16.43	0.4683	0.83	. Q	.	.	.	.
16.58	0.4779	0.77	. Q	.	.	.	.
16.73	0.4864	0.65	. Q	.	.	.	.
16.87	0.4937	0.56	. Q	.	.	.	.
17.02	0.5001	0.51	. Q	.	.	.	.
17.16	0.5059	0.47	.Q	.	.	.	.
17.31	0.5114	0.44	.Q	.	.	.	.
17.45	0.5164	0.41	.Q	.	.	.	.
17.59	0.5212	0.39	.Q	.	.	.	.
17.74	0.5258	0.37	.Q	.	.	.	.
17.89	0.5301	0.35	.Q	.	.	.	.
18.03	0.5343	0.34	.Q	.	.	.	.
18.17	0.5378	0.26	.Q	.	.	.	.
18.32	0.5409	0.25	Q	.	.	.	.
18.47	0.5438	0.24	Q	.	.	.	.
18.61	0.5466	0.23	Q	.	.	.	.
18.76	0.5492	0.22	Q	.	.	.	.
18.90	0.5518	0.21	Q	.	.	.	.
19.05	0.5543	0.21	Q	.	.	.	.
19.19	0.5568	0.20	Q	.	.	.	.
19.33	0.5591	0.19	Q	.	.	.	.
19.48	0.5614	0.19	Q	.	.	.	.
19.62	0.5637	0.18	Q	.	.	.	.
19.77	0.5659	0.18	Q	.	.	.	.
19.92	0.5680	0.18	Q	.	.	.	.
20.06	0.5701	0.17	Q	.	.	.	.
20.20	0.5721	0.17	Q	.	.	.	.
20.35	0.5741	0.16	Q	.	.	.	.
20.49	0.5760	0.16	Q	.	.	.	.
20.64	0.5779	0.16	Q	.	.	.	.
20.78	0.5798	0.15	Q	.	.	.	.
20.93	0.5816	0.15	Q	.	.	.	.
21.08	0.5834	0.15	Q	.	.	.	.
21.22	0.5851	0.15	Q	.	.	.	.
21.36	0.5869	0.14	Q	.	.	.	.
21.51	0.5886	0.14	Q	.	.	.	.
21.66	0.5902	0.14	Q	.	.	.	.
21.80	0.5919	0.14	Q	.	.	.	.
21.94	0.5935	0.13	Q	.	.	.	.
22.09	0.5951	0.13	Q	.	.	.	.
22.23	0.5967	0.13	Q	.	.	.	.
22.38	0.5982	0.13	Q	.	.	.	.
22.52	0.5997	0.13	Q	.	.	.	.
22.67	0.6012	0.12	Q	.	.	.	.
22.82	0.6027	0.12	Q	.	.	.	.
22.96	0.6042	0.12	Q	.	.	.	.
23.11	0.6056	0.12	Q	.	.	.	.

23.25	0.6070	0.12	Q	.	.	.	.
23.39	0.6084	0.12	Q	.	.	.	.
23.54	0.6098	0.11	Q	.	.	.	.
23.68	0.6112	0.11	Q	.	.	.	.
23.83	0.6125	0.11	Q	.	.	.	.
23.98	0.6139	0.11	Q	.	.	.	.
24.12	0.6152	0.11	Q	.	.	.	.
24.26	0.6158	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1444.2
10%	95.7
20%	26.1
30%	17.4
40%	8.7
50%	8.7
60%	8.7
70%	8.7
80%	8.7
90%	8.7

APPENDIX C.3

C.3 Node 113 (Detention Basin 7)

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
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            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                             Fuscoe Engineering, Inc.
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                              Irvine, California 92606
                        PH: 949-474-1960    Fax: 949-474-5315

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 113
  3/21/14   OS(C:)/aes2012/hydrosft/Ch1/DPH/SAUHnode113
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.79
    TOTAL CATCHMENT AREA(ACRES) =    4.61
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.108
    LOW LOSS FRACTION = 0.351
    TIME OF CONCENTRATION(MIN.) =  8.72
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.79
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.62

**************************************************************************
  TIME      VOLUME       Q    0.        5.0       10.0       15.0       20.0
 (HOURS)     (AF)      (CFS)
--------------------------------------------------------------------------
  0.01      0.0000      0.00  Q         .         .          .          .
  0.16      0.0008      0.13  Q         .         .          .          .
  0.30      0.0024      0.14  Q         .         .          .          .
  0.45      0.0041      0.14  Q         .         .          .          .
```

0.59	0.0057	0.14	Q	.	.	.	.
0.74	0.0074	0.14	Q	.	.	.	.
0.89	0.0090	0.14	Q	.	.	.	.
1.03	0.0107	0.14	Q	.	.	.	.
1.18	0.0124	0.14	Q	.	.	.	.
1.32	0.0141	0.14	Q	.	.	.	.
1.47	0.0158	0.14	Q	.	.	.	.
1.61	0.0175	0.14	Q	.	.	.	.
1.76	0.0192	0.14	Q	.	.	.	.
1.90	0.0209	0.15	Q	.	.	.	.
2.05	0.0227	0.15	Q	.	.	.	.
2.19	0.0244	0.15	Q	.	.	.	.
2.34	0.0262	0.15	Q	.	.	.	.
2.48	0.0280	0.15	Q	.	.	.	.
2.63	0.0298	0.15	Q	.	.	.	.
2.77	0.0316	0.15	Q	.	.	.	.
2.92	0.0334	0.15	Q	.	.	.	.
3.07	0.0352	0.15	Q	.	.	.	.
3.21	0.0371	0.15	Q	.	.	.	.
3.36	0.0389	0.16	Q	.	.	.	.
3.50	0.0408	0.16	Q	.	.	.	.
3.65	0.0427	0.16	Q	.	.	.	.
3.79	0.0446	0.16	Q	.	.	.	.
3.94	0.0465	0.16	Q	.	.	.	.
4.08	0.0484	0.16	Q	.	.	.	.
4.23	0.0503	0.16	Q	.	.	.	.
4.37	0.0523	0.16	Q	.	.	.	.
4.52	0.0543	0.16	Q	.	.	.	.
4.66	0.0563	0.17	Q	.	.	.	.
4.81	0.0583	0.17	Q	.	.	.	.
4.95	0.0603	0.17	Q	.	.	.	.
5.10	0.0623	0.17	Q	.	.	.	.
5.25	0.0644	0.17	Q	.	.	.	.
5.39	0.0664	0.17	Q	.	.	.	.
5.54	0.0685	0.17	Q	.	.	.	.
5.68	0.0706	0.18	Q	.	.	.	.
5.83	0.0727	0.18	Q	.	.	.	.
5.97	0.0749	0.18	Q	.	.	.	.
6.12	0.0770	0.18	Q	.	.	.	.
6.26	0.0792	0.18	Q	.	.	.	.
6.41	0.0814	0.18	Q	.	.	.	.
6.55	0.0836	0.19	Q	.	.	.	.
6.70	0.0859	0.19	Q	.	.	.	.
6.84	0.0882	0.19	Q	.	.	.	.
6.99	0.0904	0.19	Q	.	.	.	.
7.13	0.0927	0.19	Q	.	.	.	.
7.28	0.0951	0.19	Q	.	.	.	.
7.43	0.0974	0.20	Q	.	.	.	.
7.57	0.0998	0.20	Q	.	.	.	.
7.72	0.1022	0.20	Q	.	.	.	.
7.86	0.1047	0.20	Q	.	.	.	.
8.01	0.1071	0.21	Q	.	.	.	.

8.15	0.1096	0.21	Q	.	.	.	.
8.30	0.1121	0.21	Q	.	.	.	.
8.44	0.1147	0.21	Q	.	.	.	.
8.59	0.1173	0.22	Q	.	.	.	.
8.73	0.1199	0.22	Q	.	.	.	.
8.88	0.1225	0.22	Q	.	.	.	.
9.02	0.1252	0.22	Q	.	.	.	.
9.17	0.1279	0.23	Q	.	.	.	.
9.31	0.1307	0.23	Q	.	.	.	.
9.46	0.1334	0.23	Q	.	.	.	.
9.61	0.1363	0.24	Q	.	.	.	.
9.75	0.1391	0.24	Q	.	.	.	.
9.90	0.1420	0.24	Q	.	.	.	.
10.04	0.1450	0.25	Q	.	.	.	.
10.19	0.1480	0.25	Q	.	.	.	.
10.33	0.1510	0.26	Q	.	.	.	.
10.48	0.1541	0.26	Q	.	.	.	.
10.62	0.1572	0.26	Q	.	.	.	.
10.77	0.1604	0.27	Q	.	.	.	.
10.91	0.1637	0.27	Q	.	.	.	.
11.06	0.1670	0.28	Q	.	.	.	.
11.20	0.1703	0.28	Q	.	.	.	.
11.35	0.1737	0.29	Q	.	.	.	.
11.49	0.1772	0.29	Q	.	.	.	.
11.64	0.1808	0.30	Q	.	.	.	.
11.79	0.1844	0.31	Q	.	.	.	.
11.93	0.1881	0.31	Q	.	.	.	.
12.08	0.1921	0.34	Q	.	.	.	.
12.22	0.1966	0.41	Q	.	.	.	.
12.37	0.2016	0.42	Q	.	.	.	.
12.51	0.2067	0.43	Q	.	.	.	.
12.66	0.2119	0.44	Q	.	.	.	.
12.80	0.2172	0.45	Q	.	.	.	.
12.95	0.2227	0.46	Q	.	.	.	.
13.09	0.2283	0.47	Q	.	.	.	.
13.24	0.2340	0.49	Q	.	.	.	.
13.38	0.2399	0.49	Q	.	.	.	.
13.53	0.2459	0.51	.Q	.	.	.	.
13.67	0.2522	0.52	.Q	.	.	.	.
13.82	0.2586	0.55	.Q	.	.	.	.
13.97	0.2653	0.56	.Q	.	.	.	.
14.11	0.2722	0.59	.Q	.	.	.	.
14.26	0.2794	0.61	.Q	.	.	.	.
14.40	0.2868	0.64	.Q	.	.	.	.
14.55	0.2947	0.66	.Q	.	.	.	.
14.69	0.3029	0.71	.Q	.	.	.	.
14.84	0.3116	0.74	.Q	.	.	.	.
14.98	0.3211	0.84	.Q	.	.	.	.
15.13	0.3316	0.90	.Q	.	.	.	.
15.27	0.3434	1.06	. Q	.	.	.	.
15.42	0.3566	1.16	. Q	.	.	.	.
15.56	0.3708	1.19	. Q	.	.	.	.

15.71	0.3863	1.40	. Q	.	.	.	.
15.85	0.4083	2.27	. Q	.	.	.	.
16.00	0.4413	3.23	. Q	.	.	.	.
16.15	0.5229	10.36	.	.	Q	.	.
16.29	0.5955	1.73	. Q	.	.	.	.
16.44	0.6124	1.07	. Q	.	.	.	.
16.58	0.6246	0.97	.Q	.	.	.	.
16.73	0.6352	0.79	.Q	.	.	.	.
16.87	0.6440	0.68	.Q	.	.	.	.
17.02	0.6519	0.62	.Q	.	.	.	.
17.16	0.6591	0.57	.Q	.	.	.	.
17.31	0.6657	0.54	.Q	.	.	.	.
17.45	0.6720	0.50	.Q	.	.	.	.
17.60	0.6779	0.48	Q	.	.	.	.
17.74	0.6835	0.45	Q	.	.	.	.
17.89	0.6888	0.43	Q	.	.	.	.
18.03	0.6939	0.42	Q	.	.	.	.
18.18	0.6983	0.32	Q	.	.	.	.
18.33	0.7020	0.30	Q	.	.	.	.
18.47	0.7056	0.29	Q	.	.	.	.
18.62	0.7090	0.28	Q	.	.	.	.
18.76	0.7123	0.27	Q	.	.	.	.
18.91	0.7155	0.26	Q	.	.	.	.
19.05	0.7186	0.25	Q	.	.	.	.
19.20	0.7216	0.25	Q	.	.	.	.
19.34	0.7245	0.24	Q	.	.	.	.
19.49	0.7273	0.23	Q	.	.	.	.
19.63	0.7300	0.23	Q	.	.	.	.
19.78	0.7327	0.22	Q	.	.	.	.
19.92	0.7353	0.21	Q	.	.	.	.
20.07	0.7379	0.21	Q	.	.	.	.
20.21	0.7404	0.20	Q	.	.	.	.
20.36	0.7428	0.20	Q	.	.	.	.
20.51	0.7452	0.20	Q	.	.	.	.
20.65	0.7475	0.19	Q	.	.	.	.
20.80	0.7498	0.19	Q	.	.	.	.
20.94	0.7520	0.18	Q	.	.	.	.
21.09	0.7542	0.18	Q	.	.	.	.
21.23	0.7564	0.18	Q	.	.	.	.
21.38	0.7585	0.18	Q	.	.	.	.
21.52	0.7606	0.17	Q	.	.	.	.
21.67	0.7627	0.17	Q	.	.	.	.
21.81	0.7647	0.17	Q	.	.	.	.
21.96	0.7667	0.16	Q	.	.	.	.
22.10	0.7686	0.16	Q	.	.	.	.
22.25	0.7705	0.16	Q	.	.	.	.
22.39	0.7724	0.16	Q	.	.	.	.
22.54	0.7743	0.15	Q	.	.	.	.
22.69	0.7762	0.15	Q	.	.	.	.
22.83	0.7780	0.15	Q	.	.	.	.
22.98	0.7798	0.15	Q	.	.	.	.
23.12	0.7815	0.15	Q	.	.	.	.

23.27	0.7833	0.14	Q	.	.	.	.
23.41	0.7850	0.14	Q	.	.	.	.
23.56	0.7867	0.14	Q	.	.	.	.
23.70	0.7884	0.14	Q	.	.	.	.
23.85	0.7900	0.14	Q	.	.	.	.
23.99	0.7917	0.14	Q	.	.	.	.
24.14	0.7933	0.13	Q	.	.	.	.
24.28	0.7941	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1447.5
10%	78.5
20%	26.2
30%	17.4
40%	8.7
50%	8.7
60%	8.7
70%	8.7
80%	8.7
90%	8.7

APPENDIX C.4

C.4 Node 134 (Detention Basin 8)

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
        (C) Copyright 1989-2012 Advanced Engineering Software (aes)
            Ver. 19.0  Release Date: 06/01/2012  License ID 1355

                          Analysis prepared by:

                             Fuscoe Engineering, Inc.
                           16795 Von Karman Ave. Suite 100
                              Irvine, California 92606
                         PH: 949-474-1960    Fax: 949-474-5315

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 134
  3/21/14    OS(C:)/aes2012/hydrosft/Ch1/DPH/SAUHnode134
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.94
    TOTAL CATCHMENT AREA(ACRES) =    1.98
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.024
    LOW LOSS FRACTION = 0.126
    TIME OF CONCENTRATION(MIN.) =  8.32
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.52
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.09

**************************************************************************
  TIME      VOLUME        Q    0.        2.5       5.0       7.5       10.0
 (HOURS)     (AF)       (CFS)
--------------------------------------------------------------------------
  0.05       0.0002      0.09  Q         .         .         .         .
  0.19       0.0013      0.09  Q         .         .         .         .
  0.33       0.0023      0.09  Q         .         .         .         .
  0.47       0.0034      0.09  Q         .         .         .         .
```

0.61	0.0045	0.09	Q	.	.	.	.
0.75	0.0056	0.09	Q	.	.	.	.
0.89	0.0067	0.10	Q	.	.	.	.
1.02	0.0078	0.10	Q	.	.	.	.
1.16	0.0089	0.10	Q	.	.	.	.
1.30	0.0100	0.10	Q	.	.	.	.
1.44	0.0111	0.10	Q	.	.	.	.
1.58	0.0122	0.10	Q	.	.	.	.
1.72	0.0133	0.10	Q	.	.	.	.
1.86	0.0145	0.10	Q	.	.	.	.
1.99	0.0156	0.10	Q	.	.	.	.
2.13	0.0168	0.10	Q	.	.	.	.
2.27	0.0179	0.10	Q	.	.	.	.
2.41	0.0191	0.10	Q	.	.	.	.
2.55	0.0203	0.10	Q	.	.	.	.
2.69	0.0215	0.10	Q	.	.	.	.
2.83	0.0226	0.10	Q	.	.	.	.
2.97	0.0238	0.10	Q	.	.	.	.
3.10	0.0250	0.11	Q	.	.	.	.
3.24	0.0263	0.11	Q	.	.	.	.
3.38	0.0275	0.11	Q	.	.	.	.
3.52	0.0287	0.11	Q	.	.	.	.
3.66	0.0299	0.11	Q	.	.	.	.
3.80	0.0312	0.11	Q	.	.	.	.
3.94	0.0324	0.11	Q	.	.	.	.
4.07	0.0337	0.11	Q	.	.	.	.
4.21	0.0350	0.11	Q	.	.	.	.
4.35	0.0363	0.11	Q	.	.	.	.
4.49	0.0376	0.11	Q	.	.	.	.
4.63	0.0389	0.11	Q	.	.	.	.
4.77	0.0402	0.12	Q	.	.	.	.
4.91	0.0415	0.12	Q	.	.	.	.
5.05	0.0428	0.12	Q	.	.	.	.
5.18	0.0442	0.12	Q	.	.	.	.
5.32	0.0455	0.12	Q	.	.	.	.
5.46	0.0469	0.12	Q	.	.	.	.
5.60	0.0483	0.12	Q	.	.	.	.
5.74	0.0496	0.12	Q	.	.	.	.
5.88	0.0510	0.12	Q	.	.	.	.
6.02	0.0524	0.12	Q	.	.	.	.
6.15	0.0539	0.12	Q	.	.	.	.
6.29	0.0553	0.13	Q	.	.	.	.
6.43	0.0568	0.13	Q	.	.	.	.
6.57	0.0582	0.13	Q	.	.	.	.
6.71	0.0597	0.13	Q	.	.	.	.
6.85	0.0612	0.13	Q	.	.	.	.
6.99	0.0627	0.13	Q	.	.	.	.
7.13	0.0642	0.13	Q	.	.	.	.
7.26	0.0657	0.13	Q	.	.	.	.
7.40	0.0673	0.14	Q	.	.	.	.
7.54	0.0688	0.14	Q	.	.	.	.
7.68	0.0704	0.14	Q	.	.	.	.

7.82	0.0720	0.14	Q	.	.	.	.
7.96	0.0736	0.14	Q	.	.	.	.
8.10	0.0753	0.14	Q	.	.	.	.
8.23	0.0769	0.14	Q	.	.	.	.
8.37	0.0786	0.15	Q	.	.	.	.
8.51	0.0803	0.15	Q	.	.	.	.
8.65	0.0820	0.15	Q	.	.	.	.
8.79	0.0837	0.15	Q	.	.	.	.
8.93	0.0854	0.15	Q	.	.	.	.
9.07	0.0872	0.15	Q	.	.	.	.
9.21	0.0890	0.16	Q	.	.	.	.
9.34	0.0908	0.16	Q	.	.	.	.
9.48	0.0926	0.16	Q	.	.	.	.
9.62	0.0945	0.16	Q	.	.	.	.
9.76	0.0964	0.17	Q	.	.	.	.
9.90	0.0983	0.17	Q	.	.	.	.
10.04	0.1002	0.17	Q	.	.	.	.
10.18	0.1022	0.17	Q	.	.	.	.
10.31	0.1042	0.18	Q	.	.	.	.
10.45	0.1062	0.18	Q	.	.	.	.
10.59	0.1082	0.18	Q	.	.	.	.
10.73	0.1103	0.18	Q	.	.	.	.
10.87	0.1124	0.19	Q	.	.	.	.
11.01	0.1146	0.19	Q	.	.	.	.
11.15	0.1168	0.19	Q	.	.	.	.
11.29	0.1190	0.20	Q	.	.	.	.
11.42	0.1213	0.20	Q	.	.	.	.
11.56	0.1236	0.20	Q	.	.	.	.
11.70	0.1260	0.21	Q	.	.	.	.
11.84	0.1284	0.21	Q	.	.	.	.
11.98	0.1309	0.22	Q	.	.	.	.
12.12	0.1335	0.24	Q	.	.	.	.
12.26	0.1364	0.29	.Q	.	.	.	.
12.39	0.1397	0.29	.Q	.	.	.	.
12.53	0.1431	0.30	.Q	.	.	.	.
12.67	0.1465	0.30	.Q	.	.	.	.
12.81	0.1500	0.31	.Q	.	.	.	.
12.95	0.1536	0.32	.Q	.	.	.	.
13.09	0.1573	0.33	.Q	.	.	.	.
13.23	0.1611	0.33	.Q	.	.	.	.
13.37	0.1650	0.35	.Q	.	.	.	.
13.50	0.1690	0.35	.Q	.	.	.	.
13.64	0.1732	0.37	.Q	.	.	.	.
13.78	0.1775	0.38	.Q	.	.	.	.
13.92	0.1819	0.40	.Q	.	.	.	.
14.06	0.1865	0.41	.Q	.	.	.	.
14.20	0.1913	0.43	.Q	.	.	.	.
14.34	0.1964	0.44	.Q	.	.	.	.
14.47	0.2016	0.47	.Q	.	.	.	.
14.61	0.2071	0.49	.Q	.	.	.	.
14.75	0.2130	0.53	. Q	.	.	.	.
14.89	0.2191	0.55	. Q	.	.	.	.

15.03	0.2257	0.60	. Q	.	.	.	.
15.17	0.2328	0.63	. Q	.	.	.	.
15.31	0.2406	0.72	. Q	.	.	.	.
15.45	0.2489	0.74	. Q	.	.	.	.
15.58	0.2577	0.79	. Q	.	.	.	.
15.72	0.2673	0.90	. Q	.	.	.	.
15.86	0.2802	1.35	. Q	.	.	.	.
16.00	0.2986	1.86	. Q	.	.	.	.
16.14	0.3413	5.60	.	.	. Q	.	.
16.28	0.3796	1.08	. Q	.	.	.	.
16.42	0.3899	0.71	. Q	.	.	.	.
16.55	0.3978	0.67	. Q	.	.	.	.
16.69	0.4050	0.57	. Q	.	.	.	.
16.83	0.4112	0.51	. Q	.	.	.	.
16.97	0.4167	0.46	.Q	.	.	.	.
17.11	0.4217	0.42	.Q	.	.	.	.
17.25	0.4263	0.39	.Q	.	.	.	.
17.39	0.4306	0.36	.Q	.	.	.	.
17.53	0.4347	0.34	.Q	.	.	.	.
17.66	0.4385	0.32	.Q	.	.	.	.
17.80	0.4420	0.31	.Q	.	.	.	.
17.94	0.4455	0.29	.Q	.	.	.	.
18.08	0.4488	0.28	.Q	.	.	.	.
18.22	0.4516	0.21	Q	.	.	.	.
18.36	0.4540	0.21	Q	.	.	.	.
18.50	0.4563	0.20	Q	.	.	.	.
18.63	0.4586	0.19	Q	.	.	.	.
18.77	0.4607	0.19	Q	.	.	.	.
18.91	0.4628	0.18	Q	.	.	.	.
19.05	0.4649	0.17	Q	.	.	.	.
19.19	0.4668	0.17	Q	.	.	.	.
19.33	0.4687	0.16	Q	.	.	.	.
19.47	0.4706	0.16	Q	.	.	.	.
19.61	0.4724	0.16	Q	.	.	.	.
19.74	0.4742	0.15	Q	.	.	.	.
19.88	0.4759	0.15	Q	.	.	.	.
20.02	0.4776	0.15	Q	.	.	.	.
20.16	0.4792	0.14	Q	.	.	.	.
20.30	0.4808	0.14	Q	.	.	.	.
20.44	0.4824	0.14	Q	.	.	.	.
20.58	0.4840	0.13	Q	.	.	.	.
20.71	0.4855	0.13	Q	.	.	.	.
20.85	0.4870	0.13	Q	.	.	.	.
20.99	0.4884	0.13	Q	.	.	.	.
21.13	0.4899	0.12	Q	.	.	.	.
21.27	0.4913	0.12	Q	.	.	.	.
21.41	0.4927	0.12	Q	.	.	.	.
21.55	0.4940	0.12	Q	.	.	.	.
21.69	0.4954	0.12	Q	.	.	.	.
21.82	0.4967	0.11	Q	.	.	.	.
21.96	0.4980	0.11	Q	.	.	.	.
22.10	0.4993	0.11	Q	.	.	.	.

22.24	0.5005	0.11	Q	.	.	.	.
22.38	0.5018	0.11	Q	.	.	.	.
22.52	0.5030	0.11	Q	.	.	.	.
22.66	0.5042	0.11	Q	.	.	.	.
22.79	0.5054	0.10	Q	.	.	.	.
22.93	0.5066	0.10	Q	.	.	.	.
23.07	0.5078	0.10	Q	.	.	.	.
23.21	0.5089	0.10	Q	.	.	.	.
23.35	0.5100	0.10	Q	.	.	.	.
23.49	0.5112	0.10	Q	.	.	.	.
23.63	0.5123	0.10	Q	.	.	.	.
23.77	0.5134	0.10	Q	.	.	.	.
23.90	0.5145	0.09	Q	.	.	.	.
24.04	0.5155	0.09	Q	.	.	.	.
24.18	0.5161	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1447.7
10%	108.2
20%	25.0
30%	16.6
40%	8.3
50%	8.3
60%	8.3
70%	8.3
80%	8.3
90%	8.3

APPENDIX C.5

C.5 Node 138

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
        (C) Copyright 1989-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1355

                          Analysis prepared by:

                        FUSCOE ENGINEERING, INC
                            16795 VON KARMAN
                              SUITE 100
                            IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 138
  3/25/14   OS(C:)/aes2013/hydrosft/Ch1/DPH/SAUHnode138
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    1.05
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.163
    LOW LOSS FRACTION = 0.444
    TIME OF CONCENTRATION(MIN.) =  6.34
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.18
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.14

**************************************************************************
  TIME      VOLUME        Q     0.        2.5       5.0       7.5       10.0
 (HOURS)     (AF)       (CFS)
--------------------------------------------------------------------------
  0.04       0.0001      0.03  Q          .         .         .         .
  0.15       0.0003      0.03  Q          .         .         .         .
  0.26       0.0006      0.03  Q          .         .         .         .
  0.36       0.0008      0.03  Q          .         .         .         .
```

0.47	0.0011	0.03	Q	.	.	.	.
0.57	0.0014	0.03	Q	.	.	.	.
0.68	0.0016	0.03	Q	.	.	.	.
0.78	0.0019	0.03	Q	.	.	.	.
0.89	0.0022	0.03	Q	.	.	.	.
1.00	0.0024	0.03	Q	.	.	.	.
1.10	0.0027	0.03	Q	.	.	.	.
1.21	0.0030	0.03	Q	.	.	.	.
1.31	0.0033	0.03	Q	.	.	.	.
1.42	0.0035	0.03	Q	.	.	.	.
1.52	0.0038	0.03	Q	.	.	.	.
1.63	0.0041	0.03	Q	.	.	.	.
1.73	0.0044	0.03	Q	.	.	.	.
1.84	0.0047	0.03	Q	.	.	.	.
1.95	0.0049	0.03	Q	.	.	.	.
2.05	0.0052	0.03	Q	.	.	.	.
2.16	0.0055	0.03	Q	.	.	.	.
2.26	0.0058	0.03	Q	.	.	.	.
2.37	0.0061	0.03	Q	.	.	.	.
2.47	0.0064	0.03	Q	.	.	.	.
2.58	0.0067	0.03	Q	.	.	.	.
2.69	0.0069	0.03	Q	.	.	.	.
2.79	0.0072	0.03	Q	.	.	.	.
2.90	0.0075	0.03	Q	.	.	.	.
3.00	0.0078	0.03	Q	.	.	.	.
3.11	0.0081	0.03	Q	.	.	.	.
3.21	0.0084	0.03	Q	.	.	.	.
3.32	0.0087	0.03	Q	.	.	.	.
3.43	0.0090	0.03	Q	.	.	.	.
3.53	0.0093	0.03	Q	.	.	.	.
3.64	0.0096	0.04	Q	.	.	.	.
3.74	0.0099	0.04	Q	.	.	.	.
3.85	0.0102	0.04	Q	.	.	.	.
3.95	0.0106	0.04	Q	.	.	.	.
4.06	0.0109	0.04	Q	.	.	.	.
4.17	0.0112	0.04	Q	.	.	.	.
4.27	0.0115	0.04	Q	.	.	.	.
4.38	0.0118	0.04	Q	.	.	.	.
4.48	0.0121	0.04	Q	.	.	.	.
4.59	0.0125	0.04	Q	.	.	.	.
4.69	0.0128	0.04	Q	.	.	.	.
4.80	0.0131	0.04	Q	.	.	.	.
4.90	0.0134	0.04	Q	.	.	.	.
5.01	0.0138	0.04	Q	.	.	.	.
5.12	0.0141	0.04	Q	.	.	.	.
5.22	0.0144	0.04	Q	.	.	.	.
5.33	0.0147	0.04	Q	.	.	.	.
5.43	0.0151	0.04	Q	.	.	.	.
5.54	0.0154	0.04	Q	.	.	.	.
5.64	0.0158	0.04	Q	.	.	.	.
5.75	0.0161	0.04	Q	.	.	.	.
5.86	0.0164	0.04	Q	.	.	.	.

5.96	0.0168	0.04	Q	.	.	.	.
6.07	0.0171	0.04	Q	.	.	.	.
6.17	0.0175	0.04	Q	.	.	.	.
6.28	0.0179	0.04	Q	.	.	.	.
6.38	0.0182	0.04	Q	.	.	.	.
6.49	0.0186	0.04	Q	.	.	.	.
6.60	0.0189	0.04	Q	.	.	.	.
6.70	0.0193	0.04	Q	.	.	.	.
6.81	0.0197	0.04	Q	.	.	.	.
6.91	0.0200	0.04	Q	.	.	.	.
7.02	0.0204	0.04	Q	.	.	.	.
7.12	0.0208	0.04	Q	.	.	.	.
7.23	0.0211	0.04	Q	.	.	.	.
7.34	0.0215	0.04	Q	.	.	.	.
7.44	0.0219	0.04	Q	.	.	.	.
7.55	0.0223	0.04	Q	.	.	.	.
7.65	0.0227	0.04	Q	.	.	.	.
7.76	0.0231	0.05	Q	.	.	.	.
7.86	0.0235	0.05	Q	.	.	.	.
7.97	0.0239	0.05	Q	.	.	.	.
8.07	0.0243	0.05	Q	.	.	.	.
8.18	0.0247	0.05	Q	.	.	.	.
8.29	0.0251	0.05	Q	.	.	.	.
8.39	0.0255	0.05	Q	.	.	.	.
8.50	0.0259	0.05	Q	.	.	.	.
8.60	0.0263	0.05	Q	.	.	.	.
8.71	0.0268	0.05	Q	.	.	.	.
8.81	0.0272	0.05	Q	.	.	.	.
8.92	0.0276	0.05	Q	.	.	.	.
9.03	0.0281	0.05	Q	.	.	.	.
9.13	0.0285	0.05	Q	.	.	.	.
9.24	0.0289	0.05	Q	.	.	.	.
9.34	0.0294	0.05	Q	.	.	.	.
9.45	0.0298	0.05	Q	.	.	.	.
9.55	0.0303	0.05	Q	.	.	.	.
9.66	0.0307	0.05	Q	.	.	.	.
9.77	0.0312	0.05	Q	.	.	.	.
9.87	0.0317	0.05	Q	.	.	.	.
9.98	0.0322	0.05	Q	.	.	.	.
10.08	0.0326	0.06	Q	.	.	.	.
10.19	0.0331	0.06	Q	.	.	.	.
10.29	0.0336	0.06	Q	.	.	.	.
10.40	0.0341	0.06	Q	.	.	.	.
10.51	0.0346	0.06	Q	.	.	.	.
10.61	0.0351	0.06	Q	.	.	.	.
10.72	0.0356	0.06	Q	.	.	.	.
10.82	0.0362	0.06	Q	.	.	.	.
10.93	0.0367	0.06	Q	.	.	.	.
11.03	0.0372	0.06	Q	.	.	.	.
11.14	0.0378	0.06	Q	.	.	.	.
11.24	0.0383	0.06	Q	.	.	.	.
11.35	0.0389	0.06	Q	.	.	.	.

11.46	0.0394	0.07	Q	.	.	.	.
11.56	0.0400	0.07	Q	.	.	.	.
11.67	0.0406	0.07	Q	.	.	.	.
11.77	0.0412	0.07	Q	.	.	.	.
11.88	0.0418	0.07	Q	.	.	.	.
11.98	0.0424	0.07	Q	.	.	.	.
12.09	0.0431	0.09	Q	.	.	.	.
12.20	0.0439	0.09	Q	.	.	.	.
12.30	0.0447	0.09	Q	.	.	.	.
12.41	0.0455	0.09	Q	.	.	.	.
12.51	0.0463	0.10	Q	.	.	.	.
12.62	0.0472	0.10	Q	.	.	.	.
12.72	0.0480	0.10	Q	.	.	.	.
12.83	0.0489	0.10	Q	.	.	.	.
12.94	0.0498	0.10	Q	.	.	.	.
13.04	0.0507	0.10	Q	.	.	.	.
13.15	0.0516	0.11	Q	.	.	.	.
13.25	0.0525	0.11	Q	.	.	.	.
13.36	0.0535	0.11	Q	.	.	.	.
13.46	0.0545	0.11	Q	.	.	.	.
13.57	0.0555	0.12	Q	.	.	.	.
13.68	0.0565	0.12	Q	.	.	.	.
13.78	0.0575	0.12	Q	.	.	.	.
13.89	0.0586	0.12	Q	.	.	.	.
13.99	0.0597	0.13	Q	.	.	.	.
14.10	0.0608	0.13	Q	.	.	.	.
14.20	0.0620	0.14	Q	.	.	.	.
14.31	0.0632	0.14	Q	.	.	.	.
14.41	0.0644	0.14	Q	.	.	.	.
14.52	0.0657	0.15	Q	.	.	.	.
14.63	0.0670	0.16	Q	.	.	.	.
14.73	0.0684	0.16	Q	.	.	.	.
14.84	0.0698	0.17	Q	.	.	.	.
14.94	0.0713	0.17	Q	.	.	.	.
15.05	0.0729	0.19	Q	.	.	.	.
15.15	0.0745	0.19	Q	.	.	.	.
15.26	0.0764	0.23	Q	.	.	.	.
15.37	0.0784	0.24	Q	.	.	.	.
15.47	0.0805	0.23	Q	.	.	.	.
15.58	0.0826	0.26	.Q	.	.	.	.
15.68	0.0853	0.34	.Q	.	.	.	.
15.79	0.0886	0.43	.Q	.	.	.	.
15.89	0.0935	0.68	. Q	.	.	.	.
16.00	0.1007	0.98	. Q	.	.	.	.
16.11	0.1189	3.20	.	. Q	.	.	.
16.21	0.1352	0.53	. Q	.	.	.	.
16.32	0.1388	0.30	.Q	.	.	.	.
16.42	0.1412	0.24	Q	.	.	.	.
16.53	0.1431	0.21	Q	.	.	.	.
16.63	0.1448	0.18	Q	.	.	.	.
16.74	0.1463	0.16	Q	.	.	.	.
16.85	0.1477	0.15	Q	.	.	.	.

16.95	0.1490	0.14	Q	.	.	.	.
17.06	0.1502	0.13	Q	.	.	.	.
17.16	0.1513	0.13	Q	.	.	.	.
17.27	0.1523	0.12	Q	.	.	.	.
17.37	0.1534	0.11	Q	.	.	.	.
17.48	0.1543	0.11	Q	.	.	.	.
17.58	0.1553	0.11	Q	.	.	.	.
17.69	0.1562	0.10	Q	.	.	.	.
17.80	0.1571	0.10	Q	.	.	.	.
17.90	0.1579	0.10	Q	.	.	.	.
18.01	0.1587	0.09	Q	.	.	.	.
18.11	0.1594	0.07	Q	.	.	.	.
18.22	0.1600	0.07	Q	.	.	.	.
18.32	0.1606	0.07	Q	.	.	.	.
18.43	0.1612	0.06	Q	.	.	.	.
18.54	0.1618	0.06	Q	.	.	.	.
18.64	0.1623	0.06	Q	.	.	.	.
18.75	0.1628	0.06	Q	.	.	.	.
18.85	0.1634	0.06	Q	.	.	.	.
18.96	0.1639	0.06	Q	.	.	.	.
19.06	0.1643	0.06	Q	.	.	.	.
19.17	0.1648	0.05	Q	.	.	.	.
19.28	0.1653	0.05	Q	.	.	.	.
19.38	0.1658	0.05	Q	.	.	.	.
19.49	0.1662	0.05	Q	.	.	.	.
19.59	0.1667	0.05	Q	.	.	.	.
19.70	0.1671	0.05	Q	.	.	.	.
19.80	0.1675	0.05	Q	.	.	.	.
19.91	0.1679	0.05	Q	.	.	.	.
20.02	0.1683	0.05	Q	.	.	.	.
20.12	0.1688	0.05	Q	.	.	.	.
20.23	0.1692	0.05	Q	.	.	.	.
20.33	0.1695	0.04	Q	.	.	.	.
20.44	0.1699	0.04	Q	.	.	.	.
20.54	0.1703	0.04	Q	.	.	.	.
20.65	0.1707	0.04	Q	.	.	.	.
20.76	0.1711	0.04	Q	.	.	.	.
20.86	0.1714	0.04	Q	.	.	.	.
20.97	0.1718	0.04	Q	.	.	.	.
21.07	0.1721	0.04	Q	.	.	.	.
21.18	0.1725	0.04	Q	.	.	.	.
21.28	0.1728	0.04	Q	.	.	.	.
21.39	0.1732	0.04	Q	.	.	.	.
21.49	0.1735	0.04	Q	.	.	.	.
21.60	0.1738	0.04	Q	.	.	.	.
21.71	0.1742	0.04	Q	.	.	.	.
21.81	0.1745	0.04	Q	.	.	.	.
21.92	0.1748	0.04	Q	.	.	.	.
22.02	0.1751	0.04	Q	.	.	.	.
22.13	0.1754	0.04	Q	.	.	.	.
22.23	0.1757	0.04	Q	.	.	.	.
22.34	0.1761	0.03	Q	.	.	.	.

22.45	0.1764	0.03	Q	.	.	.	.
22.55	0.1767	0.03	Q	.	.	.	.
22.66	0.1770	0.03	Q	.	.	.	.
22.76	0.1772	0.03	Q	.	.	.	.
22.87	0.1775	0.03	Q	.	.	.	.
22.97	0.1778	0.03	Q	.	.	.	.
23.08	0.1781	0.03	Q	.	.	.	.
23.19	0.1784	0.03	Q	.	.	.	.
23.29	0.1787	0.03	Q	.	.	.	.
23.40	0.1790	0.03	Q	.	.	.	.
23.50	0.1792	0.03	Q	.	.	.	.
23.61	0.1795	0.03	Q	.	.	.	.
23.71	0.1798	0.03	Q	.	.	.	.
23.82	0.1800	0.03	Q	.	.	.	.
23.92	0.1803	0.03	Q	.	.	.	.
24.03	0.1806	0.03	Q	.	.	.	.
24.14	0.1807	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1445.5
10%	38.0
20%	19.0
30%	12.7
40%	6.3
50%	6.3
60%	6.3
70%	6.3
80%	6.3
90%	6.3

APPENDIX C.6

C.6 Node 141

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
        (C) Copyright 1989-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1355

                          Analysis prepared by:

                        FUSCOE ENGINEERING, INC
                            16795 VON KARMAN
                              SUITE 100
                            IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 141
  3/25/14   OS(C:)/aes2013/hydrosft/Ch1/DPH/SAUHnode141
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    1.36
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.040
    LOW LOSS FRACTION = 0.157
    TIME OF CONCENTRATION(MIN.) =  8.90
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.33
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.09

**************************************************************************
  TIME      VOLUME        Q     0.        2.5        5.0        7.5       10.0
 (HOURS)    (AF)       (CFS)
--------------------------------------------------------------------------
  0.13      0.0003      0.06  Q           .          .          .          .
  0.28      0.0010      0.06  Q           .          .          .          .
  0.43      0.0018      0.06  Q           .          .          .          .
  0.57      0.0025      0.06  Q           .          .          .          .
```

0.72	0.0032	0.06	Q	.	.	.	.
0.87	0.0040	0.06	Q	.	.	.	.
1.02	0.0047	0.06	Q	.	.	.	.
1.17	0.0055	0.06	Q	.	.	.	.
1.32	0.0062	0.06	Q	.	.	.	.
1.46	0.0070	0.06	Q	.	.	.	.
1.61	0.0077	0.06	Q	.	.	.	.
1.76	0.0085	0.06	Q	.	.	.	.
1.91	0.0093	0.06	Q	.	.	.	.
2.06	0.0101	0.06	Q	.	.	.	.
2.21	0.0108	0.06	Q	.	.	.	.
2.35	0.0116	0.06	Q	.	.	.	.
2.50	0.0124	0.07	Q	.	.	.	.
2.65	0.0132	0.07	Q	.	.	.	.
2.80	0.0140	0.07	Q	.	.	.	.
2.95	0.0148	0.07	Q	.	.	.	.
3.10	0.0156	0.07	Q	.	.	.	.
3.24	0.0165	0.07	Q	.	.	.	.
3.39	0.0173	0.07	Q	.	.	.	.
3.54	0.0181	0.07	Q	.	.	.	.
3.69	0.0190	0.07	Q	.	.	.	.
3.84	0.0198	0.07	Q	.	.	.	.
3.99	0.0207	0.07	Q	.	.	.	.
4.13	0.0215	0.07	Q	.	.	.	.
4.28	0.0224	0.07	Q	.	.	.	.
4.43	0.0233	0.07	Q	.	.	.	.
4.58	0.0241	0.07	Q	.	.	.	.
4.73	0.0250	0.07	Q	.	.	.	.
4.88	0.0259	0.07	Q	.	.	.	.
5.02	0.0268	0.07	Q	.	.	.	.
5.17	0.0277	0.07	Q	.	.	.	.
5.32	0.0287	0.08	Q	.	.	.	.
5.47	0.0296	0.08	Q	.	.	.	.
5.62	0.0305	0.08	Q	.	.	.	.
5.77	0.0315	0.08	Q	.	.	.	.
5.91	0.0324	0.08	Q	.	.	.	.
6.06	0.0334	0.08	Q	.	.	.	.
6.21	0.0343	0.08	Q	.	.	.	.
6.36	0.0353	0.08	Q	.	.	.	.
6.51	0.0363	0.08	Q	.	.	.	.
6.66	0.0373	0.08	Q	.	.	.	.
6.80	0.0383	0.08	Q	.	.	.	.
6.95	0.0393	0.08	Q	.	.	.	.
7.10	0.0403	0.08	Q	.	.	.	.
7.25	0.0414	0.09	Q	.	.	.	.
7.40	0.0424	0.09	Q	.	.	.	.
7.55	0.0435	0.09	Q	.	.	.	.
7.69	0.0446	0.09	Q	.	.	.	.
7.84	0.0456	0.09	Q	.	.	.	.
7.99	0.0467	0.09	Q	.	.	.	.
8.14	0.0479	0.09	Q	.	.	.	.
8.29	0.0490	0.09	Q	.	.	.	.

8.44	0.0501	0.09	Q	.	.	.	.
8.58	0.0513	0.09	Q	.	.	.	.
8.73	0.0524	0.10	Q	.	.	.	.
8.88	0.0536	0.10	Q	.	.	.	.
9.03	0.0548	0.10	Q	.	.	.	.
9.18	0.0560	0.10	Q	.	.	.	.
9.32	0.0572	0.10	Q	.	.	.	.
9.47	0.0585	0.10	Q	.	.	.	.
9.62	0.0597	0.10	Q	.	.	.	.
9.77	0.0610	0.10	Q	.	.	.	.
9.92	0.0623	0.11	Q	.	.	.	.
10.07	0.0636	0.11	Q	.	.	.	.
10.22	0.0649	0.11	Q	.	.	.	.
10.36	0.0663	0.11	Q	.	.	.	.
10.51	0.0677	0.11	Q	.	.	.	.
10.66	0.0691	0.12	Q	.	.	.	.
10.81	0.0705	0.12	Q	.	.	.	.
10.96	0.0720	0.12	Q	.	.	.	.
11.10	0.0734	0.12	Q	.	.	.	.
11.25	0.0750	0.12	Q	.	.	.	.
11.40	0.0765	0.13	Q	.	.	.	.
11.55	0.0781	0.13	Q	.	.	.	.
11.70	0.0797	0.13	Q	.	.	.	.
11.85	0.0813	0.13	Q	.	.	.	.
11.99	0.0830	0.14	Q	.	.	.	.
12.14	0.0848	0.16	Q	.	.	.	.
12.29	0.0868	0.18	Q	.	.	.	.
12.44	0.0891	0.18	Q	.	.	.	.
12.59	0.0914	0.19	Q	.	.	.	.
12.74	0.0937	0.19	Q	.	.	.	.
12.89	0.0961	0.20	Q	.	.	.	.
13.03	0.0986	0.20	Q	.	.	.	.
13.18	0.1011	0.21	Q	.	.	.	.
13.33	0.1037	0.21	Q	.	.	.	.
13.48	0.1064	0.22	Q	.	.	.	.
13.63	0.1091	0.23	Q	.	.	.	.
13.77	0.1120	0.24	Q	.	.	.	.
13.92	0.1149	0.24	Q	.	.	.	.
14.07	0.1179	0.25	.Q	.	.	.	.
14.22	0.1211	0.26	.Q	.	.	.	.
14.37	0.1244	0.28	.Q	.	.	.	.
14.52	0.1279	0.29	.Q	.	.	.	.
14.66	0.1316	0.31	.Q	.	.	.	.
14.81	0.1356	0.33	.Q	.	.	.	.
14.96	0.1398	0.36	.Q	.	.	.	.
15.11	0.1443	0.38	.Q	.	.	.	.
15.26	0.1493	0.43	.Q	.	.	.	.
15.41	0.1548	0.47	.Q	.	.	.	.
15.55	0.1606	0.48	.Q	.	.	.	.
15.70	0.1669	0.54	. Q	.	.	.	.
15.85	0.1754	0.83	. Q	.	.	.	.
16.00	0.1875	1.15	. Q	.	.	.	.

16.15	0.2162	3.52	.	.	Q	.	.	.
16.30	0.2418	0.65	. Q	.		.	.	.
16.44	0.2486	0.45	.Q	.		.	.	.
16.59	0.2538	0.41	.Q	.		.	.	.
16.74	0.2584	0.34	.Q	.		.	.	.
16.89	0.2623	0.30	.Q	.		.	.	.
17.04	0.2658	0.27	.Q	.		.	.	.
17.19	0.2690	0.25	Q	.		.	.	.
17.33	0.2720	0.23	Q	.		.	.	.
17.48	0.2747	0.22	Q	.		.	.	.
17.63	0.2773	0.21	Q	.		.	.	.
17.78	0.2798	0.20	Q	.		.	.	.
17.93	0.2821	0.19	Q	.		.	.	.
18.08	0.2844	0.18	Q	.		.	.	.
18.23	0.2863	0.14	Q	.		.	.	.
18.37	0.2879	0.13	Q	.		.	.	.
18.52	0.2895	0.13	Q	.		.	.	.
18.67	0.2910	0.12	Q	.		.	.	.
18.82	0.2925	0.12	Q	.		.	.	.
18.97	0.2939	0.11	Q	.		.	.	.
19.11	0.2952	0.11	Q	.		.	.	.
19.26	0.2965	0.11	Q	.		.	.	.
19.41	0.2978	0.10	Q	.		.	.	.
19.56	0.2991	0.10	Q	.		.	.	.
19.71	0.3003	0.10	Q	.		.	.	.
19.86	0.3014	0.09	Q	.		.	.	.
20.01	0.3026	0.09	Q	.		.	.	.
20.15	0.3037	0.09	Q	.		.	.	.
20.30	0.3048	0.09	Q	.		.	.	.
20.45	0.3059	0.09	Q	.		.	.	.
20.60	0.3069	0.08	Q	.		.	.	.
20.75	0.3080	0.08	Q	.		.	.	.
20.89	0.3090	0.08	Q	.		.	.	.
21.04	0.3100	0.08	Q	.		.	.	.
21.19	0.3109	0.08	Q	.		.	.	.
21.34	0.3119	0.08	Q	.		.	.	.
21.49	0.3128	0.08	Q	.		.	.	.
21.64	0.3137	0.07	Q	.		.	.	.
21.78	0.3146	0.07	Q	.		.	.	.
21.93	0.3155	0.07	Q	.		.	.	.
22.08	0.3164	0.07	Q	.		.	.	.
22.23	0.3172	0.07	Q	.		.	.	.
22.38	0.3181	0.07	Q	.		.	.	.
22.53	0.3189	0.07	Q	.		.	.	.
22.67	0.3197	0.07	Q	.		.	.	.
22.82	0.3206	0.07	Q	.		.	.	.
22.97	0.3214	0.06	Q	.		.	.	.
23.12	0.3221	0.06	Q	.		.	.	.
23.27	0.3229	0.06	Q	.		.	.	.
23.42	0.3237	0.06	Q	.		.	.	.
23.57	0.3244	0.06	Q	.		.	.	.
23.71	0.3252	0.06	Q	.		.	.	.

23.86	0.3259	0.06	Q	.	.	.	.
24.01	0.3267	0.06	Q	.	.	.	.
24.16	0.3270	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1441.8
10%	106.8
20%	26.7
30%	17.8
40%	8.9
50%	8.9
60%	8.9
70%	8.9
80%	8.9
90%	8.9

APPENDIX C.7

C.7 Node 144

```
**************************************************************************
                    SMALL AREA UNIT HYDROGRAPH MODEL
==========================================================================
        (C) Copyright 1989-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1355

                          Analysis prepared by:

                        FUSCOE ENGINEERING, INC
                            16795 VON KARMAN
                              SUITE 100
                            IRVINE, CA 92606

**************************************************************************
--------------------------------------------------------------------------

 Problem Descriptions:
  Dana Point Harbor
  10-Year Small Area Unit Hydrograph at Area D Node 144
  3/25/14   OS(C:)/aes2013/hydrosft/Ch1/DPH/SAUHnode144
--------------------------------------------------------------------------


    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    0.50
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.076
    LOW LOSS FRACTION = 0.242
    TIME OF CONCENTRATION(MIN.) =  5.98
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

--------------------------------------------------------------------------

    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.11
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.04

**************************************************************************
  TIME      VOLUME       Q    0.        2.5       5.0       7.5       10.0
 (HOURS)    (AF)       (CFS)
--------------------------------------------------------------------------
  0.05      0.0000      0.00  Q         .         .         .         .
  0.15      0.0001      0.02  Q         .         .         .         .
  0.25      0.0002      0.02  Q         .         .         .         .
  0.35      0.0004      0.02  Q         .         .         .         .
```

0.45	0.0006	0.02	Q	.	.	.	.
0.55	0.0007	0.02	Q	.	.	.	.
0.65	0.0009	0.02	Q	.	.	.	.
0.75	0.0011	0.02	Q	.	.	.	.
0.85	0.0012	0.02	Q	.	.	.	.
0.95	0.0014	0.02	Q	.	.	.	.
1.05	0.0015	0.02	Q	.	.	.	.
1.15	0.0017	0.02	Q	.	.	.	.
1.25	0.0019	0.02	Q	.	.	.	.
1.35	0.0021	0.02	Q	.	.	.	.
1.45	0.0022	0.02	Q	.	.	.	.
1.55	0.0024	0.02	Q	.	.	.	.
1.65	0.0026	0.02	Q	.	.	.	.
1.75	0.0027	0.02	Q	.	.	.	.
1.85	0.0029	0.02	Q	.	.	.	.
1.95	0.0031	0.02	Q	.	.	.	.
2.05	0.0032	0.02	Q	.	.	.	.
2.15	0.0034	0.02	Q	.	.	.	.
2.25	0.0036	0.02	Q	.	.	.	.
2.35	0.0038	0.02	Q	.	.	.	.
2.45	0.0039	0.02	Q	.	.	.	.
2.54	0.0041	0.02	Q	.	.	.	.
2.64	0.0043	0.02	Q	.	.	.	.
2.74	0.0045	0.02	Q	.	.	.	.
2.84	0.0047	0.02	Q	.	.	.	.
2.94	0.0048	0.02	Q	.	.	.	.
3.04	0.0050	0.02	Q	.	.	.	.
3.14	0.0052	0.02	Q	.	.	.	.
3.24	0.0054	0.02	Q	.	.	.	.
3.34	0.0056	0.02	Q	.	.	.	.
3.44	0.0058	0.02	Q	.	.	.	.
3.54	0.0059	0.02	Q	.	.	.	.
3.64	0.0061	0.02	Q	.	.	.	.
3.74	0.0063	0.02	Q	.	.	.	.
3.84	0.0065	0.02	Q	.	.	.	.
3.94	0.0067	0.02	Q	.	.	.	.
4.04	0.0069	0.02	Q	.	.	.	.
4.14	0.0071	0.02	Q	.	.	.	.
4.24	0.0073	0.02	Q	.	.	.	.
4.34	0.0075	0.02	Q	.	.	.	.
4.44	0.0077	0.02	Q	.	.	.	.
4.54	0.0079	0.02	Q	.	.	.	.
4.64	0.0081	0.02	Q	.	.	.	.
4.74	0.0083	0.02	Q	.	.	.	.
4.84	0.0085	0.02	Q	.	.	.	.
4.94	0.0087	0.02	Q	.	.	.	.
5.04	0.0089	0.02	Q	.	.	.	.
5.14	0.0091	0.02	Q	.	.	.	.
5.24	0.0093	0.02	Q	.	.	.	.
5.34	0.0095	0.02	Q	.	.	.	.
5.44	0.0097	0.03	Q	.	.	.	.
5.54	0.0099	0.03	Q	.	.	.	.

5.63	0.0101	0.03	Q	.	.	.	.
5.73	0.0103	0.03	Q	.	.	.	.
5.83	0.0105	0.03	Q	.	.	.	.
5.93	0.0107	0.03	Q	.	.	.	.
6.03	0.0109	0.03	Q	.	.	.	.
6.13	0.0111	0.03	Q	.	.	.	.
6.23	0.0114	0.03	Q	.	.	.	.
6.33	0.0116	0.03	Q	.	.	.	.
6.43	0.0118	0.03	Q	.	.	.	.
6.53	0.0120	0.03	Q	.	.	.	.
6.63	0.0122	0.03	Q	.	.	.	.
6.73	0.0125	0.03	Q	.	.	.	.
6.83	0.0127	0.03	Q	.	.	.	.
6.93	0.0129	0.03	Q	.	.	.	.
7.03	0.0131	0.03	Q	.	.	.	.
7.13	0.0134	0.03	Q	.	.	.	.
7.23	0.0136	0.03	Q	.	.	.	.
7.33	0.0138	0.03	Q	.	.	.	.
7.43	0.0141	0.03	Q	.	.	.	.
7.53	0.0143	0.03	Q	.	.	.	.
7.63	0.0145	0.03	Q	.	.	.	.
7.73	0.0148	0.03	Q	.	.	.	.
7.83	0.0150	0.03	Q	.	.	.	.
7.93	0.0153	0.03	Q	.	.	.	.
8.03	0.0155	0.03	Q	.	.	.	.
8.13	0.0158	0.03	Q	.	.	.	.
8.23	0.0160	0.03	Q	.	.	.	.
8.33	0.0163	0.03	Q	.	.	.	.
8.43	0.0165	0.03	Q	.	.	.	.
8.52	0.0168	0.03	Q	.	.	.	.
8.62	0.0170	0.03	Q	.	.	.	.
8.72	0.0173	0.03	Q	.	.	.	.
8.82	0.0175	0.03	Q	.	.	.	.
8.92	0.0178	0.03	Q	.	.	.	.
9.02	0.0181	0.03	Q	.	.	.	.
9.12	0.0183	0.03	Q	.	.	.	.
9.22	0.0186	0.03	Q	.	.	.	.
9.32	0.0189	0.03	Q	.	.	.	.
9.42	0.0192	0.03	Q	.	.	.	.
9.52	0.0194	0.03	Q	.	.	.	.
9.62	0.0197	0.03	Q	.	.	.	.
9.72	0.0200	0.03	Q	.	.	.	.
9.82	0.0203	0.03	Q	.	.	.	.
9.92	0.0206	0.04	Q	.	.	.	.
10.02	0.0209	0.04	Q	.	.	.	.
10.12	0.0212	0.04	Q	.	.	.	.
10.22	0.0215	0.04	Q	.	.	.	.
10.32	0.0218	0.04	Q	.	.	.	.
10.42	0.0221	0.04	Q	.	.	.	.
10.52	0.0224	0.04	Q	.	.	.	.
10.62	0.0227	0.04	Q	.	.	.	.
10.72	0.0230	0.04	Q	.	.	.	.

10.82	0.0233	0.04	Q	.	.	.	.
10.92	0.0237	0.04	Q	.	.	.	.
11.02	0.0240	0.04	Q	.	.	.	.
11.12	0.0243	0.04	Q	.	.	.	.
11.22	0.0247	0.04	Q	.	.	.	.
11.32	0.0250	0.04	Q	.	.	.	.
11.42	0.0253	0.04	Q	.	.	.	.
11.52	0.0257	0.04	Q	.	.	.	.
11.61	0.0260	0.04	Q	.	.	.	.
11.71	0.0264	0.04	Q	.	.	.	.
11.81	0.0268	0.04	Q	.	.	.	.
11.91	0.0271	0.05	Q	.	.	.	.
12.01	0.0275	0.05	Q	.	.	.	.
12.11	0.0279	0.06	Q	.	.	.	.
12.21	0.0284	0.06	Q	.	.	.	.
12.31	0.0289	0.06	Q	.	.	.	.
12.41	0.0294	0.06	Q	.	.	.	.
12.51	0.0299	0.06	Q	.	.	.	.
12.61	0.0305	0.06	Q	.	.	.	.
12.71	0.0310	0.06	Q	.	.	.	.
12.81	0.0315	0.07	Q	.	.	.	.
12.91	0.0321	0.07	Q	.	.	.	.
13.01	0.0326	0.07	Q	.	.	.	.
13.11	0.0332	0.07	Q	.	.	.	.
13.21	0.0337	0.07	Q	.	.	.	.
13.31	0.0343	0.07	Q	.	.	.	.
13.41	0.0349	0.07	Q	.	.	.	.
13.51	0.0355	0.07	Q	.	.	.	.
13.61	0.0361	0.08	Q	.	.	.	.
13.71	0.0368	0.08	Q	.	.	.	.
13.81	0.0374	0.08	Q	.	.	.	.
13.91	0.0381	0.08	Q	.	.	.	.
14.01	0.0387	0.08	Q	.	.	.	.
14.11	0.0394	0.09	Q	.	.	.	.
14.21	0.0401	0.09	Q	.	.	.	.
14.31	0.0409	0.09	Q	.	.	.	.
14.41	0.0416	0.09	Q	.	.	.	.
14.51	0.0424	0.10	Q	.	.	.	.
14.60	0.0432	0.10	Q	.	.	.	.
14.70	0.0441	0.10	Q	.	.	.	.
14.80	0.0449	0.11	Q	.	.	.	.
14.90	0.0458	0.11	Q	.	.	.	.
15.00	0.0468	0.12	Q	.	.	.	.
15.10	0.0478	0.13	Q	.	.	.	.
15.20	0.0489	0.14	Q	.	.	.	.
15.30	0.0501	0.15	Q	.	.	.	.
15.40	0.0514	0.16	Q	.	.	.	.
15.50	0.0527	0.15	Q	.	.	.	.
15.60	0.0540	0.17	Q	.	.	.	.
15.70	0.0556	0.21	Q	.	.	.	.
15.80	0.0575	0.26	.Q	.	.	.	.
15.90	0.0601	0.38	.Q	.	.	.	.

16.00	0.0638	0.52	. Q	.	.	.	.
16.10	0.0727	1.62	.	Q	.	.	.
16.20	0.0806	0.30	.Q	.	.	.	.
16.30	0.0826	0.19	Q	.	.	.	.
16.40	0.0840	0.14	Q	.	.	.	.
16.50	0.0851	0.14	Q	.	.	.	.
16.60	0.0862	0.12	Q	.	.	.	.
16.70	0.0872	0.11	Q	.	.	.	.
16.80	0.0881	0.10	Q	.	.	.	.
16.90	0.0889	0.09	Q	.	.	.	.
17.00	0.0896	0.09	Q	.	.	.	.
17.10	0.0904	0.08	Q	.	.	.	.
17.20	0.0910	0.08	Q	.	.	.	.
17.30	0.0917	0.08	Q	.	.	.	.
17.40	0.0923	0.07	Q	.	.	.	.
17.49	0.0929	0.07	Q	.	.	.	.
17.59	0.0935	0.07	Q	.	.	.	.
17.69	0.0940	0.07	Q	.	.	.	.
17.79	0.0945	0.06	Q	.	.	.	.
17.89	0.0951	0.06	Q	.	.	.	.
17.99	0.0956	0.06	Q	.	.	.	.
18.09	0.0960	0.05	Q	.	.	.	.
18.19	0.0964	0.04	Q	.	.	.	.
18.29	0.0968	0.04	Q	.	.	.	.
18.39	0.0971	0.04	Q	.	.	.	.
18.49	0.0975	0.04	Q	.	.	.	.
18.59	0.0978	0.04	Q	.	.	.	.
18.69	0.0981	0.04	Q	.	.	.	.
18.79	0.0984	0.04	Q	.	.	.	.
18.89	0.0988	0.04	Q	.	.	.	.
18.99	0.0991	0.04	Q	.	.	.	.
19.09	0.0994	0.04	Q	.	.	.	.
19.19	0.0997	0.04	Q	.	.	.	.
19.29	0.0999	0.03	Q	.	.	.	.
19.39	0.1002	0.03	Q	.	.	.	.
19.49	0.1005	0.03	Q	.	.	.	.
19.59	0.1008	0.03	Q	.	.	.	.
19.69	0.1010	0.03	Q	.	.	.	.
19.79	0.1013	0.03	Q	.	.	.	.
19.89	0.1016	0.03	Q	.	.	.	.
19.99	0.1018	0.03	Q	.	.	.	.
20.09	0.1021	0.03	Q	.	.	.	.
20.19	0.1023	0.03	Q	.	.	.	.
20.29	0.1025	0.03	Q	.	.	.	.
20.39	0.1028	0.03	Q	.	.	.	.
20.48	0.1030	0.03	Q	.	.	.	.
20.58	0.1032	0.03	Q	.	.	.	.
20.68	0.1035	0.03	Q	.	.	.	.
20.78	0.1037	0.03	Q	.	.	.	.
20.88	0.1039	0.03	Q	.	.	.	.
20.98	0.1041	0.03	Q	.	.	.	.
21.08	0.1044	0.03	Q	.	.	.	.

21.18	0.1046	0.03	Q	.	.	.	.
21.28	0.1048	0.03	Q	.	.	.	.
21.38	0.1050	0.03	Q	.	.	.	.
21.48	0.1052	0.02	Q	.	.	.	.
21.58	0.1054	0.02	Q	.	.	.	.
21.68	0.1056	0.02	Q	.	.	.	.
21.78	0.1058	0.02	Q	.	.	.	.
21.88	0.1060	0.02	Q	.	.	.	.
21.98	0.1062	0.02	Q	.	.	.	.
22.08	0.1064	0.02	Q	.	.	.	.
22.18	0.1066	0.02	Q	.	.	.	.
22.28	0.1068	0.02	Q	.	.	.	.
22.38	0.1069	0.02	Q	.	.	.	.
22.48	0.1071	0.02	Q	.	.	.	.
22.58	0.1073	0.02	Q	.	.	.	.
22.68	0.1075	0.02	Q	.	.	.	.
22.78	0.1077	0.02	Q	.	.	.	.
22.88	0.1079	0.02	Q	.	.	.	.
22.98	0.1080	0.02	Q	.	.	.	.
23.08	0.1082	0.02	Q	.	.	.	.
23.18	0.1084	0.02	Q	.	.	.	.
23.28	0.1085	0.02	Q	.	.	.	.
23.38	0.1087	0.02	Q	.	.	.	.
23.48	0.1089	0.02	Q	.	.	.	.
23.57	0.1091	0.02	Q	.	.	.	.
23.67	0.1092	0.02	Q	.	.	.	.
23.77	0.1094	0.02	Q	.	.	.	.
23.87	0.1095	0.02	Q	.	.	.	.
23.97	0.1097	0.02	Q	.	.	.	.
24.07	0.1099	0.02	Q	.	.	.	.
24.17	0.1100	0.00	Q	.	.	.	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1441.2
10%	47.8
20%	17.9
30%	12.0
40%	6.0
50%	6.0
60%	6.0
70%	6.0
80%	6.0
90%	6.0

APPENDIX D

D. HydroCAD Detention Modeling (Summary, Hydrograph, Stage-Storage Table, Stage-Discharge Table)
   - D.1 Basin 5
   - D.2 Basin 6
   - D.3 Basin 7
   - D.4 Basin 8

APPENDIX D.1

D.1 Basin 5

Summary for Pond 2P: Basin 5

Inflow	=	7.17 cfs @	16.15 hrs, Volume=	0.665 af
Outflow	=	1.36 cfs @	16.35 hrs, Volume=	0.662 af, Atten= 81%, Lag= 11.9 min
Primary	=	1.36 cfs @	16.35 hrs, Volume=	0.662 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 10.39' @ 16.35 hrs Surf.Area= 0.067 ac Storage= 0.162 af

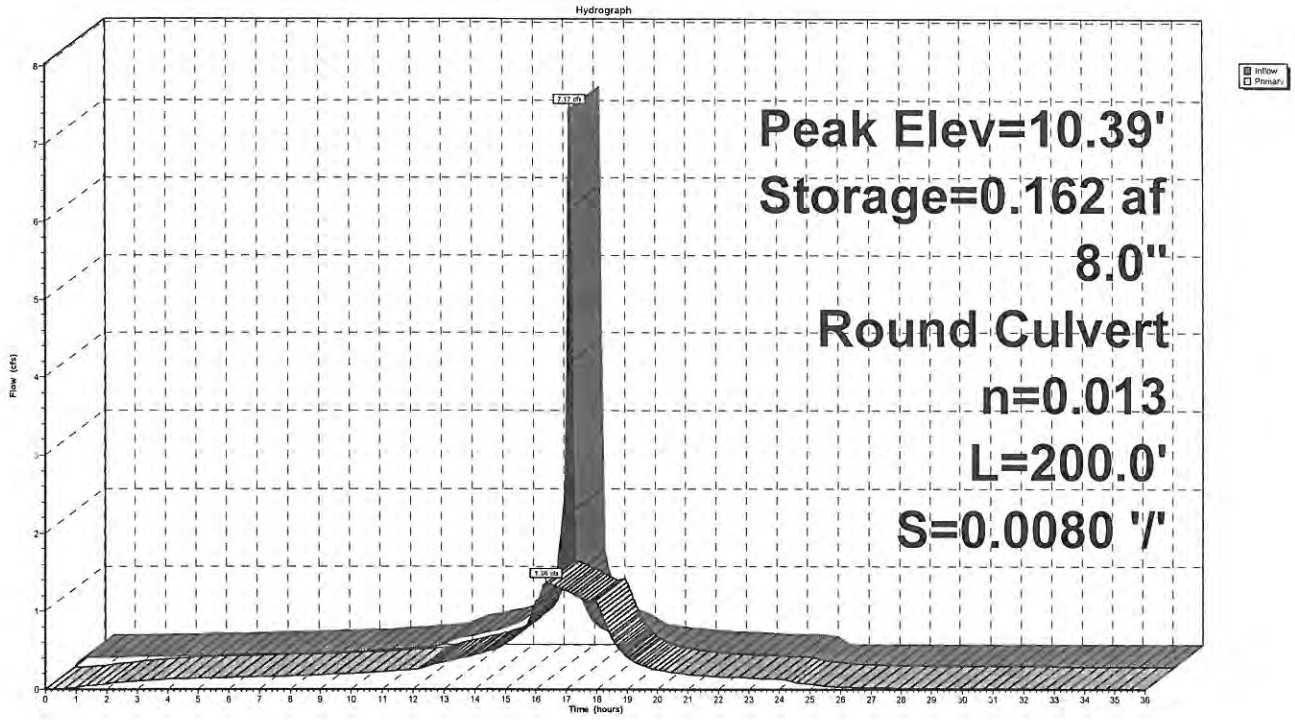
Plug-Flow detention time= 78.0 min calculated for 0.662 af (99% of inflow)
Center-of-Mass det. time= 76.1 min (917.6 - 841.5)

Volume	Invert	Avail.Storage	Storage Description
#1	8.50'	0.200 af	**StormChamber StormChamber @ 889.20' L** Effective Size= 58.4"W x 34.0"H => 9.81 sf x 889.20'L = 8,724.4 cf Overall Size= 60.0"W x 34.0"H x 8.54'L with 0.94' Overlap Row Length Adjustment= +0.94' x 9.81 sf x 1 rows

Device	Routing	Invert	Outlet Devices
#1	Primary	8.50'	**8.0" Round Culvert** L= 200.0' Ke= 0.200 Inlet / Outlet Invert= 8.50' / 6.90' S= 0.0080 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=1.36 cfs @ 16.35 hrs HW=10.39' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.36 cfs @ 3.90 fps)

Pond 2P: Basin 5



Stage-Area-Storage for Pond 2P: Basin 5

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
8.50	0.000	9.54	0.096	10.58	0.174
8.52	0.002	9.56	0.098	10.60	0.175
8.54	0.004	9.58	0.100	10.62	0.177
8.56	0.006	9.60	0.101	10.64	0.178
8.58	0.008	9.62	0.103	10.66	0.179
8.60	0.010	9.64	0.105	10.68	0.180
8.62	0.012	9.66	0.107	10.70	0.181
8.64	0.014	9.68	0.108	10.72	0.182
8.66	0.016	9.70	0.110	10.74	0.183
8.68	0.018	9.72	0.112	10.76	0.184
8.70	0.020	9.74	0.113	10.78	0.185
8.72	0.021	9.76	0.115	10.80	0.186
8.74	0.023	9.78	0.117	10.82	0.187
8.76	0.025	9.80	0.118	10.84	0.188
8.78	0.027	9.82	0.120	10.86	0.189
8.80	0.029	9.84	0.121	10.88	0.190
8.82	0.031	9.86	0.123	10.90	0.191
8.84	0.033	9.88	0.125	10.92	0.192
8.86	0.035	9.90	0.126	10.94	0.193
8.88	0.037	9.92	0.128	10.96	0.193
8.90	0.038	9.94	0.129	10.98	0.194
8.92	0.040	9.96	0.131	11.00	0.195
8.94	0.042	9.98	0.133	11.02	0.195
8.96	0.044	10.00	0.134	11.04	0.196
8.98	0.046	10.02	0.136	11.06	0.196
9.00	0.048	10.04	0.137	11.08	0.197
9.02	0.050	10.06	0.139	11.10	0.197
9.04	0.052	10.08	0.140	11.12	0.198
9.06	0.053	10.10	0.142	11.14	0.198
9.08	0.055	10.12	0.143	11.16	0.198
9.10	0.057	10.14	0.145	11.18	0.199
9.12	0.059	10.16	0.146	11.20	0.199
9.14	0.061	10.18	0.147	11.22	0.199
9.16	0.063	10.20	0.149	11.24	0.200
9.18	0.065	10.22	0.150	11.26	0.200
9.20	0.066	10.24	0.152	11.28	0.200
9.22	0.068	10.26	0.153	11.30	0.200
9.24	0.070	10.28	0.155	11.32	0.200
9.26	0.072	10.30	0.156	11.34	**0.200**
9.28	0.074	10.32	0.157		
9.30	0.075	10.34	0.159		
9.32	0.077	10.36	0.160		
9.34	0.079	10.38	0.161		
9.36	0.081	10.40	0.163		
9.38	0.082	10.42	0.164		
9.40	0.084	10.44	0.165		
9.42	0.086	10.46	0.167		
9.44	0.088	10.48	0.168		
9.46	0.089	10.50	0.169		
9.48	0.091	10.52	0.171		
9.50	0.093	10.54	0.172		
9.52	0.094	10.56	0.173		

Stage-Discharge for Pond 2P: Basin 5

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
8.50	0.00	9.54	1.14	10.58	1.40
8.52	0.00	9.56	1.14	10.60	1.41
8.54	0.00	9.58	1.15	10.62	1.41
8.56	0.01	9.60	1.15	10.64	1.42
8.58	0.02	9.62	1.16	10.66	1.42
8.60	0.03	9.64	1.17	10.68	1.43
8.62	0.04	9.66	1.17	10.70	1.43
8.64	0.06	9.68	1.18	10.72	1.44
8.66	0.08	9.70	1.18	10.74	1.44
8.68	0.10	9.72	1.19	10.76	1.45
8.70	0.12	9.74	1.19	10.78	1.45
8.72	0.14	9.76	1.20	10.80	1.46
8.74	0.17	9.78	1.20	10.82	1.46
8.76	0.20	9.80	1.21	10.84	1.46
8.78	0.23	9.82	1.21	10.86	1.47
8.80	0.26	9.84	1.22	10.88	1.47
8.82	0.29	9.86	1.23	10.90	1.48
8.84	0.33	9.88	1.23	10.92	1.48
8.86	0.37	9.90	1.24	10.94	1.49
8.88	0.40	9.92	1.24	10.96	1.49
8.90	0.44	9.94	1.25	10.98	1.50
8.92	0.48	9.96	1.25	11.00	1.50
8.94	0.52	9.98	1.26	11.02	1.50
8.96	0.56	10.00	1.26	11.04	1.51
8.98	0.60	10.02	1.27	11.06	1.51
9.00	0.64	10.04	1.27	11.08	1.52
9.02	0.68	10.06	1.28	11.10	1.52
9.04	0.72	10.08	1.28	11.12	1.53
9.06	0.76	10.10	1.29	11.14	1.53
9.08	0.80	10.12	1.29	11.16	1.53
9.10	0.84	10.14	1.30	11.18	1.54
9.12	0.88	10.16	1.30	11.20	1.54
9.14	0.92	10.18	1.31	11.22	1.55
9.16	0.96	10.20	1.31	11.24	1.55
9.18	0.99	10.22	1.32	11.26	1.56
9.20	1.02	10.24	1.32	11.28	1.56
9.22	1.05	10.26	1.33	11.30	1.56
9.24	1.08	10.28	1.33	11.32	1.57
9.26	1.10	10.30	1.34	11.34	**1.57**
9.28	1.13	10.32	1.34		
9.30	1.14	10.34	1.35		
9.32	1.15	10.36	1.35		
9.34	1.16	10.38	1.36		
9.36	1.15	10.40	1.36		
9.38	1.13	10.42	1.37		
9.40	1.10	10.44	1.37		
9.42	1.10	10.46	1.38		
9.44	1.11	10.48	1.38		
9.46	1.11	10.50	1.39		
9.48	1.12	10.52	1.39		
9.50	1.13	10.54	1.40		
9.52	1.13	10.56	1.40		

APPENDIX D.2

D.2 Basin 6

Summary for Pond 2P: Basin 6

Inflow	=	6.94 cfs @	16.15 hrs, Volume=	0.627 af
Outflow	=	1.50 cfs @	16.33 hrs, Volume=	0.623 af, Atten= 78%, Lag= 10.6 min
Primary	=	1.50 cfs @	16.33 hrs, Volume=	0.623 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 8.02' @ 16.33 hrs Surf.Area= 0.067 ac Storage= 0.164 af

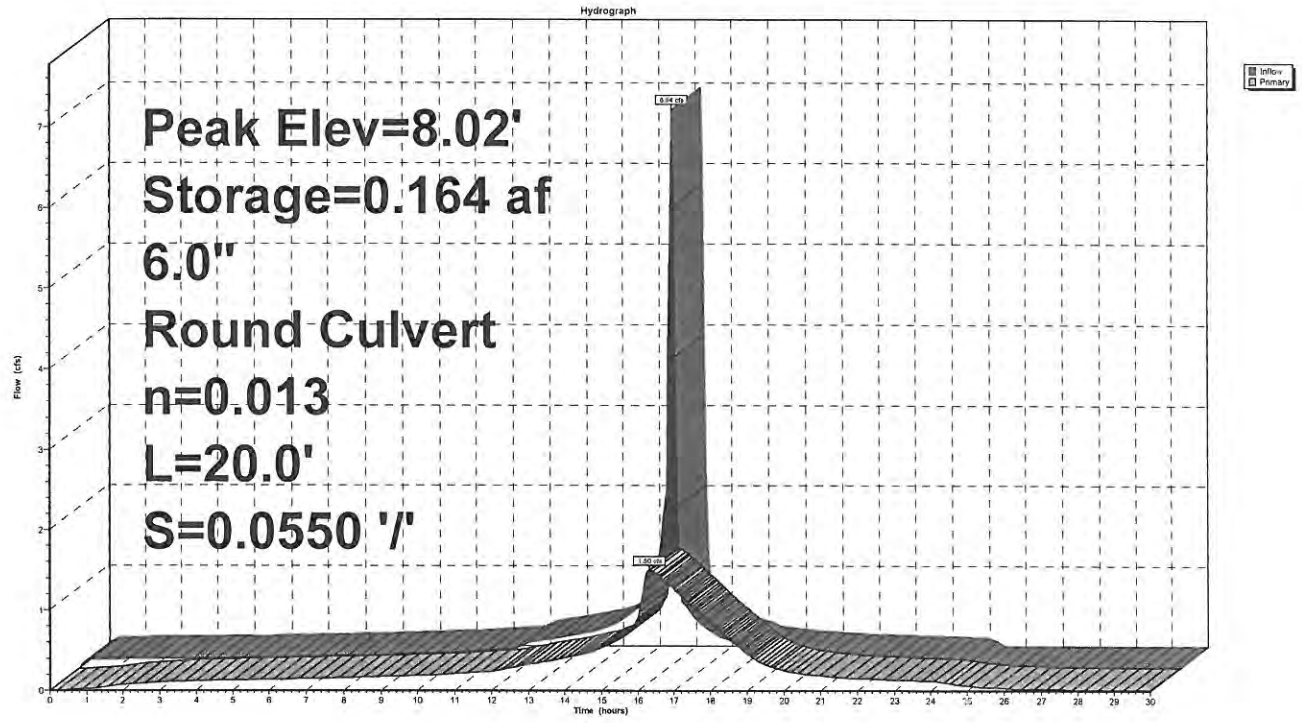
Plug-Flow detention time= 77.2 min calculated for 0.623 af (99% of inflow)
Center-of-Mass det. time= 73.4 min (916.1 - 842.6)

Volume	Invert	Avail.Storage	Storage Description
#1	6.10'	0.200 af	**StormChamber StormChamber @ 889.20' L** Effective Size= 58.4"W x 34.0"H => 9.81 sf x 889.20'L = 8,724.4 cf Overall Size= 60.0"W x 34.0"H x 8.54'L with 0.94' Overlap Row Length Adjustment= +0.94' x 9.81 sf x 1 rows

Device	Routing	Invert	Outlet Devices
#1	Primary	6.10'	**6.0" Round Culvert** L= 20.0' Ke= 0.200 Inlet / Outlet Invert= 6.10' / 5.00' S= 0.0550 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=1.50 cfs @ 16.33 hrs HW=8.01' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.50 cfs @ 7.63 fps)

Pond 2P: Basin 6



Stage-Area-Storage for Pond 2P: Basin 6

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
6.10	0.000	7.14	0.096	8.18	0.174
6.12	0.002	7.16	0.098	8.20	0.175
6.14	0.004	7.18	0.100	8.22	0.177
6.16	0.006	7.20	0.101	8.24	0.178
6.18	0.008	7.22	0.103	8.26	0.179
6.20	0.010	7.24	0.105	8.28	0.180
6.22	0.012	7.26	0.107	8.30	0.181
6.24	0.014	7.28	0.108	8.32	0.182
6.26	0.016	7.30	0.110	8.34	0.183
6.28	0.018	7.32	0.112	8.36	0.184
6.30	0.020	7.34	0.113	8.38	0.185
6.32	0.021	7.36	0.115	8.40	0.186
6.34	0.023	7.38	0.117	8.42	0.187
6.36	0.025	7.40	0.118	8.44	0.188
6.38	0.027	7.42	0.120	8.46	0.189
6.40	0.029	7.44	0.121	8.48	0.190
6.42	0.031	7.46	0.123	8.50	0.191
6.44	0.033	7.48	0.125	8.52	0.192
6.46	0.035	7.50	0.126	8.54	0.193
6.48	0.037	7.52	0.128	8.56	0.193
6.50	0.038	7.54	0.129	8.58	0.194
6.52	0.040	7.56	0.131	8.60	0.195
6.54	0.042	7.58	0.133	8.62	0.195
6.56	0.044	7.60	0.134	8.64	0.196
6.58	0.046	7.62	0.136	8.66	0.196
6.60	0.048	7.64	0.137	8.68	0.197
6.62	0.050	7.66	0.139	8.70	0.197
6.64	0.052	7.68	0.140	8.72	0.198
6.66	0.053	7.70	0.142	8.74	0.198
6.68	0.055	7.72	0.143	8.76	0.198
6.70	0.057	7.74	0.145	8.78	0.199
6.72	0.059	7.76	0.146	8.80	0.199
6.74	0.061	7.78	0.147	8.82	0.199
6.76	0.063	7.80	0.149	8.84	0.200
6.78	0.065	7.82	0.150	8.86	0.200
6.80	0.066	7.84	0.152	8.88	0.200
6.82	0.068	7.86	0.153	8.90	0.200
6.84	0.070	7.88	0.155	8.92	0.200
6.86	0.072	7.90	0.156	8.94	**0.200**
6.88	0.074	7.92	0.157		
6.90	0.075	7.94	0.159		
6.92	0.077	7.96	0.160		
6.94	0.079	7.98	0.161		
6.96	0.081	8.00	0.163		
6.98	0.082	8.02	0.164		
7.00	0.084	8.04	0.165		
7.02	0.086	8.06	0.167		
7.04	0.088	8.08	0.168		
7.06	0.089	8.10	0.169		
7.08	0.091	8.12	0.171		
7.10	0.093	8.14	0.172		
7.12	0.094	8.16	0.173		

Stage-Discharge for Pond 2P: Basin 6

Elevation (feet)	Primary (cfs)
6.10	0.00
6.12	0.00
6.14	0.01
6.16	0.01
6.18	0.02
6.20	0.04
6.22	0.05
6.24	0.07
6.26	0.09
6.28	0.11
6.30	0.14
6.32	0.17
6.34	0.19
6.36	0.22
6.38	0.25
6.40	0.29
6.42	0.32
6.44	0.35
6.46	0.39
6.48	0.42
6.50	0.45
6.52	0.49
6.54	0.52
6.56	0.55
6.58	0.57
6.60	0.59
6.62	0.61
6.64	0.64
6.66	0.66
6.68	0.68
6.70	0.70
6.72	0.72
6.74	0.74
6.76	0.76
6.78	0.77
6.80	0.79
6.82	0.81
6.84	0.83
6.86	0.84
6.88	0.86
6.90	0.88
6.92	0.89
6.94	0.91
6.96	0.92
6.98	0.94
7.00	0.95
7.02	0.97
7.04	0.98
7.06	1.00
7.08	1.01
7.10	1.02
7.12	1.04
7.14	1.05
7.16	1.06
7.18	1.08
7.20	1.09
7.22	1.10
7.24	1.11
7.26	1.13
7.28	1.14
7.30	1.15
7.32	1.16
7.34	1.18
7.36	1.19
7.38	1.20
7.40	1.21
7.42	1.22
7.44	1.23
7.46	1.25
7.48	1.26
7.50	1.27
7.52	1.28
7.54	1.29
7.56	1.30
7.58	1.31
7.60	1.32
7.62	1.33
7.64	1.34
7.66	1.35
7.68	1.36
7.70	1.37
7.72	1.38
7.74	1.39
7.76	1.40
7.78	1.41
7.80	1.42
7.82	1.43
7.84	1.44
7.86	1.45
7.88	1.46
7.90	1.46
7.92	1.47
7.94	1.48
7.96	1.48
7.98	1.49
8.00	1.49
8.02	1.50
8.04	1.51
8.06	1.51
8.08	1.52
8.10	1.52
8.12	1.53
8.14	1.53
8.16	1.54
8.18	1.55
8.20	1.55
8.22	1.56
8.24	1.56
8.26	1.57
8.28	1.58
8.30	1.58
8.32	1.59
8.34	1.59
8.36	1.60
8.38	1.60
8.40	1.61
8.42	1.61
8.44	1.62
8.46	1.63
8.48	1.63
8.50	1.64
8.52	1.64
8.54	1.65
8.56	1.65
8.58	1.66
8.60	1.66
8.62	1.67
8.64	1.67
8.66	1.68
8.68	1.68
8.70	1.69
8.72	1.70
8.74	1.70
8.76	1.71
8.78	1.71
8.80	1.72
8.82	1.72
8.84	1.73
8.86	1.73
8.88	1.74
8.90	1.74
8.92	1.75
8.94	**1.75**

APPENDIX D.3

D.3 Basin 7

Summary for Pond 2P: Basin 7

Inflow	=	10.32 cfs @	16.15 hrs,	Volume=	0.812 af
Outflow	=	2.37 cfs @	16.32 hrs,	Volume=	0.808 af, Atten= 77%, Lag= 10.0 min
Primary	=	2.37 cfs @	16.32 hrs,	Volume=	0.808 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 9.45' @ 16.32 hrs Surf.Area= 0.039 ac Storage= 0.208 af

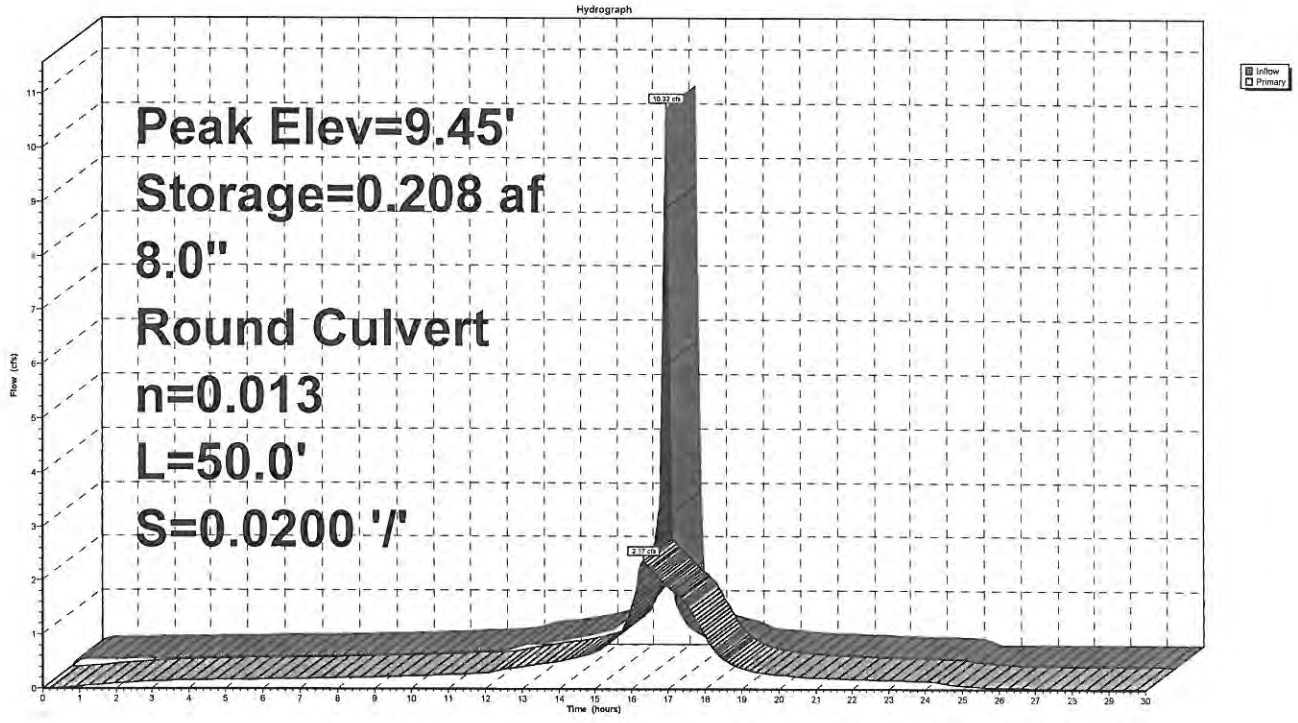
Plug-Flow detention time= 62.9 min calculated for 0.807 af (99% of inflow)
Center-of-Mass det. time= 60.3 min (909.1 - 848.8)

Volume	Invert	Avail.Storage	Storage Description
#1	7.00'	0.216 af	**StormChamber StormChamber @ 957.60' L** Effective Size= 58.4"W x 34.0"H => 9.81 sf x 957.60'L = 9,395.5 cf Overall Size= 60.0"W x 34.0"H x 8.54'L with 0.94' Overlap Row Length Adjustment= +0.94' x 9.81 sf x 1 rows

Device	Routing	Invert	Outlet Devices
#1	Primary	7.00'	**8.0" Round Culvert** L= 50.0' Ke= 0.200 Inlet / Outlet Invert= 7.00' / 6.00' S= 0.0200 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=2.36 cfs @ 16.32 hrs HW=9.43' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.36 cfs @ 6.76 fps)

Pond 2P: Basin 7



Stage-Area-Storage for Pond 2P: Basin 7

Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
7.00	0.000	8.04	0.104	9.08	0.188
7.02	0.002	8.06	0.105	9.10	0.189
7.04	0.004	8.08	0.107	9.12	0.190
7.06	0.006	8.10	0.109	9.14	0.191
7.08	0.009	8.12	0.111	9.16	0.193
7.10	0.011	8.14	0.113	9.18	0.194
7.12	0.013	8.16	0.115	9.20	0.195
7.14	0.015	8.18	0.117	9.22	0.196
7.16	0.017	8.20	0.118	9.24	0.197
7.18	0.019	8.22	0.120	9.26	0.199
7.20	0.021	8.24	0.122	9.28	0.200
7.22	0.023	8.26	0.124	9.30	0.201
7.24	0.025	8.28	0.126	9.32	0.202
7.26	0.027	8.30	0.127	9.34	0.203
7.28	0.029	8.32	0.129	9.36	0.204
7.30	0.031	8.34	0.131	9.38	0.205
7.32	0.033	8.36	0.133	9.40	0.206
7.34	0.035	8.38	0.134	9.42	0.207
7.36	0.037	8.40	0.136	9.44	0.207
7.38	0.039	8.42	0.138	9.46	0.208
7.40	0.041	8.44	0.139	9.48	0.209
7.42	0.043	8.46	0.141	9.50	0.210
7.44	0.045	8.48	0.143	9.52	0.210
7.46	0.047	8.50	0.144	9.54	0.211
7.48	0.050	8.52	0.146	9.56	0.211
7.50	0.052	8.54	0.148	9.58	0.212
7.52	0.054	8.56	0.149	9.60	0.212
7.54	0.056	8.58	0.151	9.62	0.213
7.56	0.058	8.60	0.153	9.64	0.213
7.58	0.060	8.62	0.154	9.66	0.214
7.60	0.062	8.64	0.156	9.68	0.214
7.62	0.064	8.66	0.157	9.70	0.214
7.64	0.066	8.68	0.159	9.72	0.215
7.66	0.068	8.70	0.160	9.74	0.215
7.68	0.069	8.72	0.162	9.76	0.215
7.70	0.071	8.74	0.163	9.78	0.215
7.72	0.073	8.76	0.165	9.80	0.216
7.74	0.075	8.78	0.166	9.82	0.216
7.76	0.077	8.80	0.168	9.84	**0.216**
7.78	0.079	8.82	0.169		
7.80	0.081	8.84	0.171		
7.82	0.083	8.86	0.172		
7.84	0.085	8.88	0.174		
7.86	0.087	8.90	0.175		
7.88	0.089	8.92	0.177		
7.90	0.091	8.94	0.178		
7.92	0.092	8.96	0.179		
7.94	0.094	8.98	0.181		
7.96	0.096	9.00	0.182		
7.98	0.098	9.02	0.184		
8.00	0.100	9.04	0.185		
8.02	0.102	9.06	0.186		

Stage-Discharge for Pond 2P: Basin 7

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
7.00	0.00	8.04	1.66	9.08	2.20
7.02	0.00	8.06	1.68	9.10	2.21
7.04	0.01	8.08	1.69	9.12	2.22
7.06	0.02	8.10	1.70	9.14	2.23
7.08	0.03	8.12	1.71	9.16	2.24
7.10	0.04	8.14	1.72	9.18	2.25
7.12	0.06	8.16	1.73	9.20	2.26
7.14	0.08	8.18	1.75	9.22	2.27
7.16	0.11	8.20	1.76	9.24	2.28
7.18	0.14	8.22	1.77	9.26	2.29
7.20	0.17	8.24	1.78	9.28	2.29
7.22	0.20	8.26	1.79	9.30	2.30
7.24	0.24	8.28	1.80	9.32	2.31
7.26	0.27	8.30	1.81	9.34	2.32
7.28	0.31	8.32	1.83	9.36	2.33
7.30	0.36	8.34	1.84	9.38	2.34
7.32	0.40	8.36	1.85	9.40	2.35
7.34	0.44	8.38	1.86	9.42	2.36
7.36	0.49	8.40	1.87	9.44	2.36
7.38	0.54	8.42	1.88	9.46	2.37
7.40	0.59	8.44	1.89	9.48	2.38
7.42	0.64	8.46	1.90	9.50	2.39
7.44	0.69	8.48	1.91	9.52	2.40
7.46	0.74	8.50	1.92	9.54	2.41
7.48	0.79	8.52	1.93	9.56	2.41
7.50	0.85	8.54	1.94	9.58	2.42
7.52	0.90	8.56	1.95	9.60	2.43
7.54	0.95	8.58	1.96	9.62	2.44
7.56	1.00	8.60	1.97	9.64	2.45
7.58	1.04	8.62	1.98	9.66	2.46
7.60	1.09	8.64	1.99	9.68	2.46
7.62	1.13	8.66	2.00	9.70	2.47
7.64	1.17	8.68	2.01	9.72	2.48
7.66	1.20	8.70	2.02	9.74	2.49
7.68	1.24	8.72	2.03	9.76	2.50
7.70	1.27	8.74	2.04	9.78	2.50
7.72	1.31	8.76	2.05	9.80	2.51
7.74	1.34	8.78	2.06	9.82	2.52
7.76	1.37	8.80	2.07	9.84	**2.53**
7.78	1.40	8.82	2.08		
7.80	1.44	8.84	2.09		
7.82	1.47	8.86	2.10		
7.84	1.50	8.88	2.11		
7.86	1.52	8.90	2.12		
7.88	1.55	8.92	2.13		
7.90	1.58	8.94	2.14		
7.92	1.59	8.96	2.15		
7.94	1.60	8.98	2.16		
7.96	1.61	9.00	2.17		
7.98	1.63	9.02	2.18		
8.00	1.64	9.04	2.19		
8.02	1.65	9.06	2.20		

APPENDIX D.4

D.4 Basin 8

Summary for Pond 2P: Basin 8

Inflow	=	5.60 cfs @	16.15 hrs, Volume=	0.527 af
Outflow	=	1.03 cfs @	16.35 hrs, Volume=	0.524 af, Atten= 82%, Lag= 12.0 min
Primary	=	1.03 cfs @	16.35 hrs, Volume=	0.524 af

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Peak Elev= 7.94' @ 16.35 hrs Surf.Area= 0.075 ac Storage= 0.137 af

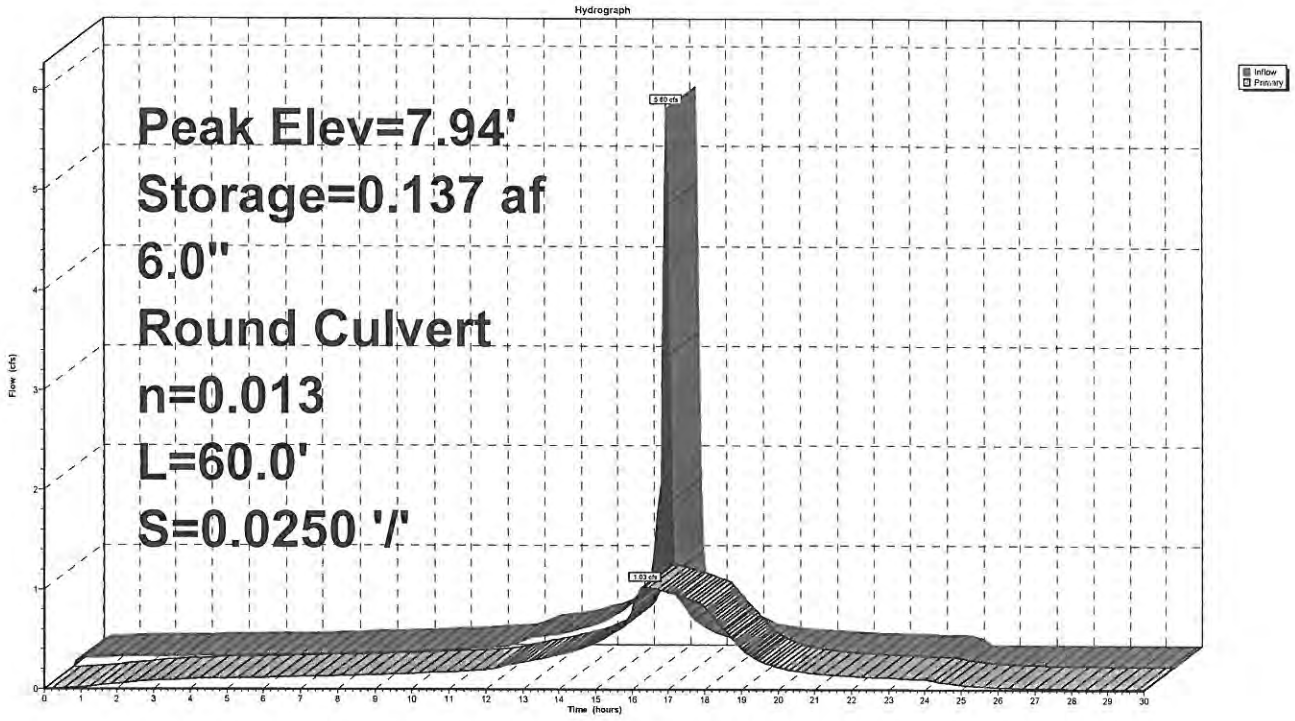
Plug-Flow detention time=83.2 min calculated for 0.524 af (99% of inflow)
Center-of-Mass det. time=78.9 min (919.8 - 840.9)

Volume	Invert	Avail.Storage	Storage Description
#1	6.40'	0.200 af	**StormChamber StormChamber @ 889.20' L** Effective Size= 58.4"W x 34.0"H => 9.81 sf x 889.20'L = 8,724.4 cf Overall Size= 60.0"W x 34.0"H x 8.54'L with 0.94' Overlap

Device	Routing	Invert	Outlet Devices
#1	Primary	6.40'	**6.0" Round Culvert** L= 60.0' Ke= 0.200 Inlet / Outlet Invert= 6.40' / 4.90' S= 0.0250 '/' Cc= 0.900 n= 0.013, Flow Area= 0.20 sf

Primary OutFlow Max=1.03 cfs @ 16.35 hrs HW=7.94' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.03 cfs @ 5.25 fps)

Pond 2P: Basin 8



Stage-Area-Storage for Pond 2P: Basin 8

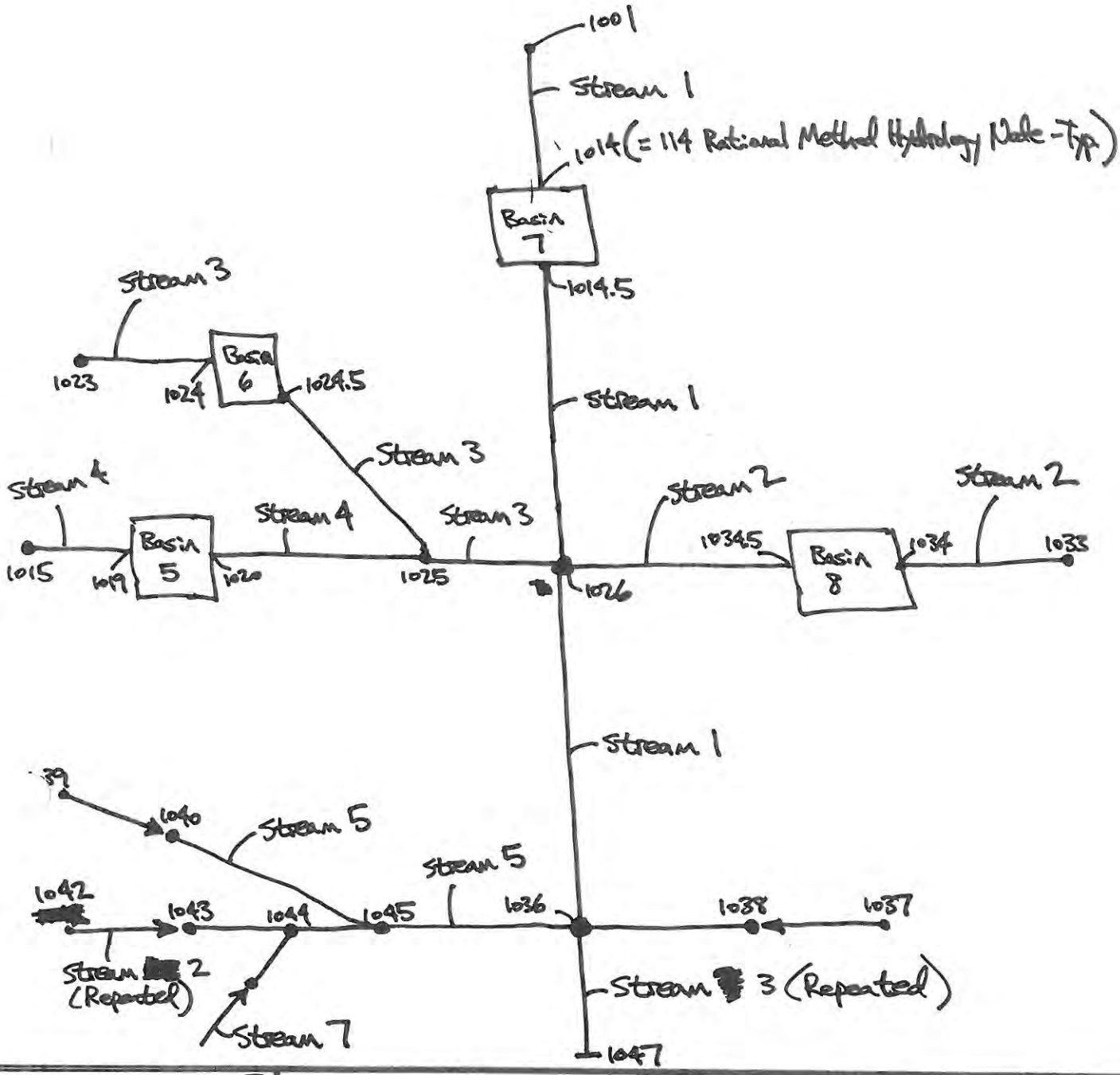
Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)	Elevation (feet)	Storage (acre-feet)
6.40	0.000	7.44	0.096	8.48	0.174
6.42	0.002	7.46	0.098	8.50	0.175
6.44	0.004	7.48	0.100	8.52	0.176
6.46	0.006	7.50	0.101	8.54	0.178
6.48	0.008	7.52	0.103	8.56	0.179
6.50	0.010	7.54	0.105	8.58	0.180
6.52	0.012	7.56	0.106	8.60	0.181
6.54	0.014	7.58	0.108	8.62	0.182
6.56	0.016	7.60	0.110	8.64	0.183
6.58	0.018	7.62	0.111	8.66	0.184
6.60	0.020	7.64	0.113	8.68	0.185
6.62	0.021	7.66	0.115	8.70	0.186
6.64	0.023	7.68	0.116	8.72	0.187
6.66	0.025	7.70	0.118	8.74	0.188
6.68	0.027	7.72	0.120	8.76	0.189
6.70	0.029	7.74	0.121	8.78	0.190
6.72	0.031	7.76	0.123	8.80	0.191
6.74	0.033	7.78	0.125	8.82	0.192
6.76	0.035	7.80	0.126	8.84	0.192
6.78	0.037	7.82	0.128	8.86	0.193
6.80	0.038	7.84	0.129	8.88	0.194
6.82	0.040	7.86	0.131	8.90	0.194
6.84	0.042	7.88	0.132	8.92	0.195
6.86	0.044	7.90	0.134	8.94	0.196
6.88	0.046	7.92	0.135	8.96	0.196
6.90	0.048	7.94	0.137	8.98	0.197
6.92	0.050	7.96	0.139	9.00	0.197
6.94	0.052	7.98	0.140	9.02	0.197
6.96	0.053	8.00	0.141	9.04	0.198
6.98	0.055	8.02	0.143	9.06	0.198
7.00	0.057	8.04	0.144	9.08	0.199
7.02	0.059	8.06	0.146	9.10	0.199
7.04	0.061	8.08	0.147	9.12	0.199
7.06	0.063	8.10	0.149	9.14	0.199
7.08	0.064	8.12	0.150	9.16	0.200
7.10	0.066	8.14	0.152	9.18	0.200
7.12	0.068	8.16	0.153	9.20	0.200
7.14	0.070	8.18	0.154	9.22	0.200
7.16	0.072	8.20	0.156	9.24	**0.200**
7.18	0.073	8.22	0.157		
7.20	0.075	8.24	0.158		
7.22	0.077	8.26	0.160		
7.24	0.079	8.28	0.161		
7.26	0.080	8.30	0.162		
7.28	0.082	8.32	0.164		
7.30	0.084	8.34	0.165		
7.32	0.086	8.36	0.166		
7.34	0.087	8.38	0.168		
7.36	0.089	8.40	0.169		
7.38	0.091	8.42	0.170		
7.40	0.093	8.44	0.172		
7.42	0.094	8.46	0.173		

Stage-Discharge for Pond 2P: Basin 8

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
6.40	0.00	7.44	0.92	8.48	1.13
6.42	0.00	7.46	0.93	8.50	1.14
6.44	0.01	7.48	0.93	8.52	1.14
6.46	0.01	7.50	0.94	8.54	1.15
6.48	0.02	7.52	0.94	8.56	1.15
6.50	0.04	7.54	0.95	8.58	1.15
6.52	0.05	7.56	0.95	8.60	1.16
6.54	0.07	7.58	0.95	8.62	1.16
6.56	0.09	7.60	0.96	8.64	1.16
6.58	0.11	7.62	0.96	8.66	1.17
6.60	0.14	7.64	0.97	8.68	1.17
6.62	0.17	7.66	0.97	8.70	1.17
6.64	0.19	7.68	0.98	8.72	1.18
6.66	0.22	7.70	0.98	8.74	1.18
6.68	0.25	7.72	0.98	8.76	1.18
6.70	0.29	7.74	0.99	8.78	1.19
6.72	0.32	7.76	0.99	8.80	1.19
6.74	0.35	7.78	1.00	8.82	1.20
6.76	0.39	7.80	1.00	8.84	1.20
6.78	0.42	7.82	1.01	8.86	1.20
6.80	0.45	7.84	1.01	8.88	1.21
6.82	0.49	7.86	1.01	8.90	1.21
6.84	0.52	7.88	1.02	8.92	1.21
6.86	0.55	7.90	1.02	8.94	1.22
6.88	0.57	7.92	1.03	8.96	1.22
6.90	0.59	7.94	1.03	8.98	1.22
6.92	0.61	7.96	1.03	9.00	1.23
6.94	0.64	7.98	1.04	9.02	1.23
6.96	0.66	8.00	1.04	9.04	1.23
6.98	0.68	8.02	1.05	9.06	1.24
7.00	0.70	8.04	1.05	9.08	1.24
7.02	0.72	8.06	1.05	9.10	1.24
7.04	0.74	8.08	1.06	9.12	1.25
7.06	0.76	8.10	1.06	9.14	1.25
7.08	0.77	8.12	1.07	9.16	1.25
7.10	0.79	8.14	1.07	9.18	1.26
7.12	0.81	8.16	1.07	9.20	1.26
7.14	0.83	8.18	1.08	9.22	1.26
7.16	0.84	8.20	1.08	9.24	**1.27**
7.18	0.86	8.22	1.09		
7.20	0.87	8.24	1.09		
7.22	0.87	8.26	1.09		
7.24	0.88	8.28	1.10		
7.26	0.88	8.30	1.10		
7.28	0.89	8.32	1.10		
7.30	0.89	8.34	1.11		
7.32	0.90	8.36	1.11		
7.34	0.90	8.38	1.12		
7.36	0.90	8.40	1.12		
7.38	0.91	8.42	1.12		
7.40	0.91	8.44	1.13		
7.42	0.92	8.46	1.13		

APPENDIX E

AES 10-Year Flood Routing Analysis



Q	Time	Vol
1.57	2.84	0.200
1.50	2.5	0.195
1.39	2.0	0.169
1.26	1.5	0.134
1.13	1.0	0.093
0.64	0.5	0.048
0	0	0

Basin 5

Q	Time	Vol
1.75	2.84	0.200
1.66	2.5	0.195
1.52	2.0	0.169
1.32	1.5	0.134
1.02	1.0	0.093
0.59	0.5	0.048
0	0	0

Basin 6

2.53	2.84	0.216
2.39	2.5	0.210
2.17	2.0	0.182
1.92	1.5	0.144
1.64	1.0	0.100
0.85	0.5	0.052
0	0	0

Basin 7

1.27	2.84	0.200
1.21	2.5	0.194
1.12	2.0	0.169
1.02	1.5	0.134
0.91	1.0	0.093
0.59	0.5	0.048
0	0	0

Basin 8

```
*****************************************************************************

            F L O O D    R O U T I N G    A N A L Y S I S
            USING COUNTY HYDROLOGY MANUAL OF ORANGE(1986)
        (c) Copyright 1989-2013 Advanced Engineering Software (aes)
            Ver. 20.0  Release Date: 06/01/2013  License ID 1355

                        Analysis prepared by:

                      FUSCOE ENGINEERING, INC
                          16795 VON KARMAN
                             SUITE 100
                          IRVINE, CA 92606

 ************************** DESCRIPTION OF STUDY *************************
* Dana Point Harbor                                                      *
* Area D Insurance Policy 10-Year Flood Routing                          *
* 3/25/14   OS(C:)/aes2013/hydrosft/ratscx/dphipf5                       *
 *************************************************************************

  FILE NAME: DPHIPF5.DAT
  TIME/DATE OF STUDY: 14:29 03/25/2014

   The Small Area Unit Hydrograph Procedures in Section J
   of the Hydrology Manual provides estimates of runoff
   hydrograph and runoff volume for watersheds whose time of
   concentration is less than 25 minutes. The PROGRAM User
   should check the applicability of using the small area unit
   hydrograph procedures, and follow the guidelines in
   Sections J and K.5 in complex watershed modeling.


*****************************************************************************
  FLOW PROCESS FROM NODE   1001.00 TO NODE   1014.00 IS CODE = 1.2
-----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
=============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #1)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.79
    TOTAL CATCHMENT AREA(ACRES) =    4.61
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.108
    LOW LOSS FRACTION = 0.351
    TIME OF CONCENTRATION(MIN.) =  8.72
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

-----------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.79
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.62

-----------------------------------------------------------------------------
♀
=============================================================================

                    2 4 - H O U R    S T O R M
                  R U N O F F    H Y D R O G R A P H

=============================================================================
             HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
-----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        2.6        5.2        7.8       10.4
```

14.000	0.2669	0.57	. Q	. V	.	.	.
14.017	0.2677	0.57	. Q	. V	.	.	.
14.033	0.2685	0.57	. Q	. V	.	.	.
14.050	0.2693	0.58	. Q	. V	.	.	.
14.067	0.2701	0.58	. Q	. V	.	.	.
14.083	0.2709	0.58	. Q	. V	.	.	.
14.100	0.2717	0.59	. Q	. V	.	.	.
14.117	0.2725	0.59	. Q	. V	.	.	.
14.133	0.2733	0.59	. Q	. V	.	.	.
14.150	0.2741	0.59	. Q	. V	.	.	.
14.167	0.2749	0.59	. Q	. V	.	.	.
14.183	0.2757	0.60	. Q	. V	.	.	.
14.200	0.2766	0.60	. Q	. V	.	.	.
14.217	0.2774	0.60	. Q	. V	.	.	.
14.233	0.2782	0.60	. Q	. V	.	.	.
14.250	0.2791	0.60	. Q	. V	.	.	.
14.267	0.2799	0.61	. Q	. V	.	.	.
14.283	0.2807	0.61	. Q	. V	.	.	.
14.300	0.2816	0.61	. Q	. V	.	.	.
14.317	0.2824	0.62	. Q	. V	.	.	.
14.333	0.2833	0.62	. Q	. V	.	.	.
14.350	0.2842	0.63	. Q	. V	.	.	.
14.367	0.2850	0.63	. Q	. V	.	.	.
14.383	0.2859	0.63	. Q	. V	.	.	.
14.400	0.2868	0.64	. Q	. V	.	.	.
14.417	0.2877	0.64	. Q	. V	.	.	.
14.433	0.2885	0.64	. Q	. V	.	.	.
14.450	0.2894	0.65	. Q	. V	.	.	.
14.467	0.2903	0.65	. Q	. V	.	.	.
14.483	0.2912	0.65	. Q	. V	.	.	.
14.500	0.2921	0.65	. Q	. V	.	.	.
14.517	0.2930	0.66	. Q	. V	.	.	.
14.533	0.2939	0.66	. Q	. V	.	.	.
14.550	0.2949	0.66	. Q	. V	.	.	.
14.567	0.2958	0.67	. Q	. V	.	.	.
14.583	0.2967	0.67	. Q	. V	.	.	.
14.600	0.2976	0.68	. Q	. V	.	.	.
14.617	0.2986	0.68	. Q	. V	.	.	.
14.633	0.2995	0.69	. Q	. V	.	.	.
14.650	0.3005	0.69	. Q	. V	.	.	.
14.667	0.3014	0.70	. Q	. V	.	.	.
14.683	0.3024	0.70	. Q	. V	.	.	.
14.700	0.3034	0.71	. Q	. V	.	.	.
14.717	0.3043	0.71	. Q	. V	.	.	.
14.733	0.3053	0.72	. Q	. V	.	.	.
14.750	0.3063	0.72	. Q	. V	.	.	.
14.767	0.3073	0.72	. Q	. V	.	.	.
14.783	0.3083	0.73	. Q	. V	.	.	.
14.800	0.3093	0.73	. Q	. V	.	.	.
14.817	0.3103	0.73	. Q	. V	.	.	.
14.833	0.3114	0.74	. Q	. V	.	.	.
14.850	0.3124	0.74	. Q	. V	.	.	.
14.867	0.3134	0.76	. Q	. V	.	.	.
14.883	0.3145	0.77	. Q	. V	.	.	.
14.900	0.3156	0.78	. Q	. V	.	.	.
14.917	0.3166	0.79	. Q	. V	.	.	.
14.933	0.3177	0.80	. Q	. V	.	.	.
14.950	0.3189	0.81	. Q	. V	.	.	.
14.967	0.3200	0.82	. Q	. V	.	.	.
14.983	0.3212	0.84	. Q	. V	.	.	.
15.000	0.3223	0.85	. Q	. V	.	.	.
15.017	0.3235	0.85	. Q	. V	.	.	.
15.033	0.3247	0.86	. Q	. V	.	.	.
15.050	0.3259	0.87	. Q	. V	.	.	.
15.067	0.3271	0.87	. Q	. V	.	.	.
15.083	0.3283	0.88	. Q	. V	.	.	.
15.100	0.3295	0.89	. Q	. V	.	.	.
15.117	0.3307	0.89	. Q	. V	.	.	.
15.133	0.3320	0.90	. Q	. V	.	.	.
15.150	0.3332	0.92	. Q	. V	.	.	.
15.167	0.3345	0.94	. Q	. V	.	.	.
15.183	0.3358	0.95	. Q	. V	.	.	.
15.200	0.3372	0.97	. Q	.	V .	.	.

			DPHIPF5
15.217	0.3385	0.99	Q V
15.233	0.3399	1.01	Q V
15.250	0.3413	1.02	Q V
15.267	0.3428	1.04	Q V
15.283	0.3442	1.06	Q V
15.300	0.3457	1.07	Q V
15.317	0.3472	1.08	Q V
15.333	0.3487	1.09	Q V
15.350	0.3502	1.10	Q V
15.367	0.3518	1.12	Q V
15.383	0.3533	1.13	Q V
15.400	0.3549	1.14	Q V
15.417	0.3565	1.15	Q V
15.433	0.3581	1.16	Q V
15.450	0.3597	1.16	Q V
15.467	0.3613	1.17	Q V
15.483	0.3629	1.17	Q V
15.500	0.3645	1.17	Q V
15.517	0.3661	1.18	Q V
15.533	0.3677	1.18	Q V
15.550	0.3694	1.19	Q V
15.567	0.3710	1.19	Q V
15.583	0.3727	1.21	Q V
15.600	0.3744	1.23	Q V
15.617	0.3761	1.25	Q V
15.633	0.3779	1.28	Q V
15.650	0.3797	1.30	Q V
15.667	0.3815	1.32	Q V
15.683	0.3833	1.35	Q V
15.700	0.3852	1.37	Q V
15.717	0.3871	1.40	Q V
15.733	0.3892	1.49	Q V
15.750	0.3914	1.59	Q V
15.767	0.3937	1.69	Q V
15.783	0.3962	1.79	Q V
15.800	0.3988	1.89	Q V
15.817	0.4015	1.99	Q V
15.833	0.4044	2.09	Q V
15.850	0.4074	2.19	Q V
15.867	0.4106	2.29	Q V
15.883	0.4139	2.40	Q V
15.900	0.4173	2.51	Q V
15.917	0.4210	2.62	Q V
15.933	0.4247	2.73	Q V
15.950	0.4286	2.84	Q V
15.967	0.4327	2.95	Q V
15.983	0.4369	3.06	Q V
16.000	0.4413	3.17	Q V
16.017	0.4463	3.64	Q V
16.033	0.4524	4.46	Q V
16.050	0.4597	5.27	Q V
16.067	0.4681	6.09	Q V
16.083	0.4776	6.91	Q V
16.100	0.4883	7.73	Q V
16.117	0.5000	8.55	Q V
16.133	0.5129	9.36	Q V
16.150	0.5272	10.36	Q V
16.167	0.5404	9.59	Q V
16.183	0.5522	8.60	Q V
16.200	0.5627	7.61	Q V
16.217	0.5718	6.62	Q V
16.233	0.5796	5.63	Q V
16.250	0.5860	4.64	Q V
16.267	0.5910	3.65	Q V
16.283	0.5947	2.66	Q V
16.300	0.5972	1.82	Q V
16.317	0.5995	1.65	Q V
16.333	0.6016	1.58	Q V
16.350	0.6037	1.50	Q V
16.367	0.6057	1.42	Q V
16.383	0.6075	1.35	Q V
16.400	0.6093	1.27	Q V
16.417	0.6109	1.19	Q V
16.433	0.6125	1.12	Q V

DPHIPF5

16.450	0.6139	1.07	. Q	.	.	V	.
16.467	0.6154	1.05	. Q	.	.	.V	.
16.483	0.6168	1.04	. Q	.	.	.V	.
16.500	0.6182	1.03	. Q	.	.	.V	.
16.517	0.6197	1.02	. Q	.	.	.V	.
16.533	0.6210	1.01	. Q	.	.	.V	.
16.550	0.6224	1.00	. Q	.	.	.V	.
16.567	0.6238	0.99	. Q	.	.	.V	.
16.583	0.6251	0.98	. Q	.	.	.V	.
16.600	0.6265	0.96	. Q	.	.	.V	.
16.617	0.6277	0.94	. Q	.	.	.V	.
16.633	0.6290	0.92	. Q	.	.	.V	.
16.650	0.6302	0.90	. Q	.	.	.V	.
16.667	0.6315	0.88	. Q	.	.	.V	.
16.683	0.6326	0.85	. Q	.	.	.V	.
16.700	0.6338	0.83	. Q	.	.	.V	.
16.717	0.6349	0.81	. Q	.	.	. V	.
16.733	0.6360	0.79	. Q	.	.	. V	.
16.750	0.6371	0.78	. Q	.	.	. V	.
16.767	0.6381	0.77	. Q	.	.	. V	.
16.783	0.6391	0.75	. Q	.	.	. V	.
16.800	0.6402	0.74	. Q	.	.	. V	.
16.817	0.6412	0.73	. Q	.	.	. V	.
16.833	0.6422	0.72	. Q	.	.	. V	.
16.850	0.6431	0.71	. Q	.	.	. V	.
16.867	0.6441	0.69	. Q	.	.	. V	.
16.883	0.6450	0.68	. Q	.	.	. V	.
16.900	0.6460	0.68	. Q	.	.	. V	.
16.917	0.6469	0.67	. Q	.	.	. V	.
16.933	0.6478	0.66	. Q	.	.	. V	.
16.950	0.6487	0.65	. Q	.	.	. V	.
16.967	0.6496	0.65	. Q	.	.	. V	.
16.983	0.6505	0.64	. Q	.	.	. V	.
17.000	0.6513	0.63	. Q	.	.	. V	.
17.017	0.6522	0.63	. Q	.	.	. V	.
17.033	0.6531	0.62	. Q	.	.	. V	.
17.050	0.6539	0.61	. Q	.	.	. V	.
17.067	0.6547	0.61	. Q	.	.	. V	.
17.083	0.6556	0.60	. Q	.	.	. V	.
17.100	0.6564	0.60	. Q	.	.	. V	.
17.117	0.6572	0.59	. Q	.	.	. V	.
17.133	0.6580	0.59	. Q	.	.	. V	.
17.150	0.6588	0.58	. Q	.	.	. V	.
17.167	0.6596	0.58	. Q	.	.	. V	.
17.183	0.6604	0.57	. Q	.	.	. V	.
17.200	0.6612	0.57	. Q	.	.	. V	.
17.217	0.6620	0.56	. Q	.	.	. V	.
17.233	0.6627	0.56	. Q	.	.	. V	.
17.250	0.6635	0.55	. Q	.	.	. V	.
17.267	0.6642	0.55	. Q	.	.	. V	.
17.283	0.6650	0.54	. Q	.	.	. V	.
17.300	0.6657	0.54	. Q	.	.	. V	.
17.317	0.6665	0.54	. Q	.	.	. V	.
17.333	0.6672	0.53	. Q	.	.	. V	.
17.350	0.6679	0.53	. Q	.	.	. V	.
17.367	0.6687	0.52	. Q	.	.	. V	.
17.383	0.6694	0.52	. Q	.	.	. V	.
17.400	0.6701	0.52	.Q	.	.	. V	.
17.417	0.6708	0.51	.Q	.	.	. V	.
17.433	0.6715	0.51	.Q	.	.	. V	.
17.450	0.6722	0.51	.Q	.	.	. V	.
17.467	0.6729	0.50	.Q	.	.	. V	.
17.483	0.6736	0.50	.Q	.	.	. V	.
17.500	0.6743	0.50	.Q	.	.	. V	.
17.517	0.6749	0.49	.Q	.	.	. V	.
17.533	0.6756	0.49	.Q	.	.	. V	.
17.550	0.6763	0.49	.Q	.	.	. V	.
17.567	0.6770	0.48	.Q	.	.	. V	.
17.583	0.6776	0.48	.Q	.	.	. V	.
17.600	0.6783	0.48	.Q	.	.	. V	.
17.617	0.6789	0.48	.Q	.	.	. V	.
17.633	0.6796	0.47	.Q	.	.	. V	.
17.650	0.6802	0.47	.Q	.	.	. V	.
17.667	0.6809	0.47	.Q	.	.	. V	.

17.683	0.6815	0.46	.Q	.	.	.	V	.
17.700	0.6821	0.46	.Q	.	.	.	V	.
17.717	0.6828	0.46	.Q	.	.	.	V	.
17.733	0.6834	0.46	.Q	.	.	.	V	.
17.750	0.6840	0.45	.Q	.	.	.	V	.
17.767	0.6847	0.45	.Q	.	.	.	V	.
17.783	0.6853	0.45	.Q	.	.	.	V	.
17.800	0.6859	0.45	.Q	.	.	.	V	.
17.817	0.6865	0.44	.Q	.	.	.	V	.
17.833	0.6871	0.44	.Q	.	.	.	V	.
17.850	0.6877	0.44	.Q	.	.	.	V	.
17.867	0.6883	0.44	.Q	.	.	.	V	.
17.883	0.6889	0.44	.Q	.	.	.	V	.
17.900	0.6895	0.43	.Q	.	.	.	V	.
17.917	0.6901	0.43	.Q	.	.	.	V	.
17.933	0.6907	0.43	.Q	.	.	.	V	.
17.950	0.6913	0.43	.Q	.	.	.	V	.
17.967	0.6919	0.43	.Q	.	.	.	V	.
17.983	0.6925	0.42	.Q	.	.	.	V	.
18.000	0.6930	0.42	.Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	370.0
20%	140.0
30%	85.0
40%	70.0
50%	60.0
60%	45.0
70%	35.0
80%	25.0
90%	15.0

****
FLOW PROCESS FROM NODE 1014.00 TO NODE 1014.50 IS CODE = 3.2
>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #1<<<<<
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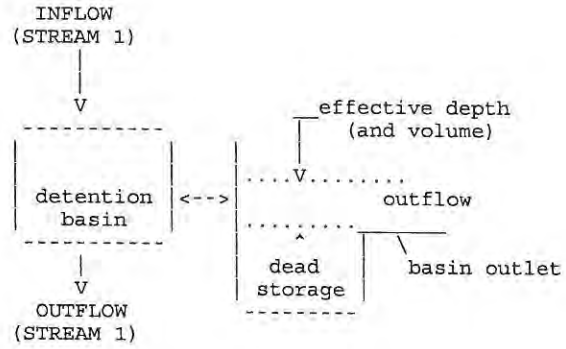

ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 1
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000
SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.50	0.85	0.052
3	1.00	1.64	0.100
4	1.50	1.92	0.144
5	2.00	2.17	0.182
6	2.50	2.39	0.210
7	2.84	2.53	0.216

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time; MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	0.57	0.00	0.29	0.5	0.030
14.033	0.000	0.57	0.00	0.29	0.5	0.030
14.050	0.000	0.58	0.00	0.29	0.5	0.030
14.067	0.000	0.58	0.00	0.29	0.5	0.030
14.083	0.000	0.58	0.00	0.29	0.5	0.030
14.100	0.000	0.59	0.00	0.29	0.5	0.031
14.117	0.000	0.59	0.00	0.30	0.5	0.031
14.133	0.000	0.59	0.00	0.30	0.5	0.031
14.150	0.000	0.59	0.00	0.30	0.5	0.031
14.167	0.000	0.59	0.00	0.30	0.5	0.031
14.183	0.000	0.60	0.00	0.30	0.5	0.031
14.200	0.000	0.60	0.00	0.30	0.5	0.031
14.217	0.000	0.60	0.00	0.30	0.5	0.031
14.233	0.000	0.60	0.00	0.30	0.5	0.032
14.250	0.000	0.60	0.00	0.30	0.5	0.032
14.267	0.000	0.61	0.00	0.31	0.5	0.032
14.283	0.000	0.61	0.00	0.31	0.5	0.032
14.300	0.000	0.61	0.00	0.31	0.5	0.032
14.317	0.000	0.62	0.00	0.31	0.5	0.032
14.333	0.000	0.62	0.00	0.31	0.5	0.032
14.350	0.000	0.63	0.00	0.31	0.5	0.032
14.367	0.000	0.63	0.00	0.31	0.5	0.033
14.383	0.000	0.63	0.00	0.31	0.5	0.033
14.400	0.000	0.64	0.00	0.32	0.5	0.033
14.417	0.000	0.64	0.00	0.32	0.5	0.033
14.433	0.000	0.64	0.00	0.32	0.5	0.033
14.450	0.000	0.65	0.00	0.32	0.5	0.033
14.467	0.000	0.65	0.00	0.32	0.5	0.033
14.483	0.000	0.65	0.00	0.32	0.5	0.034
14.500	0.000	0.65	0.00	0.32	0.6	0.034
14.517	0.000	0.66	0.00	0.33	0.6	0.034
14.533	0.000	0.66	0.00	0.33	0.6	0.034
14.550	0.000	0.66	0.00	0.33	0.6	0.034
14.567	0.000	0.67	0.00	0.33	0.6	0.034
14.583	0.000	0.67	0.00	0.33	0.6	0.034
14.600	0.000	0.68	0.00	0.33	0.6	0.035
14.617	0.000	0.68	0.00	0.33	0.6	0.035
14.633	0.000	0.69	0.00	0.34	0.6	0.035
14.650	0.000	0.69	0.00	0.34	0.6	0.035
14.667	0.000	0.70	0.00	0.34	0.6	0.035
14.683	0.000	0.70	0.00	0.34	0.6	0.035
14.700	0.000	0.71	0.00	0.34	0.6	0.036
14.717	0.000	0.71	0.00	0.34	0.6	0.036
14.733	0.000	0.72	0.00	0.35	0.6	0.036
14.750	0.000	0.72	0.00	0.35	0.6	0.036
14.767	0.000	0.72	0.00	0.35	0.6	0.036
14.783	0.000	0.73	0.00	0.35	0.6	0.037
14.800	0.000	0.73	0.00	0.35	0.6	0.037
14.817	0.000	0.73	0.00	0.35	0.6	0.037
14.833	0.000	0.74	0.00	0.36	0.6	0.037
14.850	0.000	0.74	0.00	0.36	0.6	0.037
14.867	0.000	0.76	0.00	0.36	0.6	0.037
14.883	0.000	0.77	0.00	0.36	0.6	0.038

14.900	0.000	0.78	0.00	0.36	0.6	0.038
14.917	0.000	0.79	0.00	0.37	0.6	0.038
14.933	0.000	0.80	0.00	0.37	0.6	0.038
14.950	0.000	0.81	0.00	0.37	0.6	0.039
14.967	0.000	0.82	0.00	0.37	0.6	0.039
14.983	0.000	0.84	0.00	0.38	0.6	0.039
15.000	0.000	0.85	0.00	0.38	0.6	0.039
15.017	0.000	0.85	0.00	0.38	0.6	0.040
15.033	0.000	0.86	0.00	0.38	0.7	0.040
15.050	0.000	0.87	0.00	0.39	0.7	0.040
15.067	0.000	0.87	0.00	0.39	0.7	0.041
15.083	0.000	0.88	0.00	0.39	0.7	0.041
15.100	0.000	0.89	0.00	0.40	0.7	0.041
15.117	0.000	0.89	0.00	0.40	0.7	0.041
15.133	0.000	0.90	0.00	0.40	0.7	0.042
15.150	0.000	0.92	0.00	0.40	0.7	0.042
15.167	0.000	0.94	0.00	0.41	0.7	0.042
15.183	0.000	0.95	0.00	0.41	0.7	0.043
15.200	0.000	0.97	0.00	0.41	0.7	0.043
15.217	0.000	0.99	0.00	0.42	0.7	0.044
15.233	0.000	1.01	0.00	0.42	0.7	0.044
15.250	0.000	1.02	0.00	0.43	0.7	0.044
15.267	0.000	1.04	0.00	0.43	0.7	0.045
15.283	0.000	1.06	0.00	0.43	0.7	0.045
15.300	0.000	1.07	0.00	0.44	0.7	0.046
15.317	0.000	1.08	0.00	0.44	0.8	0.046
15.333	0.000	1.09	0.00	0.45	0.8	0.047
15.350	0.000	1.10	0.00	0.45	0.8	0.047
15.367	0.000	1.12	0.00	0.46	0.8	0.048
15.383	0.000	1.13	0.00	0.46	0.8	0.048
15.400	0.000	1.14	0.00	0.47	0.8	0.048
15.417	0.000	1.15	0.00	0.47	0.8	0.049
15.433	0.000	1.16	0.00	0.48	0.8	0.049
15.450	0.000	1.16	0.00	0.48	0.8	0.050
15.467	0.000	1.17	0.00	0.48	0.8	0.050
15.483	0.000	1.17	0.00	0.49	0.8	0.051
15.500	0.000	1.17	0.00	0.49	0.8	0.051
15.517	0.000	1.18	0.00	0.50	0.8	0.052
15.533	0.000	1.18	0.00	0.50	0.9	0.052
15.550	0.000	1.19	0.00	0.51	0.9	0.053
15.567	0.000	1.19	0.00	0.51	0.9	0.053
15.583	0.000	1.21	0.00	0.52	0.9	0.054
15.600	0.000	1.23	0.00	0.52	0.9	0.054
15.617	0.000	1.25	0.00	0.53	0.9	0.055
15.633	0.000	1.28	0.00	0.53	0.9	0.055
15.650	0.000	1.30	0.00	0.54	0.9	0.056
15.667	0.000	1.32	0.00	0.54	0.9	0.056
15.683	0.000	1.35	0.00	0.55	0.9	0.057
15.700	0.000	1.37	0.00	0.56	0.9	0.057
15.717	0.000	1.40	0.00	0.56	0.9	0.058
15.733	0.000	1.49	0.00	0.57	1.0	0.059
15.750	0.000	1.59	0.00	0.58	1.0	0.060
15.767	0.000	1.69	0.00	0.59	1.0	0.061
15.783	0.000	1.79	0.00	0.60	1.0	0.062
15.800	0.000	1.89	0.00	0.61	1.0	0.063
15.817	0.000	1.99	0.00	0.63	1.0	0.064
15.833	0.000	2.09	0.00	0.64	1.1	0.066
15.850	0.000	2.19	0.00	0.66	1.1	0.067
15.867	0.000	2.29	0.00	0.67	1.1	0.069
15.883	0.000	2.40	0.00	0.69	1.1	0.071
15.900	0.000	2.51	0.00	0.71	1.2	0.072
15.917	0.000	2.62	0.00	0.73	1.2	0.074
15.933	0.000	2.73	0.00	0.75	1.2	0.076
15.950	0.000	2.84	0.00	0.78	1.3	0.079
15.967	0.000	2.95	0.00	0.80	1.3	0.081
15.983	0.000	3.06	0.00	0.82	1.3	0.083
16.000	0.000	3.17	0.00	0.85	1.4	0.086
16.017	0.000	3.64	0.00	0.88	1.4	0.089
16.033	0.000	4.46	0.00	0.92	1.5	0.093
16.050	0.000	5.27	0.00	0.98	1.6	0.098
16.067	0.000	6.09	0.00	1.05	1.6	0.104
16.083	0.000	6.91	0.00	1.13	1.7	0.111
16.100	0.000	7.73	0.00	1.22	1.7	0.119
16.117	0.000	8.55	0.00	1.33	1.8	0.129

16.133	0.000	9.36	0.00	1.44	1.9	0.139
16.150	0.000	10.36	0.00	1.59	1.9	0.151
16.167	0.000	9.59	0.00	1.73	2.0	0.161
16.183	0.000	8.60	0.00	1.84	2.1	0.170
16.200	0.000	7.61	0.00	1.94	2.1	0.178
16.217	0.000	6.62	0.00	2.03	2.2	0.184
16.233	0.000	5.63	0.00	2.12	2.2	0.189
16.250	0.000	4.64	0.00	2.18	2.2	0.192
16.267	0.000	3.65	0.00	2.21	2.3	0.194
16.283	0.000	2.66	0.00	2.22	2.3	0.194
16.300	0.000	1.82	0.00	2.21	2.3	0.194
16.317	0.000	1.65	0.00	2.20	2.3	0.193
16.333	0.000	1.58	0.00	2.18	2.3	0.192
16.350	0.000	1.50	0.00	2.16	2.2	0.191
16.367	0.000	1.42	0.00	2.14	2.2	0.190
16.383	0.000	1.35	0.00	2.12	2.2	0.189
16.400	0.000	1.27	0.00	2.10	2.2	0.187
16.417	0.000	1.19	0.00	2.07	2.2	0.186
16.433	0.000	1.12	0.00	2.04	2.2	0.184
16.450	0.000	1.07	0.00	2.02	2.2	0.183
16.467	0.000	1.05	0.00	1.99	2.2	0.181
16.483	0.000	1.04	0.00	1.97	2.2	0.180
16.500	0.000	1.03	0.00	1.95	2.2	0.178
16.517	0.000	1.02	0.00	1.93	2.1	0.177
16.533	0.000	1.01	0.00	1.91	2.1	0.175
16.550	0.000	1.00	0.00	1.89	2.1	0.174
16.567	0.000	0.99	0.00	1.87	2.1	0.172
16.583	0.000	0.98	0.00	1.85	2.1	0.171
16.600	0.000	0.96	0.00	1.83	2.1	0.169
16.617	0.000	0.94	0.00	1.81	2.1	0.167
16.633	0.000	0.92	0.00	1.79	2.1	0.166
16.650	0.000	0.90	0.00	1.77	2.1	0.164
16.667	0.000	0.88	0.00	1.75	2.0	0.163
16.683	0.000	0.85	0.00	1.72	2.0	0.161
16.700	0.000	0.83	0.00	1.70	2.0	0.159
16.717	0.000	0.81	0.00	1.68	2.0	0.158
16.733	0.000	0.79	0.00	1.66	2.0	0.156
16.750	0.000	0.78	0.00	1.64	2.0	0.154
16.767	0.000	0.77	0.00	1.61	2.0	0.153
16.783	0.000	0.75	0.00	1.59	2.0	0.151
16.800	0.000	0.74	0.00	1.57	2.0	0.149
16.817	0.000	0.73	0.00	1.55	1.9	0.148
16.833	0.000	0.72	0.00	1.53	1.9	0.146
16.850	0.000	0.71	0.00	1.50	1.9	0.144
16.867	0.000	0.69	0.00	1.48	1.9	0.143
16.883	0.000	0.68	0.00	1.47	1.9	0.141
16.900	0.000	0.68	0.00	1.45	1.9	0.139
16.917	0.000	0.67	0.00	1.43	1.9	0.138
16.933	0.000	0.66	0.00	1.41	1.9	0.136
16.950	0.000	0.65	0.00	1.39	1.9	0.134
16.967	0.000	0.65	0.00	1.37	1.9	0.133
16.983	0.000	0.64	0.00	1.35	1.8	0.131
17.000	0.000	0.63	0.00	1.33	1.8	0.129
17.017	0.000	0.63	0.00	1.31	1.8	0.128
17.033	0.000	0.62	0.00	1.30	1.8	0.126
17.050	0.000	0.61	0.00	1.28	1.8	0.124
17.067	0.000	0.61	0.00	1.26	1.8	0.123
17.083	0.000	0.60	0.00	1.24	1.8	0.121
17.100	0.000	0.60	0.00	1.22	1.8	0.120
17.117	0.000	0.59	0.00	1.20	1.8	0.118
17.133	0.000	0.59	0.00	1.19	1.7	0.116
17.150	0.000	0.58	0.00	1.17	1.7	0.115
17.167	0.000	0.58	0.00	1.15	1.7	0.113
17.183	0.000	0.57	0.00	1.13	1.7	0.112
17.200	0.000	0.57	0.00	1.11	1.7	0.110
17.217	0.000	0.56	0.00	1.10	1.7	0.108
17.233	0.000	0.56	0.00	1.08	1.7	0.107
17.250	0.000	0.55	0.00	1.06	1.7	0.105
17.267	0.000	0.55	0.00	1.04	1.7	0.104
17.283	0.000	0.54	0.00	1.03	1.7	0.102
17.300	0.000	0.54	0.00	1.01	1.6	0.101
17.317	0.000	0.54	0.00	0.99	1.6	0.099
17.333	0.000	0.53	0.00	0.98	1.6	0.098
17.350	0.000	0.53	0.00	0.96	1.6	0.096

17.367	0.000	0.52	0.00	0.95	1.6	0.095
17.383	0.000	0.52	0.00	0.93	1.5	0.093
17.400	0.000	0.52	0.00	0.92	1.5	0.092
17.417	0.000	0.51	0.00	0.90	1.5	0.091
17.433	0.000	0.51	0.00	0.89	1.5	0.089
17.450	0.000	0.51	0.00	0.88	1.5	0.088
17.467	0.000	0.50	0.00	0.86	1.4	0.087
17.483	0.000	0.50	0.00	0.85	1.4	0.085
17.500	0.000	0.50	0.00	0.84	1.4	0.084
17.517	0.000	0.49	0.00	0.82	1.4	0.083
17.533	0.000	0.49	0.00	0.81	1.4	0.082
17.550	0.000	0.49	0.00	0.80	1.3	0.081
17.567	0.000	0.48	0.00	0.79	1.3	0.080
17.583	0.000	0.48	0.00	0.78	1.3	0.078
17.600	0.000	0.48	0.00	0.76	1.3	0.077
17.617	0.000	0.48	0.00	0.75	1.3	0.076
17.633	0.000	0.47	0.00	0.74	1.2	0.075
17.650	0.000	0.47	0.00	0.73	1.2	0.074
17.667	0.000	0.47	0.00	0.72	1.2	0.073
17.683	0.000	0.46	0.00	0.71	1.2	0.072
17.700	0.000	0.46	0.00	0.70	1.2	0.071
17.717	0.000	0.46	0.00	0.69	1.2	0.070
17.733	0.000	0.46	0.00	0.68	1.1	0.069
17.750	0.000	0.45	0.00	0.67	1.1	0.068
17.767	0.000	0.45	0.00	0.66	1.1	0.067
17.783	0.000	0.45	0.00	0.65	1.1	0.067
17.800	0.000	0.45	0.00	0.64	1.1	0.066
17.817	0.000	0.44	0.00	0.63	1.1	0.065
17.833	0.000	0.44	0.00	0.62	1.1	0.064
17.850	0.000	0.44	0.00	0.62	1.0	0.063
17.867	0.000	0.44	0.00	0.61	1.0	0.062
17.883	0.000	0.44	0.00	0.60	1.0	0.062
17.900	0.000	0.43	0.00	0.59	1.0	0.061
17.917	0.000	0.43	0.00	0.58	1.0	0.060
17.933	0.000	0.43	0.00	0.58	1.0	0.059
17.950	0.000	0.43	0.00	0.57	1.0	0.058
17.967	0.000	0.43	0.00	0.56	1.0	0.058
17.983	0.000	0.42	0.00	0.55	0.9	0.057
18.000	0.000	0.42	0.00	0.55	0.9	0.056

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 0.793 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 0.793 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 1014.50 TO NODE 1026.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<

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MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 131.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 7.00
DOWNSTREAM ELEVATION(FT) = 4.40
PIPE DIAMETER(FT) = 18.00

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)

				DPHIPF5
14.000	0.49	0.50	0.48	0.000
14.017	0.49	0.50	0.48	0.000
14.033	0.49	0.50	0.48	0.000
14.050	0.49	0.50	0.49	0.000
14.067	0.50	0.50	0.49	0.000
14.083	0.50	0.50	0.49	0.000
14.100	0.50	0.50	0.49	0.000
14.117	0.50	0.50	0.49	0.000
14.133	0.50	0.50	0.49	0.000
14.150	0.51	0.50	0.50	0.000
14.167	0.51	0.50	0.50	0.000
14.183	0.51	0.50	0.50	0.000
14.200	0.51	0.50	0.50	0.000
14.217	0.51	0.50	0.50	0.000
14.233	0.52	0.50	0.51	0.000
14.250	0.52	0.50	0.51	0.000
14.267	0.52	0.50	0.51	0.000
14.283	0.52	0.50	0.51	0.000
14.300	0.52	0.50	0.51	0.000
14.317	0.53	0.50	0.52	0.000
14.333	0.53	0.50	0.52	0.000
14.350	0.53	0.50	0.52	0.000
14.367	0.53	0.50	0.52	0.000
14.383	0.53	0.50	0.52	0.000
14.400	0.54	0.50	0.53	0.000
14.417	0.54	0.50	0.53	0.000
14.433	0.54	0.50	0.53	0.000
14.450	0.54	0.50	0.53	0.000
14.467	0.55	0.50	0.54	0.000
14.483	0.55	0.50	0.54	0.000
14.500	0.55	0.50	0.54	0.000
14.517	0.55	0.50	0.54	0.000
14.533	0.55	0.50	0.54	0.000
14.550	0.56	0.50	0.55	0.000
14.567	0.56	0.50	0.55	0.000
14.583	0.56	0.50	0.55	0.000
14.600	0.56	0.50	0.55	0.000
14.617	0.57	0.50	0.56	0.000
14.633	0.57	0.50	0.56	0.000
14.650	0.57	0.50	0.56	0.000
14.667	0.57	0.50	0.56	0.000
14.683	0.58	0.50	0.57	0.000
14.700	0.58	0.50	0.57	0.000
14.717	0.58	0.50	0.57	0.000
14.733	0.59	0.50	0.57	0.000
14.750	0.59	0.50	0.58	0.000
14.767	0.59	0.50	0.58	0.000
14.783	0.60	0.50	0.58	0.000
14.800	0.60	0.50	0.59	0.000
14.817	0.60	0.50	0.59	0.000
14.833	0.60	0.50	0.59	0.000
14.850	0.61	0.50	0.59	0.000
14.867	0.61	0.50	0.60	0.000
14.883	0.61	0.50	0.60	0.000
14.900	0.62	0.50	0.60	0.000
14.917	0.62	0.50	0.61	0.000
14.933	0.62	0.50	0.61	0.000
14.950	0.63	0.50	0.61	0.000
14.967	0.63	0.50	0.62	0.000
14.983	0.64	0.50	0.62	0.000
15.000	0.64	0.50	0.62	0.000
15.017	0.65	0.50	0.63	0.000
15.033	0.65	0.50	0.63	0.000
15.050	0.66	0.50	0.64	0.000
15.067	0.66	0.50	0.64	0.000
15.083	0.67	0.50	0.65	0.000
15.100	0.67	0.50	0.65	0.000
15.117	0.68	0.50	0.65	0.000
15.133	0.68	0.50	0.66	0.000
15.150	0.69	0.50	0.66	0.000
15.167	0.69	0.50	0.67	0.000
15.183	0.70	0.50	0.67	0.000
15.200	0.70	0.50	0.68	0.000
15.217	0.71	0.50	0.68	0.000

				DPHIPF5
15.233	0.71	0.50	0.69	0.000
15.250	0.72	0.50	0.69	0.000
15.267	0.73	0.50	0.70	0.000
15.283	0.74	0.50	0.71	0.000
15.300	0.74	0.50	0.71	0.000
15.317	0.75	0.50	0.72	0.000
15.333	0.76	0.50	0.73	0.000
15.350	0.77	0.50	0.73	0.000
15.367	0.77	0.50	0.74	0.000
15.383	0.78	0.50	0.75	0.000
15.400	0.79	0.50	0.76	0.000
15.417	0.80	0.50	0.76	0.000
15.433	0.80	0.50	0.77	0.000
15.450	0.81	0.50	0.78	0.000
15.467	0.82	0.50	0.79	0.000
15.483	0.83	0.50	0.79	0.000
15.500	0.84	0.50	0.80	0.000
15.517	0.84	0.50	0.81	0.000
15.533	0.85	0.50	0.82	0.000
15.550	0.86	0.50	0.83	0.000
15.567	0.87	0.50	0.83	0.000
15.583	0.87	0.50	0.84	0.000
15.600	0.88	0.50	0.85	0.000
15.617	0.89	0.50	0.86	0.000
15.633	0.90	0.50	0.86	0.000
15.650	0.91	0.50	0.87	0.000
15.667	0.92	0.50	0.88	0.000
15.683	0.92	0.50	0.89	0.000
15.700	0.93	0.50	0.89	0.000
15.717	0.94	0.50	0.90	0.000
15.733	0.96	0.50	0.91	0.000
15.750	0.97	0.50	0.92	0.000
15.767	0.98	0.50	0.93	0.000
15.783	1.00	0.50	0.94	0.000
15.800	1.02	0.50	0.95	0.000
15.817	1.04	0.50	0.96	0.000
15.833	1.06	0.50	0.98	0.000
15.850	1.09	0.50	0.99	0.000
15.867	1.11	0.50	1.01	0.000
15.883	1.14	0.50	1.03	0.000
15.900	1.17	0.50	1.05	0.000
15.917	1.20	0.50	1.08	0.000
15.933	1.23	0.50	1.10	0.000
15.950	1.27	0.50	1.13	0.000
15.967	1.31	0.50	1.16	0.000
15.983	1.34	0.50	1.19	0.000
16.000	1.38	0.50	1.22	0.000
16.017	1.43	0.50	1.26	0.000
16.033	1.49	0.50	1.29	0.000
16.050	1.56	0.50	1.33	0.000
16.067	1.64	0.50	1.37	0.000
16.083	1.69	0.50	1.41	0.000
16.100	1.74	0.50	1.47	0.000
16.117	1.79	0.50	1.54	0.000
16.133	1.86	0.50	1.61	0.000
16.150	1.93	0.50	1.67	0.000
16.167	2.00	0.50	1.72	0.000
16.183	2.06	0.50	1.77	0.000
16.200	2.12	0.50	1.83	0.000
16.217	2.16	0.50	1.90	0.000
16.233	2.20	0.50	1.97	0.000
16.250	2.24	0.50	2.04	0.000
16.267	2.26	0.50	2.10	0.000
16.283	2.27	0.50	2.15	0.000
16.300	2.27	0.50	2.19	0.000
16.317	2.26	0.50	2.22	0.000
16.333	2.25	0.50	2.25	0.000
16.350	2.24	0.50	2.26	0.000
16.367	2.24	0.50	2.27	0.000
16.383	2.23	0.50	2.26	0.000
16.400	2.22	0.50	2.25	0.000
16.417	2.21	0.50	2.25	0.000
16.433	2.20	0.50	2.24	0.000
16.450	2.18	0.50	2.23	0.000

			DPHIPF5	
16.467	2.17	0.50	2.22	0.000
16.483	2.16	0.50	2.21	0.000
16.500	2.15	0.50	2.20	0.000
16.517	2.14	0.50	2.19	0.000
16.533	2.13	0.50	2.18	0.000
16.550	2.12	0.50	2.16	0.000
16.567	2.11	0.50	2.15	0.000
16.583	2.10	0.50	2.14	0.000
16.600	2.09	0.50	2.13	0.000
16.617	2.08	0.50	2.12	0.000
16.633	2.07	0.50	2.11	0.000
16.650	2.06	0.50	2.10	0.000
16.667	2.05	0.50	2.09	0.000
16.683	2.04	0.50	2.08	0.000
16.700	2.03	0.50	2.07	0.000
16.717	2.02	0.50	2.06	0.000
16.733	2.00	0.50	2.05	0.000
16.750	1.99	0.50	2.04	0.000
16.767	1.98	0.50	2.03	0.000
16.783	1.97	0.50	2.02	0.000
16.800	1.96	0.50	2.01	0.000
16.817	1.95	0.50	2.00	0.000
16.833	1.94	0.50	1.99	0.000
16.850	1.93	0.50	1.98	0.000
16.867	1.92	0.50	1.96	0.000
16.883	1.91	0.50	1.95	0.000
16.900	1.90	0.50	1.94	0.000
16.917	1.88	0.50	1.93	0.000
16.933	1.87	0.50	1.92	0.000
16.950	1.86	0.50	1.91	0.000
16.967	1.85	0.50	1.90	0.000
16.983	1.84	0.50	1.89	0.000
17.000	1.83	0.50	1.88	0.000
17.017	1.82	0.50	1.87	0.000
17.033	1.81	0.50	1.86	0.000
17.050	1.80	0.50	1.85	0.000
17.067	1.79	0.50	1.84	0.000
17.083	1.78	0.50	1.82	0.000
17.100	1.77	0.50	1.81	0.000
17.117	1.76	0.50	1.80	0.000
17.133	1.75	0.50	1.79	0.000
17.150	1.74	0.50	1.78	0.000
17.167	1.73	0.50	1.77	0.000
17.183	1.72	0.50	1.76	0.000
17.200	1.71	0.50	1.75	0.000
17.217	1.70	0.50	1.74	0.000
17.233	1.69	0.50	1.73	0.000
17.250	1.68	0.50	1.72	0.000
17.267	1.67	0.50	1.71	0.000
17.283	1.66	0.50	1.70	0.000
17.300	1.65	0.50	1.69	0.000
17.317	1.64	0.50	1.68	0.000
17.333	1.61	0.50	1.67	0.000
17.350	1.59	0.50	1.66	0.000
17.367	1.57	0.50	1.65	0.000
17.383	1.54	0.50	1.64	0.000
17.400	1.52	0.50	1.62	0.000
17.417	1.50	0.50	1.60	0.000
17.433	1.48	0.50	1.57	0.000
17.450	1.45	0.50	1.55	0.000
17.467	1.43	0.50	1.53	0.000
17.483	1.41	0.50	1.51	0.000
17.500	1.39	0.50	1.48	0.000
17.517	1.37	0.50	1.46	0.000
17.533	1.35	0.50	1.44	0.000
17.550	1.33	0.50	1.42	0.000
17.567	1.31	0.50	1.40	0.000
17.583	1.29	0.50	1.38	0.000
17.600	1.28	0.50	1.36	0.000
17.617	1.26	0.50	1.34	0.000
17.633	1.24	0.50	1.32	0.000
17.650	1.22	0.50	1.30	0.000
17.667	1.21	0.50	1.28	0.000
17.683	1.19	0.50	1.26	0.000

17.700	1.17	0.50	1.25	0.000
17.717	1.16	0.50	1.23	0.000
17.733	1.14	0.50	1.21	0.000
17.750	1.13	0.50	1.20	0.000
17.767	1.11	0.50	1.18	0.000
17.783	1.10	0.50	1.16	0.000
17.800	1.08	0.50	1.15	0.000
17.817	1.07	0.50	1.13	0.000
17.833	1.05	0.50	1.12	0.000
17.850	1.04	0.50	1.10	0.000
17.867	1.03	0.50	1.09	0.000
17.883	1.01	0.50	1.07	0.000
17.900	1.00	0.50	1.06	0.000
17.917	0.99	0.50	1.04	0.000
17.933	0.98	0.50	1.03	0.000
17.950	0.96	0.50	1.02	0.000
17.967	0.95	0.50	1.01	0.000
17.983	0.94	0.50	0.99	0.000
18.000	0.93	0.50	0.98	0.000

```
****************************************************************************
  FLOW PROCESS FROM NODE   1026.00 TO NODE   1026.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [dphipf5                        ]


****************************************************************************
  FLOW PROCESS FROM NODE   1033.00 TO NODE   1034.00 IS CODE = 1.2
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #2)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.94
    TOTAL CATCHMENT AREA(ACRES) =    1.98
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.024
    LOW LOSS FRACTION = 0.126
    TIME OF CONCENTRATION(MIN.) =  8.32
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

----------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.52
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.09

----------------------------------------------------------------------------
♀
============================================================================

                    2 4 - H O U R    S T O R M
                  R U N O F F    H Y D R O G R A P H

============================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        1.4       2.8       4.2       5.6
----------------------------------------------------------------------------
  14.000      0.1840      0.40  . Q       .   V     .         .         .
```

14.017	0.1846	0.40	.	Q	.	V	.	.	.	.
14.033	0.1852	0.41	.	Q	.	V	.	.	.	.
14.050	0.1857	0.41	.	Q	.	V	.	.	.	.
14.067	0.1863	0.41	.	Q	.	V	.	.	.	.
14.083	0.1868	0.41	.	Q	.	V	.	.	.	.
14.100	0.1874	0.41	.	Q	.	V	.	.	.	.
14.117	0.1880	0.42	.	Q	.	V	.	.	.	.
14.133	0.1886	0.42	.	Q	.	V	.	.	.	.
14.150	0.1891	0.42	.	Q	.	V	.	.	.	.
14.167	0.1897	0.42	.	Q	.	V	.	.	.	.
14.183	0.1903	0.43	.	Q	.	V	.	.	.	.
14.200	0.1909	0.43	.	Q	.	V	.	.	.	.
14.217	0.1915	0.43	.	Q	.	V	.	.	.	.
14.233	0.1921	0.43	.	Q	.	V	.	.	.	.
14.250	0.1927	0.44	.	Q	.	V	.	.	.	.
14.267	0.1933	0.44	.	Q	.	V	.	.	.	.
14.283	0.1939	0.44	.	Q	.	V	.	.	.	.
14.300	0.1945	0.44	.	Q	.	V	.	.	.	.
14.317	0.1951	0.44	.	Q	.	V	.	.	.	.
14.333	0.1957	0.44	.	Q	.	V	.	.	.	.
14.350	0.1963	0.45	.	Q	.	V	.	.	.	.
14.367	0.1970	0.45	.	Q	.	V	.	.	.	.
14.383	0.1976	0.45	.	Q	.	V	.	.	.	.
14.400	0.1982	0.46	.	Q	.	V	.	.	.	.
14.417	0.1988	0.46	.	Q	.	V	.	.	.	.
14.433	0.1995	0.46	.	Q	.	V	.	.	.	.
14.450	0.2001	0.47	.	Q	.	V	.	.	.	.
14.467	0.2008	0.47	.	Q	.	V	.	.	.	.
14.483	0.2014	0.47	.	Q	.	V	.	.	.	.
14.500	0.2021	0.47	.	Q	.	V	.	.	.	.
14.517	0.2027	0.48	.	Q	.	V	.	.	.	.
14.533	0.2034	0.48	.	Q	.	V	.	.	.	.
14.550	0.2041	0.48	.	Q	.	V	.	.	.	.
14.567	0.2047	0.48	.	Q	.	V	.	.	.	.
14.583	0.2054	0.48	.	Q	.	V	.	.	.	.
14.600	0.2061	0.49	.	Q	.	V	.	.	.	.
14.617	0.2067	0.49	.	Q	.	V	.	.	.	.
14.633	0.2074	0.49	.	Q	.	V	.	.	.	.
14.650	0.2081	0.50	.	Q	.	V	.	.	.	.
14.667	0.2088	0.50	.	Q	.	V	.	.	.	.
14.683	0.2095	0.51	.	Q	.	V	.	.	.	.
14.700	0.2102	0.51	.	Q	.	V	.	.	.	.
14.717	0.2109	0.52	.	Q	.	V	.	.	.	.
14.733	0.2116	0.52	.	Q	.	V	.	.	.	.
14.750	0.2123	0.52	.	Q	.	V	.	.	.	.
14.767	0.2131	0.53	.	Q	.	V	.	.	.	.
14.783	0.2138	0.53	.	Q	.	V	.	.	.	.
14.800	0.2145	0.53	.	Q	.	V	.	.	.	.
14.817	0.2153	0.54	.	Q	.	V	.	.	.	.
14.833	0.2160	0.54	.	Q	.	V	.	.	.	.
14.850	0.2168	0.54	.	Q	.	V	.	.	.	.
14.867	0.2175	0.54	.	Q	.	V	.	.	.	.
14.883	0.2183	0.55	.	Q	.	V	.	.	.	.
14.900	0.2190	0.55	.	Q	.	V	.	.	.	.
14.917	0.2198	0.56	.	Q	.	V	.	.	.	.
14.933	0.2206	0.56	.	Q	.	V	.	.	.	.
14.950	0.2213	0.57	.	Q	.	V	.	.	.	.
14.967	0.2221	0.58	.	Q	.	V	.	.	.	.
14.983	0.2229	0.58	.	Q	.	V	.	.	.	.
15.000	0.2238	0.59	.	Q	.	V	.	.	.	.
15.017	0.2246	0.59	.	Q	.	V	.	.	.	.
15.033	0.2254	0.60	.	Q	.	V	.	.	.	.
15.050	0.2262	0.61	.	Q	.	V	.	.	.	.
15.067	0.2271	0.61	.	Q	.	V	.	.	.	.
15.083	0.2279	0.61	.	Q	.	V	.	.	.	.
15.100	0.2288	0.62	.	Q	.	V	.	.	.	.
15.117	0.2296	0.62	.	Q	.	V	.	.	.	.
15.133	0.2305	0.62	.	Q	.	V	.	.	.	.
15.150	0.2313	0.63	.	Q	.	V	.	.	.	.
15.167	0.2322	0.63	.	Q	.	V	.	.	.	.
15.183	0.2331	0.64	.	Q	.	V	.	.	.	.
15.200	0.2340	0.65	.	Q	.	V	.	.	.	.
15.217	0.2349	0.66	.	Q	.	V	.	.	.	.
15.233	0.2358	0.67	.	Q	.	V	.	.	.	.

DPHIPF5

15.250	0.2367	0.68	. Q . V . . .
15.267	0.2377	0.69	. Q . V . . .
15.283	0.2387	0.70	. Q . V . . .
15.300	0.2396	0.71	. Q . V . . .
15.317	0.2406	0.72	. Q . V . . .
15.333	0.2416	0.72	. Q . V . . .
15.350	0.2426	0.72	. Q . V . . .
15.367	0.2436	0.73	. Q . V . . .
15.383	0.2446	0.73	. Q . V . . .
15.400	0.2456	0.73	. Q . V. . . .
15.417	0.2466	0.73	. Q . V. . . .
15.433	0.2476	0.74	. Q . V. . . .
15.450	0.2487	0.74	. Q . V. . . .
15.467	0.2497	0.75	. Q . V. . . .
15.483	0.2507	0.75	. Q . V. . . .
15.500	0.2518	0.76	. Q . V. . . .
15.517	0.2528	0.76	. Q . V. . . .
15.533	0.2539	0.77	. Q . V. . . .
15.550	0.2549	0.77	. Q . V. . . .
15.567	0.2560	0.78	. Q . V. . . .
15.583	0.2571	0.79	. Q . V. . . .
15.600	0.2582	0.79	. Q . V . . .
15.617	0.2593	0.81	. Q . V . . .
15.633	0.2604	0.82	. Q . V . . .
15.650	0.2616	0.83	. Q . V . . .
15.667	0.2627	0.85	. Q . V . . .
15.683	0.2639	0.86	. Q . V . . .
15.700	0.2651	0.87	. Q . V . . .
15.717	0.2663	0.88	. Q . V . . .
15.733	0.2676	0.91	. Q . V . . .
15.750	0.2689	0.96	. Q . V . . .
15.767	0.2703	1.01	. Q . V . . .
15.783	0.2718	1.07	. Q . .V . . .
15.800	0.2733	1.12	. Q . .V . . .
15.817	0.2749	1.18	. Q . .V . . .
15.833	0.2766	1.23	. Q . .V . . .
15.850	0.2784	1.29	. Q. .V . . .
15.867	0.2803	1.34	. Q. .V . . .
15.883	0.2822	1.40	. Q .V . . .
15.900	0.2842	1.46	. Q . V . . .
15.917	0.2863	1.52	. Q . V . . .
15.933	0.2885	1.58	. .Q . V . . .
15.950	0.2908	1.65	. .Q . V . . .
15.967	0.2931	1.71	. . Q . V . . .
15.983	0.2955	1.77	. . Q . V . . .
16.000	0.2981	1.83	. . Q . V . . .
16.017	0.3009	2.08	. . Q . V . . .
16.033	0.3044	2.53	. . Q . V . . .
16.050	0.3085	2.98	. . .Q V . . .
16.067	0.3133	3.43	. . . Q . . .
16.083	0.3186	3.88	. . . V Q . . .
16.100	0.3246	4.33	. . . V Q . . .
16.117	0.3312	4.78	. . . V . Q . .
16.133	0.3384	5.23	. . . V . Q . .
16.150	0.3461	5.60	. . . V . Q . .
16.167	0.3529	4.96	. . . V . Q . .
16.183	0.3590	4.42	. . . V .Q . .
16.200	0.3644	3.88	. . . QV . . .
16.217	0.3689	3.33	. . . Q V . . .
16.233	0.3728	2.79	. . Q. V . . .
16.250	0.3759	2.24	. . Q . V. . .
16.267	0.3782	1.70	. . Q . V. . .
16.283	0.3799	1.19	. Q . V. . .
16.300	0.3813	1.04	. Q . V. . .
16.317	0.3827	1.00	. Q . V. . .
16.333	0.3840	0.95	. Q . V. . .
16.350	0.3852	0.91	. Q . V. . .
16.367	0.3864	0.86	. Q . V. . .
16.383	0.3875	0.82	. Q . V . .
16.400	0.3886	0.77	. Q . V . .
16.417	0.3896	0.73	. Q . V . .
16.433	0.3906	0.71	. Q . V . .
16.450	0.3916	0.70	. Q . V . .
16.467	0.3925	0.70	. Q . V . .

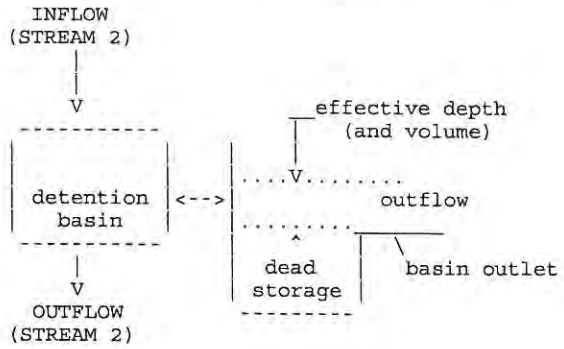
16.483	0.3935	0.69	.	Q	.	.	.	V	.	
16.500	0.3944	0.69	.	Q	.	.	.	V	.	
16.517	0.3954	0.68	.	Q	.	.	.	V	.	
16.533	0.3963	0.68	.	Q	.	.	.	V	.	
16.550	0.3972	0.68	.	Q	.	.	.	V	.	
16.567	0.3982	0.67	.	Q	.	.	.	V	.	
16.583	0.3991	0.66	.	Q	.	.	.	V	.	
16.600	0.3999	0.65	.	Q	.	.	.	.V	.	
16.617	0.4008	0.63	.	Q	.	.	.	.V	.	
16.633	0.4017	0.62	.	Q	.	.	.	.V	.	
16.650	0.4025	0.61	.	Q	.	.	.	.V	.	
16.667	0.4033	0.60	.	Q	.	.	.	.V	.	
16.683	0.4042	0.59	.	Q	.	.	.	.V	.	
16.700	0.4049	0.58	.	Q	.	.	.	.V	.	
16.717	0.4057	0.57	.	Q	.	.	.	.V	.	
16.733	0.4065	0.56	.	Q	.	.	.	.V	.	
16.750	0.4073	0.55	.	Q	.	.	.	.V	.	
16.767	0.4080	0.54	.	Q	.	.	.	.V	.	
16.783	0.4087	0.53	.	Q	.	.	.	.V	.	
16.800	0.4095	0.53	.	Q	.	.	.	.V	.	
16.817	0.4102	0.52	.	Q	.	.	.	.V	.	
16.833	0.4109	0.51	.	Q	.	.	.	.V	.	
16.850	0.4116	0.50	.	Q	.	.	.	.V	.	
16.867	0.4123	0.50	.	Q	.	.	.	.V	.	
16.883	0.4129	0.49	.	Q	.	.	.	. V	.	
16.900	0.4136	0.49	.	Q	.	.	.	. V	.	
16.917	0.4143	0.48	.	Q	.	.	.	. V	.	
16.933	0.4149	0.47	.	Q	.	.	.	. V	.	
16.950	0.4156	0.47	.	Q	.	.	.	. V	.	
16.967	0.4162	0.46	.	Q	.	.	.	. V	.	
16.983	0.4168	0.46	.	Q	.	.	.	. V	.	
17.000	0.4175	0.45	.	Q	.	.	.	. V	.	
17.017	0.4181	0.45	.	Q	.	.	.	. V	.	
17.033	0.4187	0.44	.	Q	.	.	.	. V	.	
17.050	0.4193	0.44	.	Q	.	.	.	. V	.	
17.067	0.4199	0.43	.	Q	.	.	.	. V	.	
17.083	0.4205	0.43	.	Q	.	.	.	. V	.	
17.100	0.4211	0.42	.	Q	.	.	.	. V	.	
17.117	0.4216	0.42	.	Q	.	.	.	. V	.	
17.133	0.4222	0.42	.	Q	.	.	.	. V	.	
17.150	0.4228	0.41	.	Q	.	.	.	. V	.	
17.167	0.4233	0.41	.	Q	.	.	.	. V	.	
17.183	0.4239	0.40	.	Q	.	.	.	. V	.	
17.200	0.4244	0.40	.	Q	.	.	.	. V	.	
17.217	0.4250	0.40	.	Q	.	.	.	. V	.	
17.233	0.4255	0.39	.	Q	.	.	.	. V	.	
17.250	0.4261	0.39	.	Q	.	.	.	. V	.	
17.267	0.4266	0.39	.	Q	.	.	.	. V	.	
17.283	0.4271	0.38	.	Q	.	.	.	. V	.	
17.300	0.4277	0.38	.	Q	.	.	.	. V	.	
17.317	0.4282	0.38	.	Q	.	.	.	. V	.	
17.333	0.4287	0.37	.	Q	.	.	.	. V	.	
17.350	0.4292	0.37	.	Q	.	.	.	. V	.	
17.367	0.4297	0.37	.	Q	.	.	.	. V	.	
17.383	0.4302	0.36	.	Q	.	.	.	. V	.	
17.400	0.4307	0.36	.	Q	.	.	.	. V	.	
17.417	0.4312	0.36	.	Q	.	.	.	. V	.	
17.433	0.4317	0.36	.	Q	.	.	.	. V	.	
17.450	0.4322	0.35	.	Q	.	.	.	. V	.	
17.467	0.4327	0.35	.	Q	.	.	.	. V	.	
17.483	0.4331	0.35	.	Q	.	.	.	. V	.	
17.500	0.4336	0.35	.	Q	.	.	.	. V	.	
17.517	0.4341	0.34	.	Q	.	.	.	. V	.	
17.533	0.4346	0.34	.	Q	.	.	.	. V	.	
17.550	0.4350	0.34	.	Q	.	.	.	. V	.	
17.567	0.4355	0.34	.	Q	.	.	.	. V	.	
17.583	0.4359	0.33	.	Q	.	.	.	. V	.	
17.600	0.4364	0.33	.	Q	.	.	.	. V	.	
17.617	0.4369	0.33	.	Q	.	.	.	. V	.	
17.633	0.4373	0.33	.	Q	.	.	.	. V	.	
17.650	0.4378	0.32	.	Q	.	.	.	. V	.	
17.667	0.4382	0.32	.	Q	.	.	.	. V	.	
17.683	0.4386	0.32	.	Q	.	.	.	. V	.	
17.700	0.4391	0.32	.	Q	.	.	.	. V	.	

17.717	0.4395	0.32	. Q	.	.	.	V	.
17.733	0.4399	0.31	. Q	.	.	.	V	.
17.750	0.4404	0.31	. Q	.	.	.	V	.
17.767	0.4408	0.31	. Q	.	.	.	V	.
17.783	0.4412	0.31	. Q	.	.	.	V	.
17.800	0.4417	0.31	. Q	.	.	.	V	.
17.817	0.4421	0.31	. Q	.	.	.	V	.
17.833	0.4425	0.30	. Q	.	.	.	V	.
17.850	0.4429	0.30	. Q	.	.	.	V	.
17.867	0.4433	0.30	. Q	.	.	.	V	.
17.883	0.4437	0.30	. Q	.	.	.	V	.
17.900	0.4441	0.30	. Q	.	.	.	V	.
17.917	0.4446	0.30	. Q	.	.	.	V	.
17.933	0.4450	0.29	. Q	.	.	.	V	.
17.950	0.4454	0.29	. Q	.	.	.	V	.
17.967	0.4458	0.29	. Q	.	.	.	V	.
17.983	0.4462	0.29	. Q	.	.	.	V	.
18.000	0.4466	0.29	. Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	540.0
20%	150.0
30%	95.0
40%	70.0
50%	55.0
60%	45.0
70%	30.0
80%	20.0
90%	10.0

****
FLOW PROCESS FROM NODE 1034.00 TO NODE 1034.50 IS CODE = 3.2
>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #2<<<<<



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 2
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000
SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL	DEPTH	OUTFLOW	STORAGE

NUMBER	(FT)	(CFS)	DPHIPF5 (AF)
1	0.00	0.00	0.000
2	0.50	0.59	0.048
3	1.00	0.91	0.093
4	1.50	1.02	0.134
5	2.00	1.12	0.169
6	2.50	1.21	0.194
7	2.84	1.27	0.200

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time;
MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	0.40	0.00	0.28	0.3	0.027
14.033	0.000	0.41	0.00	0.28	0.3	0.027
14.050	0.000	0.41	0.00	0.28	0.3	0.027
14.067	0.000	0.41	0.00	0.28	0.3	0.027
14.083	0.000	0.41	0.00	0.28	0.3	0.027
14.100	0.000	0.41	0.00	0.28	0.3	0.027
14.117	0.000	0.42	0.00	0.28	0.3	0.027
14.133	0.000	0.42	0.00	0.29	0.3	0.027
14.150	0.000	0.42	0.00	0.29	0.3	0.028
14.167	0.000	0.42	0.00	0.29	0.3	0.028
14.183	0.000	0.43	0.00	0.29	0.3	0.028
14.200	0.000	0.43	0.00	0.29	0.3	0.028
14.217	0.000	0.43	0.00	0.29	0.3	0.028
14.233	0.000	0.43	0.00	0.29	0.3	0.028
14.250	0.000	0.44	0.00	0.29	0.3	0.028
14.267	0.000	0.44	0.00	0.30	0.3	0.028
14.283	0.000	0.44	0.00	0.30	0.3	0.028
14.300	0.000	0.44	0.00	0.30	0.4	0.029
14.317	0.000	0.44	0.00	0.30	0.4	0.029
14.333	0.000	0.44	0.00	0.30	0.4	0.029
14.350	0.000	0.45	0.00	0.30	0.4	0.029
14.367	0.000	0.45	0.00	0.30	0.4	0.029
14.383	0.000	0.45	0.00	0.30	0.4	0.029
14.400	0.000	0.46	0.00	0.31	0.4	0.029
14.417	0.000	0.46	0.00	0.31	0.4	0.030
14.433	0.000	0.46	0.00	0.31	0.4	0.030
14.450	0.000	0.47	0.00	0.31	0.4	0.030
14.467	0.000	0.47	0.00	0.31	0.4	0.030
14.483	0.000	0.47	0.00	0.31	0.4	0.030
14.500	0.000	0.47	0.00	0.31	0.4	0.030
14.517	0.000	0.48	0.00	0.32	0.4	0.030
14.533	0.000	0.48	0.00	0.32	0.4	0.031
14.550	0.000	0.48	0.00	0.32	0.4	0.031
14.567	0.000	0.48	0.00	0.32	0.4	0.031
14.583	0.000	0.48	0.00	0.32	0.4	0.031
14.600	0.000	0.49	0.00	0.32	0.4	0.031
14.617	0.000	0.49	0.00	0.33	0.4	0.031
14.633	0.000	0.49	0.00	0.33	0.4	0.031
14.650	0.000	0.50	0.00	0.33	0.4	0.032
14.667	0.000	0.50	0.00	0.33	0.4	0.032
14.683	0.000	0.51	0.00	0.33	0.4	0.032
14.700	0.000	0.51	0.00	0.33	0.4	0.032
14.717	0.000	0.52	0.00	0.34	0.4	0.032
14.733	0.000	0.52	0.00	0.34	0.4	0.032
14.750	0.000	0.52	0.00	0.34	0.4	0.033
14.767	0.000	0.53	0.00	0.34	0.4	0.033
14.783	0.000	0.53	0.00	0.34	0.4	0.033
14.800	0.000	0.53	0.00	0.34	0.4	0.033
14.817	0.000	0.54	0.00	0.35	0.4	0.033
14.833	0.000	0.54	0.00	0.35	0.4	0.033
14.850	0.000	0.54	0.00	0.35	0.4	0.034
14.867	0.000	0.54	0.00	0.35	0.4	0.034
14.883	0.000	0.55	0.00	0.35	0.4	0.034
14.900	0.000	0.55	0.00	0.36	0.4	0.034
14.917	0.000	0.56	0.00	0.36	0.4	0.034

14.933	0.000	0.56	0.00	0.36	0.4	0.035
14.950	0.000	0.57	0.00	0.36	0.4	0.035
14.967	0.000	0.58	0.00	0.36	0.4	0.035
14.983	0.000	0.58	0.00	0.37	0.4	0.035
15.000	0.000	0.59	0.00	0.37	0.4	0.035
15.017	0.000	0.59	0.00	0.37	0.4	0.036
15.033	0.000	0.60	0.00	0.37	0.4	0.036
15.050	0.000	0.61	0.00	0.37	0.4	0.036
15.067	0.000	0.61	0.00	0.38	0.4	0.036
15.083	0.000	0.61	0.00	0.38	0.4	0.036
15.100	0.000	0.62	0.00	0.38	0.4	0.037
15.117	0.000	0.62	0.00	0.38	0.5	0.037
15.133	0.000	0.62	0.00	0.39	0.5	0.037
15.150	0.000	0.63	0.00	0.39	0.5	0.037
15.167	0.000	0.63	0.00	0.39	0.5	0.038
15.183	0.000	0.64	0.00	0.39	0.5	0.038
15.200	0.000	0.65	0.00	0.40	0.5	0.038
15.217	0.000	0.66	0.00	0.40	0.5	0.038
15.233	0.000	0.67	0.00	0.40	0.5	0.039
15.250	0.000	0.68	0.00	0.41	0.5	0.039
15.267	0.000	0.69	0.00	0.41	0.5	0.039
15.283	0.000	0.70	0.00	0.41	0.5	0.039
15.300	0.000	0.71	0.00	0.41	0.5	0.040
15.317	0.000	0.72	0.00	0.42	0.5	0.040
15.333	0.000	0.72	0.00	0.42	0.5	0.040
15.350	0.000	0.72	0.00	0.42	0.5	0.041
15.367	0.000	0.73	0.00	0.43	0.5	0.041
15.383	0.000	0.73	0.00	0.43	0.5	0.041
15.400	0.000	0.73	0.00	0.43	0.5	0.042
15.417	0.000	0.73	0.00	0.44	0.5	0.042
15.433	0.000	0.74	0.00	0.44	0.5	0.042
15.450	0.000	0.74	0.00	0.44	0.5	0.043
15.467	0.000	0.75	0.00	0.45	0.5	0.043
15.483	0.000	0.75	0.00	0.45	0.5	0.043
15.500	0.000	0.76	0.00	0.45	0.5	0.043
15.517	0.000	0.76	0.00	0.46	0.5	0.044
15.533	0.000	0.77	0.00	0.46	0.5	0.044
15.550	0.000	0.77	0.00	0.46	0.5	0.044
15.567	0.000	0.78	0.00	0.47	0.5	0.045
15.583	0.000	0.79	0.00	0.47	0.6	0.045
15.600	0.000	0.79	0.00	0.47	0.6	0.045
15.617	0.000	0.81	0.00	0.48	0.6	0.046
15.633	0.000	0.82	0.00	0.48	0.6	0.046
15.650	0.000	0.83	0.00	0.48	0.6	0.046
15.667	0.000	0.85	0.00	0.49	0.6	0.047
15.683	0.000	0.86	0.00	0.49	0.6	0.047
15.700	0.000	0.87	0.00	0.50	0.6	0.048
15.717	0.000	0.88	0.00	0.50	0.6	0.048
15.733	0.000	0.91	0.00	0.50	0.6	0.048
15.750	0.000	0.96	0.00	0.51	0.6	0.049
15.767	0.000	1.01	0.00	0.52	0.6	0.050
15.783	0.000	1.07	0.00	0.52	0.6	0.050
15.800	0.000	1.12	0.00	0.53	0.6	0.051
15.817	0.000	1.18	0.00	0.54	0.6	0.052
15.833	0.000	1.23	0.00	0.55	0.6	0.052
15.850	0.000	1.29	0.00	0.56	0.6	0.053
15.867	0.000	1.34	0.00	0.57	0.6	0.054
15.883	0.000	1.40	0.00	0.58	0.6	0.055
15.900	0.000	1.46	0.00	0.60	0.6	0.057
15.917	0.000	1.52	0.00	0.61	0.7	0.058
15.933	0.000	1.58	0.00	0.62	0.7	0.059
15.950	0.000	1.65	0.00	0.64	0.7	0.060
15.967	0.000	1.71	0.00	0.65	0.7	0.062
15.983	0.000	1.77	0.00	0.67	0.7	0.063
16.000	0.000	1.83	0.00	0.69	0.7	0.065
16.017	0.000	2.08	0.00	0.71	0.7	0.067
16.033	0.000	2.53	0.00	0.74	0.7	0.069
16.050	0.000	2.98	0.00	0.77	0.8	0.072
16.067	0.000	3.43	0.00	0.81	0.8	0.076
16.083	0.000	3.88	0.00	0.86	0.8	0.080
16.100	0.000	4.33	0.00	0.91	0.8	0.085
16.117	0.000	4.78	0.00	0.97	0.9	0.090
16.133	0.000	5.23	0.00	1.04	0.9	0.096
16.150	0.000	5.60	0.00	1.12	0.9	0.103

16.167	0.000	4.96	0.00	1.19	0.9	0.108
16.183	0.000	4.42	0.00	1.24	1.0	0.113
16.200	0.000	3.88	0.00	1.29	1.0	0.117
16.217	0.000	3.33	0.00	1.33	1.0	0.120
16.233	0.000	2.79	0.00	1.36	1.0	0.123
16.250	0.000	2.24	0.00	1.38	1.0	0.124
16.267	0.000	1.70	0.00	1.40	1.0	0.125
16.283	0.000	1.19	0.00	1.40	1.0	0.126
16.300	0.000	1.04	0.00	1.40	1.0	0.126
16.317	0.000	1.00	0.00	1.40	1.0	0.126
16.333	0.000	0.95	0.00	1.40	1.0	0.126
16.350	0.000	0.91	0.00	1.40	1.0	0.126
16.367	0.000	0.86	0.00	1.40	1.0	0.125
16.383	0.000	0.82	0.00	1.39	1.0	0.125
16.400	0.000	0.77	0.00	1.39	1.0	0.125
16.417	0.000	0.73	0.00	1.38	1.0	0.125
16.433	0.000	0.71	0.00	1.38	1.0	0.124
16.450	0.000	0.70	0.00	1.37	1.0	0.124
16.467	0.000	0.70	0.00	1.37	1.0	0.123
16.483	0.000	0.69	0.00	1.36	1.0	0.123
16.500	0.000	0.69	0.00	1.36	1.0	0.122
16.517	0.000	0.68	0.00	1.35	1.0	0.122
16.533	0.000	0.68	0.00	1.35	1.0	0.122
16.550	0.000	0.68	0.00	1.34	1.0	0.121
16.567	0.000	0.67	0.00	1.34	1.0	0.121
16.583	0.000	0.66	0.00	1.33	1.0	0.120
16.600	0.000	0.65	0.00	1.33	1.0	0.120
16.617	0.000	0.63	0.00	1.32	1.0	0.119
16.633	0.000	0.62	0.00	1.32	1.0	0.119
16.650	0.000	0.61	0.00	1.31	1.0	0.118
16.667	0.000	0.60	0.00	1.30	1.0	0.118
16.683	0.000	0.59	0.00	1.30	1.0	0.117
16.700	0.000	0.58	0.00	1.29	1.0	0.117
16.717	0.000	0.57	0.00	1.28	1.0	0.116
16.733	0.000	0.56	0.00	1.28	1.0	0.116
16.750	0.000	0.55	0.00	1.27	1.0	0.115
16.767	0.000	0.54	0.00	1.26	1.0	0.114
16.783	0.000	0.53	0.00	1.25	1.0	0.114
16.800	0.000	0.53	0.00	1.25	1.0	0.113
16.817	0.000	0.52	0.00	1.24	1.0	0.113
16.833	0.000	0.51	0.00	1.23	1.0	0.112
16.850	0.000	0.50	0.00	1.22	1.0	0.111
16.867	0.000	0.50	0.00	1.22	1.0	0.111
16.883	0.000	0.49	0.00	1.21	1.0	0.110
16.900	0.000	0.49	0.00	1.20	1.0	0.110
16.917	0.000	0.48	0.00	1.19	1.0	0.109
16.933	0.000	0.47	0.00	1.19	1.0	0.108
16.950	0.000	0.47	0.00	1.18	0.9	0.108
16.967	0.000	0.46	0.00	1.17	0.9	0.107
16.983	0.000	0.46	0.00	1.16	0.9	0.106
17.000	0.000	0.45	0.00	1.15	0.9	0.106
17.017	0.000	0.45	0.00	1.14	0.9	0.105
17.033	0.000	0.44	0.00	1.14	0.9	0.104
17.050	0.000	0.44	0.00	1.13	0.9	0.103
17.067	0.000	0.43	0.00	1.12	0.9	0.103
17.083	0.000	0.43	0.00	1.11	0.9	0.102
17.100	0.000	0.42	0.00	1.10	0.9	0.101
17.117	0.000	0.42	0.00	1.09	0.9	0.101
17.133	0.000	0.42	0.00	1.08	0.9	0.100
17.150	0.000	0.41	0.00	1.08	0.9	0.099
17.167	0.000	0.41	0.00	1.07	0.9	0.099
17.183	0.000	0.40	0.00	1.06	0.9	0.098
17.200	0.000	0.40	0.00	1.05	0.9	0.097
17.217	0.000	0.40	0.00	1.04	0.9	0.096
17.233	0.000	0.39	0.00	1.03	0.9	0.096
17.250	0.000	0.39	0.00	1.02	0.9	0.095
17.267	0.000	0.39	0.00	1.01	0.9	0.094
17.283	0.000	0.38	0.00	1.01	0.9	0.093
17.300	0.000	0.38	0.00	1.00	0.9	0.093
17.317	0.000	0.38	0.00	0.99	0.9	0.092
17.333	0.000	0.37	0.00	0.98	0.9	0.091
17.350	0.000	0.37	0.00	0.97	0.9	0.091
17.367	0.000	0.37	0.00	0.96	0.9	0.090
17.383	0.000	0.36	0.00	0.96	0.9	0.089

17.400	0.000	0.36	0.00	0.95	0.9	0.088
17.417	0.000	0.36	0.00	0.94	0.9	0.088
17.433	0.000	0.36	0.00	0.93	0.9	0.087
17.450	0.000	0.35	0.00	0.93	0.9	0.086
17.467	0.000	0.35	0.00	0.92	0.9	0.086
17.483	0.000	0.35	0.00	0.91	0.9	0.085
17.500	0.000	0.35	0.00	0.90	0.8	0.084
17.517	0.000	0.34	0.00	0.89	0.8	0.083
17.533	0.000	0.34	0.00	0.89	0.8	0.083
17.550	0.000	0.34	0.00	0.88	0.8	0.082
17.567	0.000	0.34	0.00	0.87	0.8	0.081
17.583	0.000	0.33	0.00	0.86	0.8	0.081
17.600	0.000	0.33	0.00	0.86	0.8	0.080
17.617	0.000	0.33	0.00	0.85	0.8	0.079
17.633	0.000	0.33	0.00	0.84	0.8	0.079
17.650	0.000	0.32	0.00	0.83	0.8	0.078
17.667	0.000	0.32	0.00	0.83	0.8	0.077
17.683	0.000	0.32	0.00	0.82	0.8	0.077
17.700	0.000	0.32	0.00	0.81	0.8	0.076
17.717	0.000	0.32	0.00	0.81	0.8	0.075
17.733	0.000	0.31	0.00	0.80	0.8	0.075
17.750	0.000	0.31	0.00	0.79	0.8	0.074
17.767	0.000	0.31	0.00	0.78	0.8	0.074
17.783	0.000	0.31	0.00	0.78	0.8	0.073
17.800	0.000	0.31	0.00	0.77	0.8	0.072
17.817	0.000	0.31	0.00	0.76	0.8	0.072
17.833	0.000	0.30	0.00	0.76	0.8	0.071
17.850	0.000	0.30	0.00	0.75	0.8	0.070
17.867	0.000	0.30	0.00	0.74	0.7	0.070
17.883	0.000	0.30	0.00	0.74	0.7	0.069
17.900	0.000	0.30	0.00	0.73	0.7	0.069
17.917	0.000	0.30	0.00	0.72	0.7	0.068
17.933	0.000	0.29	0.00	0.72	0.7	0.067
17.950	0.000	0.29	0.00	0.71	0.7	0.067
17.967	0.000	0.29	0.00	0.70	0.7	0.066
17.983	0.000	0.29	0.00	0.70	0.7	0.066
18.000	0.000	0.29	0.00	0.69	0.7	0.065

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 0.516 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 0.516 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 1034.50 TO NODE 1026.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<

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MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 67.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 6.40
DOWNSTREAM ELEVATION(FT) = 4.40
PIPE DIAMETER(FT) = 18.00

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.33	0.50	0.32	0.000
14.017	0.33	0.50	0.32	0.000

				DPHIPF5
14.033	0.33	0.50	0.33	0.000
14.050	0.33	0.50	0.33	0.000
14.067	0.33	0.50	0.33	0.000
14.083	0.33	0.50	0.33	0.000
14.100	0.33	0.50	0.33	0.000
14.117	0.33	0.50	0.33	0.000
14.133	0.34	0.50	0.33	0.000
14.150	0.34	0.50	0.33	0.000
14.167	0.34	0.50	0.34	0.000
14.183	0.34	0.50	0.34	0.000
14.200	0.34	0.50	0.34	0.000
14.217	0.34	0.50	0.34	0.000
14.233	0.35	0.50	0.34	0.000
14.250	0.35	0.50	0.34	0.000
14.267	0.35	0.50	0.34	0.000
14.283	0.35	0.50	0.35	0.000
14.300	0.35	0.50	0.35	0.000
14.317	0.35	0.50	0.35	0.000
14.333	0.35	0.50	0.35	0.000
14.350	0.36	0.50	0.35	0.000
14.367	0.36	0.50	0.35	0.000
14.383	0.36	0.50	0.36	0.000
14.400	0.36	0.50	0.36	0.000
14.417	0.36	0.50	0.36	0.000
14.433	0.36	0.50	0.36	0.000
14.450	0.37	0.50	0.36	0.000
14.467	0.37	0.50	0.36	0.000
14.483	0.37	0.50	0.36	0.000
14.500	0.37	0.50	0.37	0.000
14.517	0.37	0.50	0.37	0.000
14.533	0.37	0.50	0.37	0.000
14.550	0.38	0.50	0.37	0.000
14.567	0.38	0.50	0.37	0.000
14.583	0.38	0.50	0.38	0.000
14.600	0.38	0.50	0.38	0.000
14.617	0.38	0.50	0.38	0.000
14.633	0.38	0.50	0.38	0.000
14.650	0.39	0.50	0.38	0.000
14.667	0.39	0.50	0.38	0.000
14.683	0.39	0.50	0.39	0.000
14.700	0.39	0.50	0.39	0.000
14.717	0.39	0.50	0.39	0.000
14.733	0.40	0.50	0.39	0.000
14.750	0.40	0.50	0.39	0.000
14.767	0.40	0.50	0.40	0.000
14.783	0.40	0.50	0.40	0.000
14.800	0.41	0.50	0.40	0.000
14.817	0.41	0.50	0.40	0.000
14.833	0.41	0.50	0.40	0.000
14.850	0.41	0.50	0.41	0.000
14.867	0.41	0.50	0.41	0.000
14.883	0.42	0.50	0.41	0.000
14.900	0.42	0.50	0.41	0.000
14.917	0.42	0.50	0.42	0.000
14.933	0.42	0.50	0.42	0.000
14.950	0.43	0.50	0.42	0.000
14.967	0.43	0.50	0.42	0.000
14.983	0.43	0.50	0.42	0.000
15.000	0.43	0.50	0.43	0.000
15.017	0.44	0.50	0.43	0.000
15.033	0.44	0.50	0.43	0.000
15.050	0.44	0.50	0.43	0.000
15.067	0.44	0.50	0.44	0.000
15.083	0.45	0.50	0.44	0.000
15.100	0.45	0.50	0.44	0.000
15.117	0.45	0.50	0.45	0.000
15.133	0.46	0.50	0.45	0.000
15.150	0.46	0.50	0.45	0.000
15.167	0.46	0.50	0.45	0.000
15.183	0.46	0.50	0.46	0.000
15.200	0.47	0.50	0.46	0.000
15.217	0.47	0.50	0.46	0.000
15.233	0.47	0.50	0.47	0.000
15.250	0.48	0.50	0.47	0.000

DPHIPF5

15.267	0.48	0.50	0.47	0.000
15.283	0.48	0.50	0.48	0.000
15.300	0.49	0.50	0.48	0.000
15.317	0.49	0.50	0.48	0.000
15.333	0.49	0.50	0.49	0.000
15.350	0.50	0.50	0.49	0.000
15.367	0.50	0.50	0.49	0.000
15.383	0.51	0.50	0.50	0.000
15.400	0.51	0.50	0.50	0.000
15.417	0.51	0.50	0.51	0.000
15.433	0.52	0.50	0.51	0.000
15.450	0.52	0.50	0.51	0.000
15.467	0.52	0.50	0.52	0.000
15.483	0.53	0.50	0.52	0.000
15.500	0.53	0.50	0.52	0.000
15.517	0.54	0.50	0.53	0.000
15.533	0.54	0.50	0.53	0.000
15.550	0.54	0.50	0.54	0.000
15.567	0.55	0.50	0.54	0.000
15.583	0.55	0.50	0.54	0.000
15.600	0.56	0.50	0.55	0.000
15.617	0.56	0.50	0.55	0.000
15.633	0.56	0.50	0.55	0.000
15.650	0.57	0.50	0.56	0.000
15.667	0.57	0.50	0.56	0.000
15.683	0.58	0.50	0.57	0.000
15.700	0.58	0.50	0.57	0.000
15.717	0.59	0.50	0.58	0.000
15.733	0.59	0.50	0.58	0.000
15.750	0.59	0.50	0.59	0.000
15.767	0.60	0.50	0.59	0.000
15.783	0.60	0.50	0.59	0.000
15.800	0.61	0.50	0.60	0.000
15.817	0.61	0.50	0.60	0.000
15.833	0.62	0.50	0.61	0.000
15.850	0.63	0.50	0.61	0.000
15.867	0.63	0.50	0.62	0.000
15.883	0.64	0.50	0.62	0.000
15.900	0.65	0.50	0.63	0.000
15.917	0.66	0.50	0.64	0.000
15.933	0.66	0.50	0.65	0.000
15.950	0.67	0.50	0.65	0.000
15.967	0.68	0.50	0.66	0.000
15.983	0.69	0.50	0.67	0.000
16.000	0.70	0.50	0.68	0.000
16.017	0.72	0.50	0.69	0.000
16.033	0.73	0.50	0.70	0.000
16.050	0.75	0.50	0.71	0.000
16.067	0.78	0.50	0.73	0.000
16.083	0.80	0.50	0.75	0.000
16.100	0.84	0.50	0.77	0.000
16.117	0.87	0.50	0.80	0.000
16.133	0.90	0.50	0.83	0.000
16.150	0.93	0.50	0.86	0.000
16.167	0.94	0.50	0.90	0.000
16.183	0.96	0.50	0.92	0.000
16.200	0.97	0.50	0.94	0.000
16.217	0.98	0.50	0.95	0.000
16.233	0.99	0.50	0.97	0.000
16.250	0.99	0.50	0.98	0.000
16.267	1.00	0.50	0.98	0.000
16.283	1.00	0.50	0.99	0.000
16.300	1.00	0.50	0.99	0.000
16.317	1.00	0.50	1.00	0.000
16.333	1.00	0.50	1.00	0.000
16.350	1.00	0.50	1.00	0.000
16.367	1.00	0.50	1.00	0.000
16.383	1.00	0.50	1.00	0.000
16.400	1.00	0.50	1.00	0.000
16.417	1.00	0.50	1.00	0.000
16.433	0.99	0.50	1.00	0.000
16.450	0.99	0.50	1.00	0.000
16.467	0.99	0.50	0.99	0.000
16.483	0.99	0.50	0.99	0.000

			DPHIPF5	
16.500	0.99	0.50	0.99	0.000
16.517	0.99	0.50	0.99	0.000
16.533	0.99	0.50	0.99	0.000
16.550	0.99	0.50	0.99	0.000
16.567	0.99	0.50	0.99	0.000
16.583	0.98	0.50	0.99	0.000
16.600	0.98	0.50	0.99	0.000
16.617	0.98	0.50	0.98	0.000
16.633	0.98	0.50	0.98	0.000
16.650	0.98	0.50	0.98	0.000
16.667	0.98	0.50	0.98	0.000
16.683	0.98	0.50	0.98	0.000
16.700	0.97	0.50	0.98	0.000
16.717	0.97	0.50	0.98	0.000
16.733	0.97	0.50	0.97	0.000
16.750	0.97	0.50	0.97	0.000
16.767	0.97	0.50	0.97	0.000
16.783	0.97	0.50	0.97	0.000
16.800	0.97	0.50	0.97	0.000
16.817	0.96	0.50	0.97	0.000
16.833	0.96	0.50	0.97	0.000
16.850	0.96	0.50	0.96	0.000
16.867	0.96	0.50	0.96	0.000
16.883	0.96	0.50	0.96	0.000
16.900	0.96	0.50	0.96	0.000
16.917	0.95	0.50	0.96	0.000
16.933	0.95	0.50	0.96	0.000
16.950	0.95	0.50	0.95	0.000
16.967	0.95	0.50	0.95	0.000
16.983	0.95	0.50	0.95	0.000
17.000	0.94	0.50	0.95	0.000
17.017	0.94	0.50	0.95	0.000
17.033	0.94	0.50	0.94	0.000
17.050	0.94	0.50	0.94	0.000
17.067	0.94	0.50	0.94	0.000
17.083	0.94	0.50	0.94	0.000
17.100	0.93	0.50	0.94	0.000
17.117	0.93	0.50	0.94	0.000
17.133	0.93	0.50	0.93	0.000
17.150	0.93	0.50	0.93	0.000
17.167	0.93	0.50	0.93	0.000
17.183	0.92	0.50	0.93	0.000
17.200	0.92	0.50	0.93	0.000
17.217	0.92	0.50	0.92	0.000
17.233	0.92	0.50	0.92	0.000
17.250	0.92	0.50	0.92	0.000
17.267	0.91	0.50	0.92	0.000
17.283	0.91	0.50	0.92	0.000
17.300	0.91	0.50	0.91	0.000
17.317	0.91	0.50	0.91	0.000
17.333	0.90	0.50	0.91	0.000
17.350	0.90	0.50	0.91	0.000
17.367	0.89	0.50	0.90	0.000
17.383	0.88	0.50	0.90	0.000
17.400	0.88	0.50	0.89	0.000
17.417	0.87	0.50	0.89	0.000
17.433	0.87	0.50	0.88	0.000
17.450	0.86	0.50	0.88	0.000
17.467	0.86	0.50	0.87	0.000
17.483	0.85	0.50	0.87	0.000
17.500	0.85	0.50	0.86	0.000
17.517	0.84	0.50	0.86	0.000
17.533	0.84	0.50	0.85	0.000
17.550	0.84	0.50	0.85	0.000
17.567	0.83	0.50	0.84	0.000
17.583	0.83	0.50	0.84	0.000
17.600	0.82	0.50	0.83	0.000
17.617	0.82	0.50	0.83	0.000
17.633	0.81	0.50	0.82	0.000
17.650	0.81	0.50	0.82	0.000
17.667	0.80	0.50	0.81	0.000
17.683	0.80	0.50	0.81	0.000
17.700	0.79	0.50	0.80	0.000
17.717	0.79	0.50	0.80	0.000

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                                                    DPHIPF5
        17.733      0.78      0.50      0.79          0.000
        17.750      0.78      0.50      0.79          0.000
        17.767      0.77      0.50      0.78          0.000
        17.783      0.77      0.50      0.78          0.000
        17.800      0.76      0.50      0.78          0.000
        17.817      0.76      0.50      0.77          0.000
        17.833      0.76      0.50      0.77          0.000
        17.850      0.75      0.50      0.76          0.000
        17.867      0.75      0.50      0.76          0.000
        17.883      0.74      0.50      0.75          0.000
        17.900      0.74      0.50      0.75          0.000
        17.917      0.73      0.50      0.74          0.000
        17.933      0.73      0.50      0.74          0.000
        17.950      0.73      0.50      0.74          0.000
        17.967      0.72      0.50      0.73          0.000
        17.983      0.72      0.50      0.73          0.000
        18.000      0.71      0.50      0.72          0.000

****************************************************************************
  FLOW PROCESS FROM NODE   1026.00 TO NODE   1026.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1026.00 TO NODE   1026.00 IS CODE =   6
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 CLEARED AND SET TO ZERO<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1026.00 TO NODE   1026.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [dphipf5                    ]


****************************************************************************
  FLOW PROCESS FROM NODE   1023.00 TO NODE   1024.00 IS CODE = 1.2
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #3)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.92
    TOTAL CATCHMENT AREA(ACRES) =    2.60
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.054
    LOW LOSS FRACTION = 0.195
    TIME OF CONCENTRATION(MIN.) =  8.70
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

----------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.62
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.18

----------------------------------------------------------------------------
♀
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DPHIPF5

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	1.7	3.5	5.2	6.9
14.000	0.2171	0.46	. Q	. V	.	.	.
14.017	0.2178	0.46	. Q	. V	.	.	.
14.033	0.2184	0.47	. Q	. V	.	.	.
14.050	0.2191	0.47	. Q	. V	.	.	.
14.067	0.2197	0.47	. Q	. V	.	.	.
14.083	0.2204	0.47	. Q	. V	.	.	.
14.100	0.2210	0.48	. Q	. V	.	.	.
14.117	0.2217	0.48	. Q	. V	.	.	.
14.133	0.2223	0.48	. Q	. V	.	.	.
14.150	0.2230	0.48	. Q	. V	.	.	.
14.167	0.2237	0.48	. Q	. V	.	.	.
14.183	0.2244	0.49	. Q	. V	.	.	.
14.200	0.2250	0.49	. Q	. V	.	.	.
14.217	0.2257	0.49	. Q	. V	.	.	.
14.233	0.2264	0.49	. Q	. V	.	.	.
14.250	0.2270	0.49	. Q	. V	.	.	.
14.267	0.2277	0.49	. Q	. V	.	.	.
14.283	0.2284	0.50	. Q	. V	.	.	.
14.300	0.2291	0.50	. Q	. V	.	.	.
14.317	0.2298	0.50	. Q	. V	.	.	.
14.333	0.2305	0.51	. Q	. V	.	.	.
14.350	0.2312	0.51	. Q	. V	.	.	.
14.367	0.2319	0.51	. Q	. V	.	.	.
14.383	0.2326	0.52	. Q	. V	.	.	.
14.400	0.2333	0.52	. Q	. V	.	.	.
14.417	0.2341	0.52	. Q	. V	.	.	.
14.433	0.2348	0.53	. Q	. V	.	.	.
14.450	0.2355	0.53	. Q	. V	.	.	.
14.467	0.2362	0.53	. Q	. V	.	.	.
14.483	0.2370	0.53	. Q	. V	.	.	.
14.500	0.2377	0.53	. Q	. V	.	.	.
14.517	0.2384	0.54	. Q	. V	.	.	.
14.533	0.2392	0.54	. Q	. V	.	.	.
14.550	0.2399	0.54	. Q	. V	.	.	.
14.567	0.2407	0.54	. Q	. V	.	.	.
14.583	0.2414	0.55	. Q	. V	.	.	.
14.600	0.2422	0.55	. Q	. V	.	.	.
14.617	0.2430	0.56	. Q	. V	.	.	.
14.633	0.2437	0.57	. Q	. V	.	.	.
14.650	0.2445	0.57	. Q	. V	.	.	.
14.667	0.2453	0.58	. Q	. V	.	.	.
14.683	0.2461	0.58	. Q	. V	.	.	.
14.700	0.2469	0.59	. Q	. V	.	.	.
14.717	0.2478	0.59	. Q	. V	.	.	.
14.733	0.2486	0.59	. Q	. V	.	.	.
14.750	0.2494	0.60	. Q	. V	.	.	.
14.767	0.2502	0.60	. Q	. V	.	.	.
14.783	0.2511	0.60	. Q	. V	.	.	.
14.800	0.2519	0.61	. Q	. V	.	.	.
14.817	0.2527	0.61	. Q	. V	.	.	.
14.833	0.2536	0.61	. Q	. V	.	.	.
14.850	0.2544	0.62	. Q	. V	.	.	.
14.867	0.2553	0.62	. Q	. V	.	.	.
14.883	0.2562	0.63	. Q	. V	.	.	.
14.900	0.2570	0.64	. Q	. V	.	.	.
14.917	0.2579	0.65	. Q	. V	.	.	.
14.933	0.2588	0.66	. Q	. V	.	.	.
14.950	0.2598	0.66	. Q	. V	.	.	.
14.967	0.2607	0.67	. Q	. V	.	.	.
14.983	0.2616	0.68	. Q	. V	.	.	.
15.000	0.2626	0.68	. Q	. V	.	.	.
15.017	0.2635	0.69	. Q	. V	.	.	.
15.033	0.2645	0.69	. Q	. V	.	.	.

DPHIPF5

15.050	0.2654	0.70	. Q . V . . .
15.067	0.2664	0.70	. Q . V . . .
15.083	0.2674	0.71	. Q . V . . .
15.100	0.2683	0.71	. Q . V . . .
15.117	0.2693	0.72	. Q . V . . .
15.133	0.2703	0.72	. Q . V . . .
15.150	0.2713	0.73	. Q . V . . .
15.167	0.2724	0.74	. Q . V . . .
15.183	0.2734	0.75	. Q . V . . .
15.200	0.2745	0.77	. Q . V . . .
15.217	0.2755	0.78	. Q . V . . .
15.233	0.2766	0.79	. Q . V . . .
15.250	0.2777	0.80	. Q . V . . .
15.267	0.2788	0.81	. Q . V . . .
15.283	0.2800	0.82	. Q . V . . .
15.300	0.2811	0.83	. Q . V . . .
15.317	0.2823	0.84	. Q . V . . .
15.333	0.2834	0.85	. Q . V . . .
15.350	0.2846	0.85	. Q . V . . .
15.367	0.2858	0.86	. Q . V . . .
15.383	0.2870	0.87	. Q . V . . .
15.400	0.2882	0.88	. Q . V . . .
15.417	0.2894	0.89	. Q . V . . .
15.433	0.2907	0.89	. Q . V . . .
15.450	0.2919	0.89	. Q . V . . .
15.467	0.2931	0.90	. Q . V. . . .
15.483	0.2944	0.90	. Q . V. . . .
15.500	0.2956	0.90	. Q . V. . . .
15.517	0.2969	0.90	. Q . V. . . .
15.533	0.2981	0.91	. Q . V. . . .
15.550	0.2994	0.91	. Q . V. . . .
15.567	0.3006	0.91	. Q . V. . . .
15.583	0.3019	0.92	. Q . V. . . .
15.600	0.3032	0.94	. Q . V. . . .
15.617	0.3045	0.95	. Q . V. . . .
15.633	0.3058	0.97	. Q . V. . . .
15.650	0.3072	0.98	. Q . V. . . .
15.667	0.3086	1.00	. Q . V . . .
15.683	0.3100	1.01	. Q . V . . .
15.700	0.3114	1.03	. Q . V . . .
15.717	0.3128	1.05	. Q . V . . .
15.733	0.3143	1.11	. Q . V . . .
15.750	0.3160	1.17	. Q . V . . .
15.767	0.3177	1.24	. Q . V . . .
15.783	0.3195	1.30	. Q . V . . .
15.800	0.3213	1.37	. Q . V . . .
15.817	0.3233	1.44	. Q . V . . .
15.833	0.3254	1.50	. Q . .V . . .
15.850	0.3276	1.57	. Q. .V . . .
15.867	0.3298	1.64	. Q. .V . . .
15.883	0.3322	1.71	. Q. .V . . .
15.900	0.3346	1.78	. Q .V . . .
15.917	0.3372	1.85	. Q .V . . .
15.933	0.3398	1.93	. .Q . V . . .
15.950	0.3426	2.00	. .Q . V . . .
15.967	0.3454	2.07	. .Q . V . . .
15.983	0.3484	2.14	. . Q . V . . .
16.000	0.3514	2.22	. . Q . V . . .
16.017	0.3549	2.52	. . Q . V . . .
16.033	0.3591	3.06	. . Q . V . . .
16.050	0.3641	3.60	. . Q V . . .
16.067	0.3698	4.14	. . . QV . . .
16.083	0.3762	4.68	. . . V Q . . .
16.100	0.3834	5.22	. . . V . Q . .
16.117	0.3913	5.76	. . . V . Q . .
16.133	0.4000	6.30	. . . V . Q . .
16.150	0.4096	6.94	. . . V . Q . .
16.167	0.4184	6.42	. . . V . Q . .
16.183	0.4264	5.77	. . . V . Q . .
16.200	0.4334	5.12	. . . VQ. . . .
16.217	0.4396	4.47	. . . Q V . . .
16.233	0.4448	3.81	. . .Q V . . .
16.250	0.4492	3.16	. . Q . V. . .
16.267	0.4526	2.51	. . Q . V. . .

16.283	0.4552	1.86	.		Q	.		V.		.
16.300	0.4570	1.31	.		Q	.		V.		.
16.317	0.4587	1.21	.		Q	.		V.		.
16.333	0.4603	1.16	.		Q	.		V.		.
16.350	0.4618	1.11	.		Q	.		V.		.
16.367	0.4633	1.06	.		Q	.		V		.
16.383	0.4647	1.01	.		Q	.		V		.
16.400	0.4660	0.96	.		Q	.		V		.
16.417	0.4672	0.91	.		Q	.		V		.
16.433	0.4684	0.86	.	Q		.		V		.
16.450	0.4696	0.83	.	Q		.		V		.
16.467	0.4707	0.82	.	Q		.		V		.
16.483	0.4718	0.81	.	Q		.		V		.
16.500	0.4729	0.81	.	Q		.		V		.
16.517	0.4740	0.80	.	Q		.		V		.
16.533	0.4751	0.79	.	Q		.		V		.
16.550	0.4762	0.79	.	Q		.		V		.
16.567	0.4773	0.78	.	Q		.		V		.
16.583	0.4783	0.77	.	Q		.		.V		.
16.600	0.4794	0.76	.	Q		.		.V		.
16.617	0.4804	0.75	.	Q		.		.V		.
16.633	0.4814	0.73	.	Q		.		.V		.
16.650	0.4824	0.72	.	Q		.		.V		.
16.667	0.4834	0.70	.	Q		.		.V		.
16.683	0.4843	0.69	.	Q		.		.V		.
16.700	0.4853	0.68	.	Q		.		.V		.
16.717	0.4862	0.66	.	Q		.		.V		.
16.733	0.4871	0.65	.	Q		.		.V		.
16.750	0.4879	0.64	.	Q		.		.V		.
16.767	0.4888	0.63	.	Q		.		.V		.
16.783	0.4897	0.62	.	Q		.		.V		.
16.800	0.4905	0.61	.	Q		.		.V		.
16.817	0.4913	0.60	.	Q		.		.V		.
16.833	0.4921	0.59	.	Q		.		.V		.
16.850	0.4929	0.58	.	Q		.		. V		.
16.867	0.4937	0.57	.	Q		.		. V		.
16.883	0.4945	0.56	.	Q		.		. V		.
16.900	0.4953	0.56	.	Q		.		. V		.
16.917	0.4960	0.55	.	Q		.		. V		.
16.933	0.4968	0.54	.	Q		.		. V		.
16.950	0.4975	0.54	.	Q		.		. V		.
16.967	0.4982	0.53	.	Q		.		. V		.
16.983	0.4990	0.52	.	Q		.		. V		.
17.000	0.4997	0.52	. Q			.		. V		.
17.017	0.5004	0.51	. Q			.		. V		.
17.033	0.5011	0.51	. Q			.		. V		.
17.050	0.5018	0.50	. Q			.		. V		.
17.067	0.5024	0.50	. Q			.		. V		.
17.083	0.5031	0.49	. Q			.		. V		.
17.100	0.5038	0.49	. Q			.		. V		.
17.117	0.5045	0.48	. Q			.		. V		.
17.133	0.5051	0.48	. Q			.		. V		.
17.150	0.5058	0.47	. Q			.		. V		.
17.167	0.5064	0.47	. Q			.		. V		.
17.183	0.5071	0.47	. Q			.		. V		.
17.200	0.5077	0.46	. Q			.		. V		.
17.217	0.5083	0.46	. Q			.		. V		.
17.233	0.5089	0.45	. Q			.		. V		.
17.250	0.5096	0.45	. Q			.		. V		.
17.267	0.5102	0.45	. Q			.		. V		.
17.283	0.5108	0.44	. Q			.		. V		.
17.300	0.5114	0.44	. Q			.		. V		.
17.317	0.5120	0.44	. Q			.		. V		.
17.333	0.5126	0.43	. Q			.		. V		.
17.350	0.5132	0.43	. Q			.		. V		.
17.367	0.5138	0.43	. Q			.		. V		.
17.383	0.5144	0.42	. Q			.		. V		.
17.400	0.5149	0.42	. Q			.		. V		.
17.417	0.5155	0.42	. Q			.		. V		.
17.433	0.5161	0.42	. Q			.		. V		.
17.450	0.5167	0.41	. Q			.		. V		.
17.467	0.5172	0.41	. Q			.		. V		.
17.483	0.5178	0.41	. Q			.		. V		.
17.500	0.5183	0.40	. Q			.		. V		.

17.517	0.5189	0.40	. Q	.	.	.	V	.
17.533	0.5194	0.40	. Q	.	.	.	V	.
17.550	0.5200	0.40	. Q	.	.	.	V	.
17.567	0.5205	0.39	. Q	.	.	.	V	.
17.583	0.5211	0.39	. Q	.	.	.	V	.
17.600	0.5216	0.39	. Q	.	.	.	V	.
17.617	0.5221	0.39	. Q	.	.	.	V	.
17.633	0.5227	0.39	. Q	.	.	.	V	.
17.650	0.5232	0.38	. Q	.	.	.	V	.
17.667	0.5237	0.38	. Q	.	.	.	V	.
17.683	0.5243	0.38	. Q	.	.	.	V	.
17.700	0.5248	0.38	. Q	.	.	.	V	.
17.717	0.5253	0.37	. Q	.	.	.	V	.
17.733	0.5258	0.37	. Q	.	.	.	V	.
17.750	0.5263	0.37	. Q	.	.	.	V	.
17.767	0.5268	0.37	. Q	.	.	.	V	.
17.783	0.5273	0.37	. Q	.	.	.	V	.
17.800	0.5278	0.36	. Q	.	.	.	V	.
17.817	0.5283	0.36	. Q	.	.	.	V	.
17.833	0.5288	0.36	. Q	.	.	.	V	.
17.850	0.5293	0.36	. Q	.	.	.	V	.
17.867	0.5298	0.36	. Q	.	.	.	V	.
17.883	0.5303	0.35	. Q	.	.	.	V	.
17.900	0.5308	0.35	. Q	.	.	.	V	.
17.917	0.5313	0.35	. Q	.	.	.	V	.
17.933	0.5317	0.35	. Q	.	.	.	V	.
17.950	0.5322	0.35	. Q	.	.	.	V	.
17.967	0.5327	0.35	.Q	.	.	.	V	.
17.983	0.5332	0.34	.Q	.	.	.	V	.
18.000	0.5336	0.34	.Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	490.0
20%	145.0
30%	90.0
40%	70.0
50%	60.0
60%	45.0
70%	35.0
80%	25.0
90%	15.0

****
FLOW PROCESS FROM NODE 1024.00 TO NODE 1024.50 IS CODE = 3.2

>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #3<<<<<
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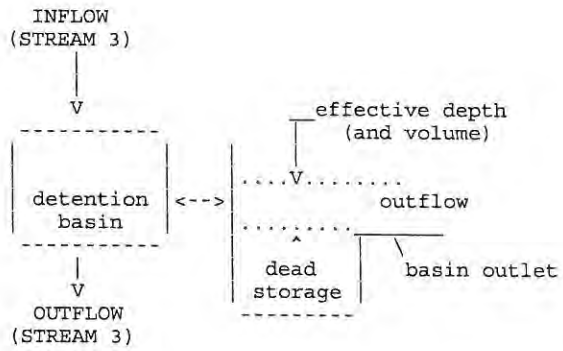

DPHIPF5

ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 3
THROUGH A FLOW-THROUGH DETENTION BASIN
SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000
SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.50	0.59	0.048
3	1.00	1.02	0.093
4	1.50	1.32	0.134
5	2.00	1.52	0.169
6	2.50	1.66	0.195
7	2.84	1.75	0.200

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time; MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	0.46	0.00	0.32	0.4	0.031
14.033	0.000	0.47	0.00	0.33	0.4	0.031
14.050	0.000	0.47	0.00	0.33	0.4	0.031
14.067	0.000	0.47	0.00	0.33	0.4	0.031
14.083	0.000	0.47	0.00	0.33	0.4	0.032
14.100	0.000	0.48	0.00	0.33	0.4	0.032
14.117	0.000	0.48	0.00	0.33	0.4	0.032
14.133	0.000	0.48	0.00	0.33	0.4	0.032
14.150	0.000	0.48	0.00	0.33	0.4	0.032
14.167	0.000	0.48	0.00	0.34	0.4	0.032
14.183	0.000	0.49	0.00	0.34	0.4	0.032
14.200	0.000	0.49	0.00	0.34	0.4	0.032
14.217	0.000	0.49	0.00	0.34	0.4	0.033
14.233	0.000	0.49	0.00	0.34	0.4	0.033
14.250	0.000	0.49	0.00	0.34	0.4	0.033
14.267	0.000	0.49	0.00	0.34	0.4	0.033
14.283	0.000	0.50	0.00	0.34	0.4	0.033
14.300	0.000	0.50	0.00	0.35	0.4	0.033
14.317	0.000	0.50	0.00	0.35	0.4	0.033
14.333	0.000	0.51	0.00	0.35	0.4	0.033
14.350	0.000	0.51	0.00	0.35	0.4	0.034
14.367	0.000	0.51	0.00	0.35	0.4	0.034
14.383	0.000	0.52	0.00	0.35	0.4	0.034
14.400	0.000	0.52	0.00	0.35	0.4	0.034
14.417	0.000	0.52	0.00	0.36	0.4	0.034
14.433	0.000	0.53	0.00	0.36	0.4	0.034
14.450	0.000	0.53	0.00	0.36	0.4	0.034
14.467	0.000	0.53	0.00	0.36	0.4	0.035
14.483	0.000	0.53	0.00	0.36	0.4	0.035
14.500	0.000	0.53	0.00	0.36	0.4	0.035
14.517	0.000	0.54	0.00	0.36	0.4	0.035
14.533	0.000	0.54	0.00	0.37	0.4	0.035
14.550	0.000	0.54	0.00	0.37	0.4	0.035
14.567	0.000	0.54	0.00	0.37	0.4	0.035
14.583	0.000	0.55	0.00	0.37	0.4	0.036
14.600	0.000	0.55	0.00	0.37	0.4	0.036
14.617	0.000	0.56	0.00	0.37	0.4	0.036
14.633	0.000	0.57	0.00	0.38	0.4	0.036
14.650	0.000	0.57	0.00	0.38	0.4	0.036
14.667	0.000	0.58	0.00	0.38	0.4	0.036
14.683	0.000	0.58	0.00	0.38	0.4	0.037
14.700	0.000	0.59	0.00	0.38	0.5	0.037
14.717	0.000	0.59	0.00	0.39	0.5	0.037

14.733	0.000	0.59	0.00	0.39	0.5	0.037
14.750	0.000	0.60	0.00	0.39	0.5	0.037
14.767	0.000	0.60	0.00	0.39	0.5	0.038
14.783	0.000	0.60	0.00	0.39	0.5	0.038
14.800	0.000	0.61	0.00	0.40	0.5	0.038
14.817	0.000	0.61	0.00	0.40	0.5	0.038
14.833	0.000	0.61	0.00	0.40	0.5	0.038
14.850	0.000	0.62	0.00	0.40	0.5	0.039
14.867	0.000	0.62	0.00	0.40	0.5	0.039
14.883	0.000	0.63	0.00	0.41	0.5	0.039
14.900	0.000	0.64	0.00	0.41	0.5	0.039
14.917	0.000	0.65	0.00	0.41	0.5	0.039
14.933	0.000	0.66	0.00	0.41	0.5	0.040
14.950	0.000	0.66	0.00	0.42	0.5	0.040
14.967	0.000	0.67	0.00	0.42	0.5	0.040
14.983	0.000	0.68	0.00	0.42	0.5	0.040
15.000	0.000	0.68	0.00	0.42	0.5	0.041
15.017	0.000	0.69	0.00	0.43	0.5	0.041
15.033	0.000	0.69	0.00	0.43	0.5	0.041
15.050	0.000	0.70	0.00	0.43	0.5	0.041
15.067	0.000	0.70	0.00	0.43	0.5	0.042
15.083	0.000	0.71	0.00	0.44	0.5	0.042
15.100	0.000	0.71	0.00	0.44	0.5	0.042
15.117	0.000	0.72	0.00	0.44	0.5	0.043
15.133	0.000	0.72	0.00	0.45	0.5	0.043
15.150	0.000	0.73	0.00	0.45	0.5	0.043
15.167	0.000	0.74	0.00	0.45	0.5	0.043
15.183	0.000	0.75	0.00	0.45	0.5	0.044
15.200	0.000	0.77	0.00	0.46	0.5	0.044
15.217	0.000	0.78	0.00	0.46	0.5	0.044
15.233	0.000	0.79	0.00	0.47	0.5	0.045
15.250	0.000	0.80	0.00	0.47	0.6	0.045
15.267	0.000	0.81	0.00	0.47	0.6	0.045
15.283	0.000	0.82	0.00	0.48	0.6	0.046
15.300	0.000	0.83	0.00	0.48	0.6	0.046
15.317	0.000	0.84	0.00	0.48	0.6	0.046
15.333	0.000	0.85	0.00	0.49	0.6	0.047
15.350	0.000	0.85	0.00	0.49	0.6	0.047
15.367	0.000	0.86	0.00	0.50	0.6	0.048
15.383	0.000	0.87	0.00	0.50	0.6	0.048
15.400	0.000	0.88	0.00	0.50	0.6	0.048
15.417	0.000	0.89	0.00	0.51	0.6	0.049
15.433	0.000	0.89	0.00	0.51	0.6	0.049
15.450	0.000	0.89	0.00	0.52	0.6	0.050
15.467	0.000	0.90	0.00	0.52	0.6	0.050
15.483	0.000	0.90	0.00	0.53	0.6	0.050
15.500	0.000	0.90	0.00	0.53	0.6	0.051
15.517	0.000	0.90	0.00	0.54	0.6	0.051
15.533	0.000	0.91	0.00	0.54	0.6	0.052
15.550	0.000	0.91	0.00	0.54	0.6	0.052
15.567	0.000	0.91	0.00	0.55	0.6	0.052
15.583	0.000	0.92	0.00	0.55	0.6	0.053
15.600	0.000	0.94	0.00	0.56	0.6	0.053
15.617	0.000	0.95	0.00	0.56	0.6	0.054
15.633	0.000	0.97	0.00	0.57	0.6	0.054
15.650	0.000	0.98	0.00	0.57	0.6	0.054
15.667	0.000	1.00	0.00	0.58	0.7	0.055
15.683	0.000	1.01	0.00	0.58	0.7	0.055
15.700	0.000	1.03	0.00	0.59	0.7	0.056
15.717	0.000	1.05	0.00	0.59	0.7	0.056
15.733	0.000	1.11	0.00	0.60	0.7	0.057
15.750	0.000	1.17	0.00	0.61	0.7	0.058
15.767	0.000	1.24	0.00	0.62	0.7	0.059
15.783	0.000	1.30	0.00	0.63	0.7	0.059
15.800	0.000	1.37	0.00	0.64	0.7	0.060
15.817	0.000	1.44	0.00	0.65	0.7	0.061
15.833	0.000	1.50	0.00	0.66	0.7	0.062
15.850	0.000	1.57	0.00	0.67	0.7	0.063
15.867	0.000	1.64	0.00	0.69	0.7	0.065
15.883	0.000	1.71	0.00	0.70	0.8	0.066
15.900	0.000	1.78	0.00	0.72	0.8	0.067
15.917	0.000	1.85	0.00	0.73	0.8	0.069
15.933	0.000	1.93	0.00	0.75	0.8	0.070
15.950	0.000	2.00	0.00	0.77	0.8	0.072

15.967	0.000	2.07	0.00	0.79	0.8	0.074
15.983	0.000	2.14	0.00	0.81	0.8	0.076
16.000	0.000	2.22	0.00	0.83	0.9	0.077
16.017	0.000	2.52	0.00	0.85	0.9	0.080
16.033	0.000	3.06	0.00	0.89	0.9	0.083
16.050	0.000	3.60	0.00	0.93	0.9	0.086
16.067	0.000	4.14	0.00	0.97	1.0	0.091
16.083	0.000	4.68	0.00	1.03	1.0	0.096
16.100	0.000	5.22	0.00	1.10	1.1	0.101
16.117	0.000	5.76	0.00	1.18	1.1	0.108
16.133	0.000	6.30	0.00	1.27	1.2	0.115
16.150	0.000	6.94	0.00	1.36	1.2	0.123
16.167	0.000	6.42	0.00	1.45	1.3	0.130
16.183	0.000	5.77	0.00	1.53	1.3	0.136
16.200	0.000	5.12	0.00	1.60	1.3	0.141
16.217	0.000	4.47	0.00	1.67	1.4	0.146
16.233	0.000	3.81	0.00	1.71	1.4	0.149
16.250	0.000	3.16	0.00	1.75	1.4	0.151
16.267	0.000	2.51	0.00	1.77	1.4	0.153
16.283	0.000	1.86	0.00	1.78	1.4	0.153
16.300	0.000	1.31	0.00	1.77	1.4	0.153
16.317	0.000	1.21	0.00	1.77	1.4	0.153
16.333	0.000	1.16	0.00	1.77	1.4	0.153
16.350	0.000	1.11	0.00	1.76	1.4	0.152
16.367	0.000	1.06	0.00	1.75	1.4	0.152
16.383	0.000	1.01	0.00	1.74	1.4	0.151
16.400	0.000	0.96	0.00	1.74	1.4	0.150
16.417	0.000	0.91	0.00	1.73	1.4	0.150
16.433	0.000	0.86	0.00	1.71	1.4	0.149
16.450	0.000	0.83	0.00	1.70	1.4	0.148
16.467	0.000	0.82	0.00	1.69	1.4	0.147
16.483	0.000	0.81	0.00	1.68	1.4	0.147
16.500	0.000	0.81	0.00	1.67	1.4	0.146
16.517	0.000	0.80	0.00	1.66	1.4	0.145
16.533	0.000	0.79	0.00	1.65	1.4	0.144
16.550	0.000	0.79	0.00	1.63	1.4	0.143
16.567	0.000	0.78	0.00	1.62	1.4	0.143
16.583	0.000	0.77	0.00	1.61	1.4	0.142
16.600	0.000	0.76	0.00	1.60	1.4	0.141
16.617	0.000	0.75	0.00	1.59	1.4	0.140
16.633	0.000	0.73	0.00	1.57	1.4	0.139
16.650	0.000	0.72	0.00	1.56	1.3	0.138
16.667	0.000	0.70	0.00	1.55	1.3	0.137
16.683	0.000	0.69	0.00	1.54	1.3	0.137
16.700	0.000	0.68	0.00	1.52	1.3	0.136
16.717	0.000	0.66	0.00	1.51	1.3	0.135
16.733	0.000	0.65	0.00	1.50	1.3	0.134
16.750	0.000	0.64	0.00	1.49	1.3	0.133
16.767	0.000	0.63	0.00	1.48	1.3	0.132
16.783	0.000	0.62	0.00	1.46	1.3	0.131
16.800	0.000	0.61	0.00	1.45	1.3	0.130
16.817	0.000	0.60	0.00	1.44	1.3	0.129
16.833	0.000	0.59	0.00	1.43	1.3	0.128
16.850	0.000	0.58	0.00	1.42	1.3	0.127
16.867	0.000	0.57	0.00	1.41	1.3	0.126
16.883	0.000	0.56	0.00	1.39	1.3	0.125
16.900	0.000	0.56	0.00	1.38	1.3	0.124
16.917	0.000	0.55	0.00	1.37	1.2	0.123
16.933	0.000	0.54	0.00	1.36	1.2	0.122
16.950	0.000	0.54	0.00	1.35	1.2	0.121
16.967	0.000	0.53	0.00	1.34	1.2	0.121
16.983	0.000	0.52	0.00	1.32	1.2	0.120
17.000	0.000	0.52	0.00	1.31	1.2	0.119
17.017	0.000	0.51	0.00	1.30	1.2	0.118
17.033	0.000	0.51	0.00	1.29	1.2	0.117
17.050	0.000	0.50	0.00	1.28	1.2	0.116
17.067	0.000	0.50	0.00	1.27	1.2	0.115
17.083	0.000	0.49	0.00	1.25	1.2	0.114
17.100	0.000	0.49	0.00	1.24	1.2	0.113
17.117	0.000	0.48	0.00	1.23	1.2	0.112
17.133	0.000	0.48	0.00	1.22	1.2	0.111
17.150	0.000	0.47	0.00	1.21	1.1	0.110
17.167	0.000	0.47	0.00	1.20	1.1	0.109
17.183	0.000	0.47	0.00	1.19	1.1	0.108

17.200	0.000	0.46	0.00	1.17	1.1	0.107
17.217	0.000	0.46	0.00	1.16	1.1	0.106
17.233	0.000	0.45	0.00	1.15	1.1	0.106
17.250	0.000	0.45	0.00	1.14	1.1	0.105
17.267	0.000	0.45	0.00	1.13	1.1	0.104
17.283	0.000	0.44	0.00	1.12	1.1	0.103
17.300	0.000	0.44	0.00	1.11	1.1	0.102
17.317	0.000	0.44	0.00	1.10	1.1	0.101
17.333	0.000	0.43	0.00	1.09	1.1	0.100
17.350	0.000	0.43	0.00	1.08	1.1	0.099
17.367	0.000	0.43	0.00	1.07	1.1	0.098
17.383	0.000	0.42	0.00	1.06	1.1	0.098
17.400	0.000	0.42	0.00	1.04	1.0	0.097
17.417	0.000	0.42	0.00	1.03	1.0	0.096
17.433	0.000	0.42	0.00	1.02	1.0	0.095
17.450	0.000	0.41	0.00	1.01	1.0	0.094
17.467	0.000	0.41	0.00	1.00	1.0	0.093
17.483	0.000	0.41	0.00	0.99	1.0	0.092
17.500	0.000	0.40	0.00	0.98	1.0	0.092
17.517	0.000	0.40	0.00	0.97	1.0	0.091
17.533	0.000	0.40	0.00	0.97	1.0	0.090
17.550	0.000	0.40	0.00	0.96	1.0	0.089
17.567	0.000	0.39	0.00	0.95	1.0	0.088
17.583	0.000	0.39	0.00	0.94	1.0	0.088
17.600	0.000	0.39	0.00	0.93	1.0	0.087
17.617	0.000	0.39	0.00	0.92	1.0	0.086
17.633	0.000	0.39	0.00	0.91	0.9	0.085
17.650	0.000	0.38	0.00	0.90	0.9	0.084
17.667	0.000	0.38	0.00	0.90	0.9	0.084
17.683	0.000	0.38	0.00	0.89	0.9	0.083
17.700	0.000	0.38	0.00	0.88	0.9	0.082
17.717	0.000	0.37	0.00	0.87	0.9	0.081
17.733	0.000	0.37	0.00	0.86	0.9	0.081
17.750	0.000	0.37	0.00	0.85	0.9	0.080
17.767	0.000	0.37	0.00	0.85	0.9	0.079
17.783	0.000	0.37	0.00	0.84	0.9	0.078
17.800	0.000	0.36	0.00	0.83	0.9	0.078
17.817	0.000	0.36	0.00	0.82	0.9	0.077
17.833	0.000	0.36	0.00	0.82	0.9	0.076
17.850	0.000	0.36	0.00	0.81	0.9	0.076
17.867	0.000	0.36	0.00	0.80	0.9	0.075
17.883	0.000	0.35	0.00	0.79	0.8	0.074
17.900	0.000	0.35	0.00	0.79	0.8	0.074
17.917	0.000	0.35	0.00	0.78	0.8	0.073
17.933	0.000	0.35	0.00	0.77	0.8	0.072
17.950	0.000	0.35	0.00	0.76	0.8	0.072
17.967	0.000	0.35	0.00	0.76	0.8	0.071
17.983	0.000	0.34	0.00	0.75	0.8	0.070
18.000	0.000	0.34	0.00	0.74	0.8	0.070

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 0.616 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 0.616 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 1024.50 TO NODE 1025.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<

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MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 14.00 MANNINGS FACTOR = 0.013

UPSTREAM ELEVATION(FT) = 6.10
DOWNSTREAM ELEVATION(FT) = 4.60
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.38	2.24	0.38	0.000
14.017	0.38	2.24	0.38	0.000
14.033	0.38	2.25	0.38	0.000
14.050	0.38	2.26	0.38	0.000
14.067	0.39	2.27	0.39	0.000
14.083	0.39	2.28	0.39	0.000
14.100	0.39	2.29	0.39	0.000
14.117	0.39	2.30	0.39	0.000
14.133	0.39	2.31	0.39	0.000
14.150	0.39	2.31	0.39	0.000
14.167	0.39	2.32	0.39	0.000
14.183	0.40	2.33	0.40	0.000
14.200	0.40	2.34	0.40	0.000
14.217	0.40	2.35	0.40	0.000
14.233	0.40	2.36	0.40	0.000
14.250	0.40	2.37	0.40	0.000
14.267	0.40	2.38	0.40	0.000
14.283	0.41	2.39	0.41	0.000
14.300	0.41	2.39	0.41	0.000
14.317	0.41	2.40	0.41	0.000
14.333	0.41	2.41	0.41	0.000
14.350	0.41	2.42	0.41	0.000
14.367	0.41	2.43	0.41	0.000
14.383	0.42	2.44	0.42	0.000
14.400	0.42	2.45	0.42	0.000
14.417	0.42	2.46	0.42	0.000
14.433	0.42	2.47	0.42	0.000
14.450	0.42	2.49	0.42	0.000
14.467	0.42	2.50	0.42	0.000
14.483	0.43	2.51	0.43	0.000
14.500	0.43	2.52	0.43	0.000
14.517	0.43	2.53	0.43	0.000
14.533	0.43	2.54	0.43	0.000
14.550	0.43	2.55	0.43	0.000
14.567	0.43	2.56	0.43	0.000
14.583	0.44	2.57	0.44	0.000
14.600	0.44	2.58	0.44	0.000
14.617	0.44	2.59	0.44	0.000
14.633	0.44	2.61	0.44	0.000
14.650	0.44	2.62	0.44	0.000
14.667	0.45	2.63	0.45	0.000
14.683	0.45	2.64	0.45	0.000
14.700	0.45	2.66	0.45	0.000
14.717	0.45	2.67	0.45	0.000
14.733	0.46	2.68	0.46	0.000
14.750	0.46	2.70	0.46	0.000
14.767	0.46	2.71	0.46	0.000
14.783	0.46	2.73	0.46	0.000
14.800	0.47	2.74	0.47	0.000
14.817	0.47	2.75	0.47	0.000
14.833	0.47	2.77	0.47	0.000
14.850	0.47	2.78	0.47	0.000
14.867	0.48	2.80	0.48	0.000
14.883	0.48	2.81	0.48	0.000
14.900	0.48	2.83	0.48	0.000
14.917	0.48	2.84	0.48	0.000
14.933	0.49	2.86	0.49	0.000
14.950	0.49	2.88	0.49	0.000
14.967	0.49	2.90	0.49	0.000
14.983	0.50	2.91	0.50	0.000
15.000	0.50	2.93	0.50	0.000
15.017	0.50	2.95	0.50	0.000
15.033	0.50	2.97	0.50	0.000
15.050	0.51	2.99	0.51	0.000

				DPHIPF5
15.067	0.51	3.01	0.51	0.000
15.083	0.51	3.03	0.51	0.000
15.100	0.52	3.05	0.52	0.000
15.117	0.52	3.07	0.52	0.000
15.133	0.52	3.09	0.52	0.000
15.150	0.53	3.11	0.53	0.000
15.167	0.53	3.13	0.53	0.000
15.183	0.53	3.15	0.53	0.000
15.200	0.54	3.17	0.54	0.000
15.217	0.54	3.19	0.54	0.000
15.233	0.55	3.22	0.55	0.000
15.250	0.55	3.24	0.55	0.000
15.267	0.56	3.27	0.56	0.000
15.283	0.56	3.29	0.56	0.000
15.300	0.56	3.32	0.56	0.000
15.317	0.57	3.35	0.57	0.000
15.333	0.57	3.37	0.57	0.000
15.350	0.58	3.40	0.58	0.000
15.367	0.58	3.43	0.58	0.000
15.383	0.59	3.46	0.59	0.000
15.400	0.59	3.48	0.59	0.000
15.417	0.60	3.50	0.60	0.000
15.433	0.60	3.53	0.60	0.000
15.450	0.60	3.55	0.60	0.000
15.467	0.61	3.57	0.61	0.000
15.483	0.61	3.59	0.61	0.000
15.500	0.61	3.62	0.61	0.000
15.517	0.62	3.64	0.62	0.000
15.533	0.62	3.66	0.62	0.000
15.550	0.63	3.68	0.63	0.000
15.567	0.63	3.70	0.63	0.000
15.583	0.63	3.73	0.63	0.000
15.600	0.64	3.75	0.64	0.000
15.617	0.64	3.77	0.64	0.000
15.633	0.65	3.80	0.65	0.000
15.650	0.65	3.82	0.65	0.000
15.667	0.65	3.85	0.65	0.000
15.683	0.66	3.88	0.66	0.000
15.700	0.66	3.91	0.66	0.000
15.717	0.67	3.93	0.67	0.000
15.733	0.67	3.97	0.67	0.000
15.750	0.68	4.00	0.68	0.000
15.767	0.69	4.04	0.69	0.000
15.783	0.69	4.09	0.69	0.000
15.800	0.70	4.14	0.70	0.000
15.817	0.71	4.19	0.71	0.000
15.833	0.72	4.25	0.72	0.000
15.850	0.73	4.31	0.73	0.000
15.867	0.74	4.38	0.74	0.000
15.883	0.76	4.45	0.76	0.000
15.900	0.77	4.53	0.77	0.000
15.917	0.78	4.61	0.78	0.000
15.933	0.80	4.69	0.80	0.000
15.950	0.81	4.78	0.81	0.000
15.967	0.83	4.88	0.83	0.000
15.983	0.85	4.97	0.85	0.000
16.000	0.86	5.08	0.86	0.000
16.017	0.88	5.19	0.88	0.000
16.033	0.91	5.34	0.91	0.000
16.050	0.94	5.53	0.94	0.000
16.067	0.98	5.75	0.98	0.000
16.083	1.02	6.00	1.02	0.000
16.100	1.06	6.24	1.06	0.000
16.117	1.11	6.51	1.11	0.000
16.133	1.15	6.80	1.15	0.000
16.150	1.21	7.12	1.21	0.000
16.167	1.26	7.44	1.26	0.000
16.183	1.31	7.72	1.31	0.000
16.200	1.35	7.93	1.35	0.000
16.217	1.37	8.09	1.37	0.000
16.233	1.40	8.21	1.40	0.000
16.250	1.41	8.31	1.41	0.000
16.267	1.42	8.38	1.42	0.000
16.283	1.43	8.41	1.43	0.000

			DPHIPF5	
16.300	1.43	8.42	1.43	0.000
16.317	1.43	8.41	1.43	0.000
16.333	1.43	8.40	1.43	0.000
16.350	1.42	8.39	1.42	0.000
16.367	1.42	8.37	1.42	0.000
16.383	1.42	8.35	1.42	0.000
16.400	1.42	8.33	1.42	0.000
16.417	1.41	8.31	1.41	0.000
16.433	1.41	8.29	1.41	0.000
16.450	1.40	8.26	1.40	0.000
16.467	1.40	8.23	1.40	0.000
16.483	1.39	8.21	1.39	0.000
16.500	1.39	8.18	1.39	0.000
16.517	1.39	8.15	1.39	0.000
16.533	1.38	8.12	1.38	0.000
16.550	1.38	8.10	1.38	0.000
16.567	1.37	8.07	1.37	0.000
16.583	1.37	8.04	1.37	0.000
16.600	1.36	8.01	1.36	0.000
16.617	1.36	7.99	1.36	0.000
16.633	1.35	7.96	1.35	0.000
16.650	1.35	7.93	1.35	0.000
16.667	1.34	7.90	1.34	0.000
16.683	1.34	7.87	1.34	0.000
16.700	1.33	7.84	1.33	0.000
16.717	1.33	7.81	1.33	0.000
16.733	1.32	7.78	1.32	0.000
16.750	1.32	7.74	1.32	0.000
16.767	1.31	7.70	1.31	0.000
16.783	1.30	7.66	1.30	0.000
16.800	1.29	7.62	1.29	0.000
16.817	1.29	7.58	1.29	0.000
16.833	1.28	7.54	1.28	0.000
16.850	1.27	7.50	1.27	0.000
16.867	1.27	7.46	1.27	0.000
16.883	1.26	7.41	1.26	0.000
16.900	1.25	7.37	1.25	0.000
16.917	1.25	7.33	1.25	0.000
16.933	1.24	7.29	1.24	0.000
16.950	1.23	7.25	1.23	0.000
16.967	1.22	7.21	1.22	0.000
16.983	1.22	7.17	1.22	0.000
17.000	1.21	7.13	1.21	0.000
17.017	1.20	7.08	1.20	0.000
17.033	1.20	7.04	1.20	0.000
17.050	1.19	7.00	1.19	0.000
17.067	1.18	6.96	1.18	0.000
17.083	1.18	6.92	1.18	0.000
17.100	1.17	6.88	1.17	0.000
17.117	1.16	6.84	1.16	0.000
17.133	1.16	6.80	1.16	0.000
17.150	1.15	6.76	1.15	0.000
17.167	1.14	6.72	1.14	0.000
17.183	1.14	6.68	1.14	0.000
17.200	1.13	6.64	1.13	0.000
17.217	1.12	6.60	1.12	0.000
17.233	1.11	6.56	1.11	0.000
17.250	1.11	6.52	1.11	0.000
17.267	1.10	6.48	1.10	0.000
17.283	1.10	6.44	1.10	0.000
17.300	1.09	6.41	1.09	0.000
17.317	1.08	6.37	1.08	0.000
17.333	1.08	6.33	1.08	0.000
17.350	1.07	6.29	1.07	0.000
17.367	1.06	6.25	1.06	0.000
17.383	1.06	6.22	1.06	0.000
17.400	1.05	6.18	1.05	0.000
17.417	1.04	6.14	1.04	0.000
17.433	1.04	6.10	1.04	0.000
17.450	1.03	6.07	1.03	0.000
17.467	1.02	6.03	1.02	0.000
17.483	1.02	5.99	1.02	0.000
17.500	1.01	5.95	1.01	0.000
17.517	1.00	5.90	1.00	0.000

				DPHIPF5
17.533	0.99	5.85	0.99	0.000
17.550	0.99	5.81	0.99	0.000
17.567	0.98	5.76	0.98	0.000
17.583	0.97	5.72	0.97	0.000
17.600	0.96	5.67	0.96	0.000
17.617	0.96	5.63	0.96	0.000
17.633	0.95	5.58	0.95	0.000
17.650	0.94	5.54	0.94	0.000
17.667	0.93	5.50	0.93	0.000
17.683	0.93	5.45	0.93	0.000
17.700	0.92	5.41	0.92	0.000
17.717	0.91	5.37	0.91	0.000
17.733	0.91	5.33	0.91	0.000
17.750	0.90	5.29	0.90	0.000
17.767	0.89	5.25	0.89	0.000
17.783	0.88	5.21	0.88	0.000
17.800	0.88	5.17	0.88	0.000
17.817	0.87	5.13	0.87	0.000
17.833	0.86	5.09	0.86	0.000
17.850	0.86	5.05	0.86	0.000
17.867	0.85	5.01	0.85	0.000
17.883	0.84	4.97	0.84	0.000
17.900	0.84	4.93	0.84	0.000
17.917	0.83	4.90	0.83	0.000
17.933	0.83	4.86	0.83	0.000
17.950	0.82	4.82	0.82	0.000
17.967	0.81	4.79	0.81	0.000
17.983	0.81	4.75	0.81	0.000
18.000	0.80	4.71	0.80	0.000

```
****************************************************************************
  FLOW PROCESS FROM NODE   1025.00 TO NODE   1025.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 3 STORED IN FILE [dphipf5                    ]


****************************************************************************
  FLOW PROCESS FROM NODE   1015.00 TO NODE   1019.00 IS CODE = 1.2
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #4)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    2.95
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.066
    LOW LOSS FRACTION = 0.219
    TIME OF CONCENTRATION(MIN.) =  9.66
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

----------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.67
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.24

----------------------------------------------------------------------------
♀
============================================================================
```

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	1.8	3.6	5.4	7.2
14.000	0.2332	0.50	. Q	. V	.	.	.
14.017	0.2339	0.50	. Q	. V	.	.	.
14.033	0.2346	0.50	. Q	. V	.	.	.
14.050	0.2353	0.50	. Q	. V	.	.	.
14.067	0.2359	0.50	. Q	. V	.	.	.
14.083	0.2366	0.50	. Q	. V	.	.	.
14.100	0.2373	0.51	. Q	. V	.	.	.
14.117	0.2380	0.51	. Q	. V	.	.	.
14.133	0.2387	0.51	. Q	. V	.	.	.
14.150	0.2395	0.52	. Q	. V	.	.	.
14.167	0.2402	0.52	. Q	. V	.	.	.
14.183	0.2409	0.52	. Q	. V	.	.	.
14.200	0.2416	0.53	. Q	. V	.	.	.
14.217	0.2423	0.53	. Q	. V	.	.	.
14.233	0.2431	0.53	. Q	. V	.	.	.
14.250	0.2438	0.53	. Q	. V	.	.	.
14.267	0.2446	0.54	. Q	. V	.	.	.
14.283	0.2453	0.54	. Q	. V	.	.	.
14.300	0.2460	0.54	. Q	. V	.	.	.
14.317	0.2468	0.54	. Q	. V	.	.	.
14.333	0.2475	0.54	. Q	. V	.	.	.
14.350	0.2483	0.54	. Q	. V	.	.	.
14.367	0.2490	0.55	. Q	. V	.	.	.
14.383	0.2498	0.55	. Q	. V	.	.	.
14.400	0.2505	0.55	. Q	. V	.	.	.
14.417	0.2513	0.55	. Q	. V	.	.	.
14.433	0.2521	0.56	. Q	. V	.	.	.
14.450	0.2528	0.56	. Q	. V	.	.	.
14.467	0.2536	0.57	. Q	. V	.	.	.
14.483	0.2544	0.57	. Q	. V	.	.	.
14.500	0.2552	0.57	. Q	. V	.	.	.
14.517	0.2560	0.58	. Q	. V	.	.	.
14.533	0.2568	0.58	. Q	. V	.	.	.
14.550	0.2576	0.59	. Q	. V	.	.	.
14.567	0.2584	0.59	. Q	. V	.	.	.
14.583	0.2592	0.59	. Q	. V	.	.	.
14.600	0.2601	0.59	. Q	. V	.	.	.
14.617	0.2609	0.60	. Q	. V	.	.	.
14.633	0.2617	0.60	. Q	. V	.	.	.
14.650	0.2625	0.60	. Q	. V	.	.	.
14.667	0.2634	0.60	. Q	. V	.	.	.
14.683	0.2642	0.61	. Q	. V	.	.	.
14.700	0.2650	0.61	. Q	. V	.	.	.
14.717	0.2659	0.61	. Q	. V	.	.	.
14.733	0.2667	0.62	. Q	. V	.	.	.
14.750	0.2676	0.62	. Q	. V	.	.	.
14.767	0.2685	0.63	. Q	. V	.	.	.
14.783	0.2693	0.64	. Q	. V	.	.	.
14.800	0.2702	0.64	. Q	. V	.	.	.
14.817	0.2711	0.65	. Q	. V	.	.	.
14.833	0.2720	0.66	. Q	. V	.	.	.
14.850	0.2729	0.66	. Q	. V	.	.	.
14.867	0.2739	0.67	. Q	. V	.	.	.
14.883	0.2748	0.68	. Q	. V	.	.	.
14.900	0.2757	0.68	. Q	. V	.	.	.
14.917	0.2767	0.69	. Q	. V	.	.	.
14.933	0.2776	0.69	. Q	. V	.	.	.
14.950	0.2786	0.70	. Q	. V	.	.	.
14.967	0.2796	0.70	. Q	. V	.	.	.
14.983	0.2805	0.70	. Q	. V	.	.	.
15.000	0.2815	0.71	. Q	. V	.	.	.
15.017	0.2825	0.71	. Q	. V	.	.	.
15.033	0.2835	0.72	. Q	. V	.	.	.
15.050	0.2845	0.72	. Q	. V	.	.	.
15.067	0.2855	0.74	. Q	. V	.	.	.

15.083	0.2865	0.75	Q V
15.100	0.2876	0.76	Q V
15.117	0.2886	0.77	Q V
15.133	0.2897	0.78	Q V
15.150	0.2908	0.79	Q V
15.167	0.2919	0.80	Q V
15.183	0.2930	0.81	Q V
15.200	0.2941	0.82	Q V
15.217	0.2953	0.83	Q V
15.233	0.2964	0.84	Q V
15.250	0.2976	0.85	Q V
15.267	0.2988	0.85	Q V
15.283	0.3000	0.86	Q V
15.300	0.3012	0.87	Q V
15.317	0.3024	0.87	Q V
15.333	0.3036	0.88	Q V
15.350	0.3048	0.89	Q V
15.367	0.3060	0.90	Q V
15.383	0.3073	0.90	Q V
15.400	0.3085	0.90	Q V
15.417	0.3098	0.90	Q V
15.433	0.3110	0.90	Q V
15.450	0.3122	0.90	Q V
15.467	0.3135	0.91	Q V
15.483	0.3147	0.91	Q V
15.500	0.3160	0.91	Q V
15.517	0.3172	0.91	Q V.
15.533	0.3185	0.92	Q V.
15.550	0.3198	0.93	Q V.
15.567	0.3211	0.95	Q V.
15.583	0.3224	0.96	Q V.
15.600	0.3238	0.98	Q V.
15.617	0.3251	0.99	Q V.
15.633	0.3265	1.01	Q V.
15.650	0.3279	1.02	Q V.
15.667	0.3293	1.03	Q V.
15.683	0.3308	1.05	Q V.
15.700	0.3323	1.10	Q V.
15.717	0.3339	1.16	Q V
15.733	0.3356	1.23	Q V
15.750	0.3374	1.29	Q V
15.767	0.3392	1.35	Q V
15.783	0.3412	1.41	Q V
15.800	0.3432	1.48	Q V
15.817	0.3453	1.54	Q V
15.833	0.3475	1.60	Q V
15.850	0.3498	1.66	Q. .V
15.867	0.3522	1.73	Q. .V
15.883	0.3547	1.80	Q. .V
15.900	0.3573	1.87	Q .V
15.917	0.3599	1.94	Q .V
15.933	0.3627	2.00	.Q .V
15.950	0.3656	2.07	.Q .V
15.967	0.3685	2.14	.Q . V
15.983	0.3716	2.21	. Q . V
16.000	0.3747	2.28	. Q . V
16.017	0.3782	2.57	. Q . V
16.033	0.3825	3.07	. Q . V
16.050	0.3874	3.58	. Q. V
16.067	0.3930	4.09	. . QV
16.083	0.3993	4.59	. . VQ
16.100	0.4064	5.10	. . V Q .
16.117	0.4141	5.61	. . V .Q .
16.133	0.4225	6.12	. . V . Q .
16.150	0.4317	6.62	. . V . Q .
16.167	0.4416	7.21	. . V . Q
16.183	0.4508	6.69	. . V . Q .
16.200	0.4592	6.08	. . V . Q .
16.217	0.4667	5.46	. . V Q .
16.233	0.4734	4.85	. . Q V .
16.250	0.4792	4.23	. . Q V .
16.267	0.4842	3.61	. Q V.
16.283	0.4883	3.00	. Q . V.
16.300	0.4916	2.38	. Q . V.

16.317	0.4940	1.77	. Q. . V. .
16.333	0.4958	1.28	. Q . . V. .
16.350	0.4975	1.22	. Q . . V. .
16.367	0.4991	1.19	. Q . . V .
16.383	0.5007	1.16	. Q . . V .
16.400	0.5023	1.12	. Q . . V .
16.417	0.5038	1.09	. Q . . V .
16.433	0.5052	1.06	. Q . . V .
16.450	0.5066	1.02	. Q . . V .
16.467	0.5080	0.99	. Q . . V .
16.483	0.5093	0.96	. Q . . V .
16.500	0.5106	0.93	. Q . . V .
16.517	0.5119	0.92	. Q . . V .
16.533	0.5131	0.90	. Q . . V .
16.550	0.5143	0.88	. Q . . V .
16.567	0.5155	0.86	. Q . . V .
16.583	0.5166	0.84	. Q . . .V .
16.600	0.5178	0.83	. Q . . .V .
16.617	0.5189	0.81	. Q . . .V .
16.633	0.5200	0.79	. Q . . .V .
16.650	0.5210	0.77	. Q . . .V .
16.667	0.5221	0.76	. Q . . .V .
16.683	0.5231	0.74	. Q . . .V .
16.700	0.5241	0.73	. Q . . .V .
16.717	0.5251	0.72	. Q . . .V .
16.733	0.5261	0.70	. Q . . .V .
16.750	0.5270	0.69	. Q . . .V .
16.767	0.5280	0.68	. Q . . .V .
16.783	0.5289	0.66	. Q . . .V .
16.800	0.5298	0.65	. Q . . .V .
16.817	0.5307	0.64	. Q . . .V .
16.833	0.5315	0.63	. Q . . .V .
16.850	0.5324	0.62	. Q . . . V .
16.867	0.5332	0.62	. Q . . . V .
16.883	0.5341	0.61	. Q . . . V .
16.900	0.5349	0.60	. Q . . . V .
16.917	0.5357	0.59	. Q . . . V .
16.933	0.5365	0.59	. Q . . . V .
16.950	0.5373	0.58	. Q . . . V .
16.967	0.5381	0.57	. Q . . . V .
16.983	0.5389	0.57	. Q . . . V .
17.000	0.5397	0.56	. Q . . . V .
17.017	0.5404	0.55	. Q . . . V .
17.033	0.5412	0.55	. Q . . . V .
17.050	0.5419	0.54	. Q . . . V .
17.067	0.5427	0.54	. Q . . . V .
17.083	0.5434	0.53	. Q . . . V .
17.100	0.5441	0.53	. Q . . . V .
17.117	0.5449	0.52	. Q . . . V .
17.133	0.5456	0.52	. Q . . . V .
17.150	0.5463	0.51	. Q . . . V .
17.167	0.5470	0.51	. Q . . . V .
17.183	0.5477	0.51	. Q . . . V .
17.200	0.5484	0.50	. Q . . . V .
17.217	0.5491	0.50	. Q . . . V .
17.233	0.5497	0.49	. Q . . . V .
17.250	0.5504	0.49	. Q . . . V .
17.267	0.5511	0.48	. Q . . . V .
17.283	0.5517	0.48	. Q . . . V .
17.300	0.5524	0.48	. Q . . . V .
17.317	0.5530	0.47	. Q . . . V .
17.333	0.5537	0.47	. Q . . . V .
17.350	0.5543	0.47	. Q . . . V .
17.367	0.5550	0.46	. Q . . . V .
17.383	0.5556	0.46	. Q . . . V .
17.400	0.5562	0.46	. Q . . . V .
17.417	0.5569	0.45	. Q . . . V .
17.433	0.5575	0.45	. Q . . . V .
17.450	0.5581	0.45	. Q . . . V .
17.467	0.5587	0.44	. Q . . . V .
17.483	0.5593	0.44	. Q . . . V .
17.500	0.5599	0.44	. Q . . . V .
17.517	0.5605	0.44	. Q . . . V .
17.533	0.5611	0.43	. Q . . . V .

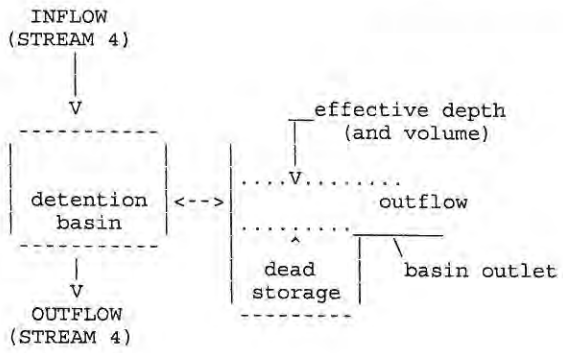
17.550	0.5617	0.43	. Q	.	.	. V	.
17.567	0.5623	0.43	. Q	.	.	. V	.
17.583	0.5629	0.42	. Q	.	.	. V	.
17.600	0.5635	0.42	. Q	.	.	. V	.
17.617	0.5640	0.42	. Q	.	.	. V	.
17.633	0.5646	0.42	. Q	.	.	. V	.
17.650	0.5652	0.41	. Q	.	.	. V	.
17.667	0.5657	0.41	. Q	.	.	. V	.
17.683	0.5663	0.41	. Q	.	.	. V	.
17.700	0.5669	0.41	. Q	.	.	. V	.
17.717	0.5674	0.40	. Q	.	.	. V	.
17.733	0.5680	0.40	. Q	.	.	. V	.
17.750	0.5685	0.40	. Q	.	.	. V	.
17.767	0.5691	0.40	. Q	.	.	. V	.
17.783	0.5696	0.40	. Q	.	.	. V	.
17.800	0.5702	0.39	. Q	.	.	. V	.
17.817	0.5707	0.39	. Q	.	.	. V	.
17.833	0.5712	0.39	. Q	.	.	. V	.
17.850	0.5718	0.39	. Q	.	.	. V	.
17.867	0.5723	0.39	. Q	.	.	. V	.
17.883	0.5728	0.38	. Q	.	.	. V	.
17.900	0.5734	0.38	. Q	.	.	. V	.
17.917	0.5739	0.38	. Q	.	.	. V	.
17.933	0.5744	0.38	. Q	.	.	. V	.
17.950	0.5749	0.38	. Q	.	.	. V	.
17.967	0.5754	0.37	. Q	.	.	. V	.
17.983	0.5760	0.37	. Q	.	.	. V	.
18.000	0.5765	0.37	. Q	.	.	. V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	500.0
20%	160.0
30%	100.0
40%	80.0
50%	65.0
60%	50.0
70%	40.0
80%	25.0
90%	15.0

****
FLOW PROCESS FROM NODE 1019.00 TO NODE 1020.00 IS CODE = 3.2

>>>>>FLOW-THROUGH DETENTION BASIN ROUTING MODEL APPLIED TO STREAM #4<<<<<
==========



ROUTE RUNOFF HYDROGRAPH FROM STREAM NUMBER 4
THROUGH A FLOW-THROUGH DETENTION BASIN

DPHIPF5

SPECIFIED BASIN CONDITIONS ARE AS FOLLOWS:
DEAD STORAGE(AF) = 0.000
SPECIFIED DEAD STORAGE(AF) FILLED = 0.000
SPECIFIED EFFECTIVE VOLUME(AF) FILLED ABOVE OUTLET = 0.000
DETENTION BASIN CONSTANT LOSS RATE(CFS) = 0.00

BASIN DEPTH VERSUS OUTFLOW AND STORAGE INFORMATION:

INTERVAL NUMBER	DEPTH (FT)	OUTFLOW (CFS)	STORAGE (AF)
1	0.00	0.00	0.000
2	0.50	0.64	0.048
3	1.00	1.13	0.093
4	1.50	1.26	0.134
5	2.00	1.39	0.169
6	2.50	1.50	0.195
7	2.84	1.57	0.200

MODIFIED-PULS BASIN ROUTING MODEL RESULTS(1-MINUTE COMPUTATION INTERVALS):
(Note: Computed EFFECTIVE DEPTH and VOLUME are estimated at the clock time; MEAN OUTFLOW is the average value during the unit interval.)

CLOCK TIME (HRS)	DEAD-STORAGE FILLED(AF)	INFLOW (CFS)	LOSS (CFS)	EFFECTIVE DEPTH(FT)	MEAN OUTFLOW (CFS)	EFFECTIVE VOLUME(AF)
14.017	0.000	0.50	0.00	0.32	0.4	0.031
14.033	0.000	0.50	0.00	0.33	0.4	0.031
14.050	0.000	0.50	0.00	0.33	0.4	0.031
14.067	0.000	0.50	0.00	0.33	0.4	0.032
14.083	0.000	0.50	0.00	0.33	0.4	0.032
14.100	0.000	0.51	0.00	0.33	0.4	0.032
14.117	0.000	0.51	0.00	0.33	0.4	0.032
14.133	0.000	0.51	0.00	0.33	0.4	0.032
14.150	0.000	0.52	0.00	0.33	0.4	0.032
14.167	0.000	0.52	0.00	0.34	0.4	0.032
14.183	0.000	0.52	0.00	0.34	0.4	0.032
14.200	0.000	0.53	0.00	0.34	0.4	0.032
14.217	0.000	0.53	0.00	0.34	0.4	0.033
14.233	0.000	0.53	0.00	0.34	0.4	0.033
14.250	0.000	0.53	0.00	0.34	0.4	0.033
14.267	0.000	0.54	0.00	0.34	0.4	0.033
14.283	0.000	0.54	0.00	0.35	0.4	0.033
14.300	0.000	0.54	0.00	0.35	0.4	0.033
14.317	0.000	0.54	0.00	0.35	0.4	0.033
14.333	0.000	0.54	0.00	0.35	0.4	0.034
14.350	0.000	0.54	0.00	0.35	0.4	0.034
14.367	0.000	0.55	0.00	0.35	0.5	0.034
14.383	0.000	0.55	0.00	0.35	0.5	0.034
14.400	0.000	0.55	0.00	0.36	0.5	0.034
14.417	0.000	0.55	0.00	0.36	0.5	0.034
14.433	0.000	0.56	0.00	0.36	0.5	0.034
14.450	0.000	0.56	0.00	0.36	0.5	0.035
14.467	0.000	0.57	0.00	0.36	0.5	0.035
14.483	0.000	0.57	0.00	0.36	0.5	0.035
14.500	0.000	0.57	0.00	0.36	0.5	0.035
14.517	0.000	0.58	0.00	0.37	0.5	0.035
14.533	0.000	0.58	0.00	0.37	0.5	0.035
14.550	0.000	0.59	0.00	0.37	0.5	0.035
14.567	0.000	0.59	0.00	0.37	0.5	0.036
14.583	0.000	0.59	0.00	0.37	0.5	0.036
14.600	0.000	0.59	0.00	0.37	0.5	0.036
14.617	0.000	0.60	0.00	0.38	0.5	0.036
14.633	0.000	0.60	0.00	0.38	0.5	0.036
14.650	0.000	0.60	0.00	0.38	0.5	0.036
14.667	0.000	0.60	0.00	0.38	0.5	0.037
14.683	0.000	0.61	0.00	0.38	0.5	0.037
14.700	0.000	0.61	0.00	0.38	0.5	0.037
14.717	0.000	0.61	0.00	0.39	0.5	0.037
14.733	0.000	0.62	0.00	0.39	0.5	0.037
14.750	0.000	0.62	0.00	0.39	0.5	0.037

14.767	0.000	0.63	0.00	0.39	0.5	0.038
14.783	0.000	0.64	0.00	0.39	0.5	0.038
14.800	0.000	0.64	0.00	0.40	0.5	0.038
14.817	0.000	0.65	0.00	0.40	0.5	0.038
14.833	0.000	0.66	0.00	0.40	0.5	0.038
14.850	0.000	0.66	0.00	0.40	0.5	0.039
14.867	0.000	0.67	0.00	0.40	0.5	0.039
14.883	0.000	0.68	0.00	0.41	0.5	0.039
14.900	0.000	0.68	0.00	0.41	0.5	0.039
14.917	0.000	0.69	0.00	0.41	0.5	0.039
14.933	0.000	0.69	0.00	0.41	0.5	0.040
14.950	0.000	0.70	0.00	0.42	0.5	0.040
14.967	0.000	0.70	0.00	0.42	0.5	0.040
14.983	0.000	0.70	0.00	0.42	0.5	0.040
15.000	0.000	0.71	0.00	0.42	0.5	0.041
15.017	0.000	0.71	0.00	0.43	0.5	0.041
15.033	0.000	0.72	0.00	0.43	0.5	0.041
15.050	0.000	0.72	0.00	0.43	0.5	0.041
15.067	0.000	0.74	0.00	0.43	0.6	0.042
15.083	0.000	0.75	0.00	0.44	0.6	0.042
15.100	0.000	0.76	0.00	0.44	0.6	0.042
15.117	0.000	0.77	0.00	0.44	0.6	0.042
15.133	0.000	0.78	0.00	0.44	0.6	0.043
15.150	0.000	0.79	0.00	0.45	0.6	0.043
15.167	0.000	0.80	0.00	0.45	0.6	0.043
15.183	0.000	0.81	0.00	0.45	0.6	0.044
15.200	0.000	0.82	0.00	0.46	0.6	0.044
15.217	0.000	0.83	0.00	0.46	0.6	0.044
15.233	0.000	0.84	0.00	0.46	0.6	0.045
15.250	0.000	0.85	0.00	0.47	0.6	0.045
15.267	0.000	0.85	0.00	0.47	0.6	0.045
15.283	0.000	0.86	0.00	0.48	0.6	0.046
15.300	0.000	0.87	0.00	0.48	0.6	0.046
15.317	0.000	0.87	0.00	0.48	0.6	0.046
15.333	0.000	0.88	0.00	0.49	0.6	0.047
15.350	0.000	0.89	0.00	0.49	0.6	0.047
15.367	0.000	0.90	0.00	0.49	0.6	0.047
15.383	0.000	0.90	0.00	0.50	0.6	0.048
15.400	0.000	0.90	0.00	0.50	0.6	0.048
15.417	0.000	0.90	0.00	0.51	0.6	0.049
15.433	0.000	0.90	0.00	0.51	0.6	0.049
15.450	0.000	0.90	0.00	0.51	0.7	0.049
15.467	0.000	0.91	0.00	0.52	0.7	0.050
15.483	0.000	0.91	0.00	0.52	0.7	0.050
15.500	0.000	0.91	0.00	0.52	0.7	0.050
15.517	0.000	0.91	0.00	0.53	0.7	0.051
15.533	0.000	0.92	0.00	0.53	0.7	0.051
15.550	0.000	0.93	0.00	0.54	0.7	0.051
15.567	0.000	0.95	0.00	0.54	0.7	0.052
15.583	0.000	0.96	0.00	0.54	0.7	0.052
15.600	0.000	0.98	0.00	0.55	0.7	0.052
15.617	0.000	0.99	0.00	0.55	0.7	0.053
15.633	0.000	1.01	0.00	0.56	0.7	0.053
15.650	0.000	1.02	0.00	0.56	0.7	0.054
15.667	0.000	1.03	0.00	0.57	0.7	0.054
15.683	0.000	1.05	0.00	0.57	0.7	0.055
15.700	0.000	1.10	0.00	0.58	0.7	0.055
15.717	0.000	1.16	0.00	0.59	0.7	0.056
15.733	0.000	1.23	0.00	0.59	0.7	0.056
15.750	0.000	1.29	0.00	0.60	0.7	0.057
15.767	0.000	1.35	0.00	0.61	0.7	0.058
15.783	0.000	1.41	0.00	0.62	0.8	0.059
15.800	0.000	1.48	0.00	0.63	0.8	0.060
15.817	0.000	1.54	0.00	0.64	0.8	0.061
15.833	0.000	1.60	0.00	0.66	0.8	0.062
15.850	0.000	1.66	0.00	0.67	0.8	0.063
15.867	0.000	1.73	0.00	0.68	0.8	0.065
15.883	0.000	1.80	0.00	0.70	0.8	0.066
15.900	0.000	1.87	0.00	0.71	0.8	0.067
15.917	0.000	1.94	0.00	0.73	0.9	0.069
15.933	0.000	2.00	0.00	0.75	0.9	0.070
15.950	0.000	2.07	0.00	0.77	0.9	0.072
15.967	0.000	2.14	0.00	0.79	0.9	0.074
15.983	0.000	2.21	0.00	0.80	0.9	0.075

DPHIPF5

16.000	0.000	2.28	0.00	0.83	0.9	0.077
16.017	0.000	2.57	0.00	0.85	1.0	0.079
16.033	0.000	3.07	0.00	0.88	1.0	0.082
16.050	0.000	3.58	0.00	0.92	1.0	0.086
16.067	0.000	4.09	0.00	0.97	1.1	0.090
16.083	0.000	4.59	0.00	1.02	1.1	0.095
16.100	0.000	5.10	0.00	1.09	1.1	0.100
16.117	0.000	5.61	0.00	1.16	1.2	0.106
16.133	0.000	6.12	0.00	1.25	1.2	0.113
16.150	0.000	6.62	0.00	1.34	1.2	0.121
16.167	0.000	7.21	0.00	1.44	1.2	0.129
16.183	0.000	6.69	0.00	1.53	1.3	0.136
16.200	0.000	6.08	0.00	1.63	1.3	0.143
16.217	0.000	5.46	0.00	1.71	1.3	0.149
16.233	0.000	4.85	0.00	1.78	1.3	0.154
16.250	0.000	4.23	0.00	1.84	1.3	0.158
16.267	0.000	3.61	0.00	1.88	1.4	0.161
16.283	0.000	3.00	0.00	1.91	1.4	0.163
16.300	0.000	2.38	0.00	1.93	1.4	0.164
16.317	0.000	1.77	0.00	1.94	1.4	0.165
16.333	0.000	1.28	0.00	1.94	1.4	0.165
16.350	0.000	1.22	0.00	1.94	1.4	0.164
16.367	0.000	1.19	0.00	1.93	1.4	0.164
16.383	0.000	1.16	0.00	1.93	1.4	0.164
16.400	0.000	1.12	0.00	1.92	1.4	0.164
16.417	0.000	1.09	0.00	1.92	1.4	0.163
16.433	0.000	1.06	0.00	1.91	1.4	0.163
16.450	0.000	1.02	0.00	1.90	1.4	0.162
16.467	0.000	0.99	0.00	1.90	1.4	0.162
16.483	0.000	0.96	0.00	1.89	1.4	0.161
16.500	0.000	0.93	0.00	1.88	1.4	0.161
16.517	0.000	0.92	0.00	1.87	1.4	0.160
16.533	0.000	0.90	0.00	1.86	1.4	0.159
16.550	0.000	0.88	0.00	1.85	1.4	0.159
16.567	0.000	0.86	0.00	1.84	1.4	0.158
16.583	0.000	0.84	0.00	1.83	1.3	0.157
16.600	0.000	0.83	0.00	1.82	1.3	0.157
16.617	0.000	0.81	0.00	1.81	1.3	0.156
16.633	0.000	0.79	0.00	1.80	1.3	0.155
16.650	0.000	0.77	0.00	1.79	1.3	0.154
16.667	0.000	0.76	0.00	1.78	1.3	0.154
16.683	0.000	0.74	0.00	1.77	1.3	0.153
16.700	0.000	0.73	0.00	1.76	1.3	0.152
16.717	0.000	0.72	0.00	1.74	1.3	0.151
16.733	0.000	0.70	0.00	1.73	1.3	0.150
16.750	0.000	0.69	0.00	1.72	1.3	0.149
16.767	0.000	0.68	0.00	1.71	1.3	0.149
16.783	0.000	0.66	0.00	1.69	1.3	0.148
16.800	0.000	0.65	0.00	1.68	1.3	0.147
16.817	0.000	0.64	0.00	1.67	1.3	0.146
16.833	0.000	0.63	0.00	1.66	1.3	0.145
16.850	0.000	0.62	0.00	1.64	1.3	0.144
16.867	0.000	0.62	0.00	1.63	1.3	0.143
16.883	0.000	0.61	0.00	1.62	1.3	0.142
16.900	0.000	0.60	0.00	1.60	1.3	0.141
16.917	0.000	0.59	0.00	1.59	1.3	0.140
16.933	0.000	0.59	0.00	1.57	1.3	0.139
16.950	0.000	0.58	0.00	1.56	1.3	0.138
16.967	0.000	0.57	0.00	1.55	1.3	0.137
16.983	0.000	0.57	0.00	1.53	1.3	0.136
17.000	0.000	0.56	0.00	1.52	1.3	0.135
17.017	0.000	0.55	0.00	1.51	1.3	0.134
17.033	0.000	0.55	0.00	1.49	1.3	0.133
17.050	0.000	0.54	0.00	1.48	1.3	0.132
17.067	0.000	0.54	0.00	1.47	1.3	0.131
17.083	0.000	0.53	0.00	1.46	1.3	0.130
17.100	0.000	0.53	0.00	1.44	1.2	0.129
17.117	0.000	0.52	0.00	1.43	1.2	0.128
17.133	0.000	0.52	0.00	1.42	1.2	0.127
17.150	0.000	0.51	0.00	1.41	1.2	0.126
17.167	0.000	0.51	0.00	1.40	1.2	0.125
17.183	0.000	0.51	0.00	1.38	1.2	0.124
17.200	0.000	0.50	0.00	1.37	1.2	0.123
17.217	0.000	0.50	0.00	1.36	1.2	0.122

17.233	0.000	0.49	0.00	1.35	1.2	0.121
17.250	0.000	0.49	0.00	1.33	1.2	0.120
17.267	0.000	0.48	0.00	1.32	1.2	0.119
17.283	0.000	0.48	0.00	1.31	1.2	0.118
17.300	0.000	0.48	0.00	1.30	1.2	0.117
17.317	0.000	0.47	0.00	1.29	1.2	0.116
17.333	0.000	0.47	0.00	1.27	1.2	0.115
17.350	0.000	0.47	0.00	1.26	1.2	0.114
17.367	0.000	0.46	0.00	1.25	1.2	0.113
17.383	0.000	0.46	0.00	1.24	1.2	0.112
17.400	0.000	0.46	0.00	1.22	1.2	0.111
17.417	0.000	0.45	0.00	1.21	1.2	0.110
17.433	0.000	0.45	0.00	1.20	1.2	0.109
17.450	0.000	0.45	0.00	1.19	1.2	0.108
17.467	0.000	0.44	0.00	1.17	1.2	0.107
17.483	0.000	0.44	0.00	1.16	1.2	0.106
17.500	0.000	0.44	0.00	1.15	1.2	0.105
17.517	0.000	0.44	0.00	1.14	1.2	0.104
17.533	0.000	0.43	0.00	1.13	1.2	0.103
17.550	0.000	0.43	0.00	1.11	1.2	0.102
17.567	0.000	0.43	0.00	1.10	1.2	0.101
17.583	0.000	0.42	0.00	1.09	1.2	0.100
17.600	0.000	0.42	0.00	1.08	1.2	0.099
17.617	0.000	0.42	0.00	1.06	1.1	0.098
17.633	0.000	0.42	0.00	1.05	1.1	0.097
17.650	0.000	0.41	0.00	1.04	1.1	0.096
17.667	0.000	0.41	0.00	1.03	1.1	0.095
17.683	0.000	0.41	0.00	1.02	1.1	0.094
17.700	0.000	0.41	0.00	1.00	1.1	0.093
17.717	0.000	0.40	0.00	0.99	1.1	0.092
17.733	0.000	0.40	0.00	0.98	1.1	0.091
17.750	0.000	0.40	0.00	0.97	1.1	0.090
17.767	0.000	0.40	0.00	0.96	1.1	0.089
17.783	0.000	0.40	0.00	0.95	1.1	0.088
17.800	0.000	0.39	0.00	0.94	1.1	0.087
17.817	0.000	0.39	0.00	0.93	1.1	0.087
17.833	0.000	0.39	0.00	0.92	1.1	0.086
17.850	0.000	0.39	0.00	0.91	1.0	0.085
17.867	0.000	0.39	0.00	0.90	1.0	0.084
17.883	0.000	0.38	0.00	0.89	1.0	0.083
17.900	0.000	0.38	0.00	0.88	1.0	0.082
17.917	0.000	0.38	0.00	0.87	1.0	0.081
17.933	0.000	0.38	0.00	0.86	1.0	0.080
17.950	0.000	0.38	0.00	0.85	1.0	0.080
17.967	0.000	0.37	0.00	0.84	1.0	0.079
17.983	0.000	0.37	0.00	0.83	1.0	0.078
18.000	0.000	0.37	0.00	0.82	1.0	0.077

PROCESS SUMMARY OF STORAGE:
INFLOW VOLUME = 0.665 AF
BASIN STORAGE = 0.000 AF (WITH 0.000 AF INITIALLY FILLED)
OUTFLOW VOLUME = 0.665 AF
LOSS VOLUME = 0.000 AF

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FLOW PROCESS FROM NODE 1020.00 TO NODE 1025.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #4<<<<<

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MODEL PIPEFLOW ROUTING OF STREAM 4 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 387.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 8.50
DOWNSTREAM ELEVATION(FT) = 4.60

PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.41	2.43	0.41	0.000
14.017	0.42	2.44	0.42	0.000
14.033	0.42	2.45	0.42	0.000
14.050	0.42	2.46	0.42	0.000
14.067	0.42	2.47	0.42	0.000
14.083	0.42	2.48	0.42	0.000
14.100	0.42	2.49	0.42	0.000
14.117	0.42	2.50	0.42	0.000
14.133	0.43	2.51	0.43	0.000
14.150	0.43	2.52	0.43	0.000
14.167	0.43	2.53	0.43	0.000
14.183	0.43	2.53	0.43	0.000
14.200	0.43	2.54	0.43	0.000
14.217	0.43	2.56	0.43	0.000
14.233	0.44	2.57	0.44	0.000
14.250	0.44	2.58	0.44	0.000
14.267	0.44	2.59	0.44	0.000
14.283	0.44	2.60	0.44	0.000
14.300	0.44	2.61	0.44	0.000
14.317	0.44	2.62	0.44	0.000
14.333	0.45	2.63	0.45	0.000
14.350	0.45	2.64	0.45	0.000
14.367	0.45	2.65	0.45	0.000
14.383	0.45	2.66	0.45	0.000
14.400	0.45	2.67	0.45	0.000
14.417	0.46	2.68	0.46	0.000
14.433	0.46	2.69	0.46	0.000
14.450	0.46	2.70	0.46	0.000
14.467	0.46	2.71	0.46	0.000
14.483	0.46	2.72	0.46	0.000
14.500	0.46	2.74	0.46	0.000
14.517	0.47	2.75	0.47	0.000
14.533	0.47	2.76	0.47	0.000
14.550	0.47	2.77	0.47	0.000
14.567	0.47	2.79	0.47	0.000
14.583	0.48	2.80	0.48	0.000
14.600	0.48	2.81	0.48	0.000
14.617	0.48	2.82	0.48	0.000
14.633	0.48	2.84	0.48	0.000
14.650	0.48	2.85	0.48	0.000
14.667	0.49	2.86	0.49	0.000
14.683	0.49	2.87	0.49	0.000
14.700	0.49	2.89	0.49	0.000
14.717	0.49	2.90	0.49	0.000
14.733	0.49	2.91	0.49	0.000
14.750	0.50	2.93	0.50	0.000
14.767	0.50	2.94	0.50	0.000
14.783	0.50	2.95	0.50	0.000
14.800	0.50	2.97	0.50	0.000
14.817	0.51	2.98	0.51	0.000
14.833	0.51	3.00	0.51	0.000
14.850	0.51	3.02	0.51	0.000
14.867	0.52	3.03	0.52	0.000
14.883	0.52	3.05	0.52	0.000
14.900	0.52	3.07	0.52	0.000
14.917	0.52	3.08	0.52	0.000
14.933	0.53	3.10	0.53	0.000
14.950	0.53	3.11	0.53	0.000
14.967	0.53	3.11	0.53	0.000
14.983	0.54	3.11	0.53	0.000
15.000	0.54	3.12	0.53	0.000
15.017	0.54	3.12	0.54	0.000
15.033	0.55	3.13	0.54	0.000
15.050	0.55	3.13	0.54	0.000
15.067	0.55	3.13	0.55	0.000
15.083	0.56	3.14	0.55	0.000

				DPHIPF5
15.100	0.56	3.14	0.55	0.000
15.117	0.56	3.15	0.56	0.000
15.133	0.57	3.15	0.56	0.000
15.150	0.57	3.16	0.56	0.000
15.167	0.57	3.16	0.57	0.000
15.183	0.58	3.17	0.57	0.000
15.200	0.58	3.17	0.58	0.000
15.217	0.59	3.18	0.58	0.000
15.233	0.59	3.18	0.59	0.000
15.250	0.60	3.19	0.59	0.000
15.267	0.60	3.20	0.59	0.000
15.283	0.61	3.20	0.60	0.000
15.300	0.61	3.21	0.60	0.000
15.317	0.62	3.21	0.61	0.000
15.333	0.62	3.22	0.61	0.000
15.350	0.63	3.22	0.62	0.000
15.367	0.63	3.23	0.62	0.000
15.383	0.63	3.24	0.63	0.000
15.400	0.64	3.24	0.63	0.000
15.417	0.64	3.25	0.64	0.000
15.433	0.65	3.25	0.64	0.000
15.450	0.65	3.26	0.65	0.000
15.467	0.66	3.26	0.65	0.000
15.483	0.66	3.27	0.65	0.000
15.500	0.66	3.27	0.66	0.000
15.517	0.67	3.28	0.66	0.000
15.533	0.67	3.28	0.66	0.000
15.550	0.67	3.29	0.67	0.000
15.567	0.68	3.29	0.67	0.000
15.583	0.68	3.30	0.68	0.000
15.600	0.69	3.30	0.68	0.000
15.617	0.69	3.31	0.68	0.000
15.633	0.70	3.31	0.69	0.000
15.650	0.70	3.32	0.69	0.000
15.667	0.70	3.32	0.70	0.000
15.683	0.71	3.33	0.70	0.000
15.700	0.72	3.34	0.71	0.000
15.717	0.72	3.34	0.71	0.000
15.733	0.73	3.35	0.72	0.000
15.750	0.74	3.36	0.73	0.000
15.767	0.74	3.37	0.73	0.000
15.783	0.75	3.39	0.74	0.000
15.800	0.76	3.40	0.75	0.000
15.817	0.78	3.41	0.76	0.000
15.833	0.79	3.43	0.77	0.000
15.850	0.80	3.44	0.78	0.000
15.867	0.81	3.46	0.80	0.000
15.883	0.83	3.48	0.81	0.000
15.900	0.84	3.50	0.82	0.000
15.917	0.86	3.52	0.84	0.000
15.933	0.87	3.54	0.85	0.000
15.950	0.89	3.56	0.87	0.000
15.967	0.91	3.58	0.89	0.000
15.983	0.93	3.60	0.91	0.000
16.000	0.95	3.63	0.93	0.000
16.017	0.97	3.66	0.94	0.000
16.033	1.00	3.69	0.97	0.000
16.050	1.03	3.73	0.99	0.000
16.067	1.07	3.78	1.03	0.000
16.083	1.12	3.82	1.07	0.000
16.100	1.14	3.85	1.11	0.000
16.117	1.16	3.86	1.14	0.000
16.133	1.18	3.88	1.16	0.000
16.150	1.21	3.90	1.18	0.000
16.167	1.23	3.93	1.20	0.000
16.183	1.26	3.95	1.23	0.000
16.200	1.28	3.98	1.25	0.000
16.217	1.30	4.00	1.28	0.000
16.233	1.32	4.02	1.30	0.000
16.250	1.34	4.03	1.32	0.000
16.267	1.35	4.05	1.34	0.000
16.283	1.36	4.06	1.35	0.000
16.300	1.37	4.06	1.36	0.000
16.317	1.37	4.07	1.37	0.000

16.333	1.37	4.07	1.37	0.000
16.350	1.37	4.07	1.37	0.000
16.367	1.37	4.07	1.37	0.000
16.383	1.37	4.06	1.37	0.000
16.400	1.37	4.06	1.37	0.000
16.417	1.37	4.06	1.37	0.000
16.433	1.37	4.06	1.37	0.000
16.450	1.37	4.06	1.37	0.000
16.467	1.36	4.06	1.37	0.000
16.483	1.36	4.06	1.36	0.000
16.500	1.36	4.05	1.36	0.000
16.517	1.36	4.05	1.36	0.000
16.533	1.36	4.05	1.36	0.000
16.550	1.35	4.05	1.36	0.000
16.567	1.35	4.04	1.35	0.000
16.583	1.35	4.04	1.35	0.000
16.600	1.35	4.04	1.35	0.000
16.617	1.34	4.04	1.35	0.000
16.633	1.34	4.03	1.34	0.000
16.650	1.34	4.03	1.34	0.000
16.667	1.33	4.03	1.34	0.000
16.683	1.33	4.03	1.33	0.000
16.700	1.33	4.02	1.33	0.000
16.717	1.33	4.02	1.33	0.000
16.733	1.32	4.02	1.33	0.000
16.750	1.32	4.01	1.32	0.000
16.767	1.32	4.01	1.32	0.000
16.783	1.31	4.01	1.32	0.000
16.800	1.31	4.00	1.31	0.000
16.817	1.31	4.00	1.31	0.000
16.833	1.30	4.00	1.31	0.000
16.850	1.30	3.99	1.30	0.000
16.867	1.30	3.99	1.30	0.000
16.883	1.29	3.99	1.30	0.000
16.900	1.29	3.98	1.29	0.000
16.917	1.28	3.98	1.29	0.000
16.933	1.28	3.98	1.29	0.000
16.950	1.28	3.97	1.28	0.000
16.967	1.27	3.97	1.28	0.000
16.983	1.27	3.97	1.27	0.000
17.000	1.27	3.96	1.27	0.000
17.017	1.26	3.96	1.27	0.000
17.033	1.26	3.96	1.26	0.000
17.050	1.26	3.95	1.26	0.000
17.067	1.25	3.95	1.26	0.000
17.083	1.25	3.95	1.25	0.000
17.100	1.25	3.94	1.25	0.000
17.117	1.24	3.94	1.25	0.000
17.133	1.24	3.94	1.24	0.000
17.150	1.24	3.94	1.24	0.000
17.167	1.23	3.93	1.24	0.000
17.183	1.23	3.93	1.24	0.000
17.200	1.23	3.93	1.23	0.000
17.217	1.23	3.92	1.23	0.000
17.233	1.22	3.92	1.23	0.000
17.250	1.22	3.92	1.22	0.000
17.267	1.22	3.91	1.22	0.000
17.283	1.21	3.91	1.22	0.000
17.300	1.21	3.91	1.21	0.000
17.317	1.21	3.91	1.21	0.000
17.333	1.20	3.90	1.21	0.000
17.350	1.20	3.90	1.20	0.000
17.367	1.20	3.90	1.20	0.000
17.383	1.19	3.89	1.20	0.000
17.400	1.19	3.89	1.19	0.000
17.417	1.19	3.89	1.19	0.000
17.433	1.18	3.88	1.19	0.000
17.450	1.18	3.88	1.18	0.000
17.467	1.18	3.88	1.18	0.000
17.483	1.17	3.87	1.18	0.000
17.500	1.17	3.87	1.17	0.000
17.517	1.17	3.87	1.17	0.000
17.533	1.16	3.86	1.17	0.000
17.550	1.16	3.86	1.16	0.000

17.567	1.16	3.86	1.16	0.000
17.583	1.15	3.86	1.16	0.000
17.600	1.15	3.85	1.16	0.000
17.617	1.15	3.85	1.15	0.000
17.633	1.15	3.85	1.15	0.000
17.650	1.14	3.84	1.15	0.000
17.667	1.14	3.84	1.14	0.000
17.683	1.14	3.84	1.14	0.000
17.700	1.13	3.83	1.14	0.000
17.717	1.13	3.83	1.13	0.000
17.733	1.12	3.82	1.13	0.000
17.750	1.11	3.81	1.12	0.000
17.767	1.10	3.80	1.11	0.000
17.783	1.09	3.79	1.10	0.000
17.800	1.07	3.78	1.09	0.000
17.817	1.06	3.77	1.08	0.000
17.833	1.05	3.76	1.07	0.000
17.850	1.04	3.75	1.06	0.000
17.867	1.04	3.74	1.05	0.000
17.883	1.03	3.72	1.04	0.000
17.900	1.02	3.71	1.03	0.000
17.917	1.01	3.70	1.02	0.000
17.933	1.00	3.69	1.01	0.000
17.950	0.99	3.68	1.00	0.000
17.967	0.98	3.66	0.99	0.000
17.983	0.97	3.65	0.98	0.000
18.000	0.96	3.64	0.97	0.000

****
FLOW PROCESS FROM NODE 1025.00 TO NODE 1025.00 IS CODE = 7

>>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 3<<<<<
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****
FLOW PROCESS FROM NODE 1025.00 TO NODE 1026.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
==========

MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 17.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 4.60
DOWNSTREAM ELEVATION(FT) = 4.40
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.79	3.63	0.79	0.000
14.017	0.80	3.64	0.80	0.000
14.033	0.80	3.64	0.80	0.000
14.050	0.80	3.64	0.80	0.000
14.067	0.81	3.65	0.81	0.000
14.083	0.81	3.65	0.81	0.000
14.100	0.81	3.65	0.81	0.000
14.117	0.81	3.66	0.81	0.000
14.133	0.82	3.66	0.82	0.000
14.150	0.82	3.66	0.82	0.000
14.167	0.82	3.67	0.82	0.000

			DPHIPF5	
14.183	0.83	3.67	0.83	0.000
14.200	0.83	3.68	0.83	0.000
14.217	0.83	3.68	0.83	0.000
14.233	0.84	3.69	0.84	0.000
14.250	0.84	3.69	0.84	0.000
14.267	0.84	3.69	0.84	0.000
14.283	0.85	3.70	0.85	0.000
14.300	0.85	3.70	0.85	0.000
14.317	0.85	3.71	0.85	0.000
14.333	0.86	3.71	0.86	0.000
14.350	0.86	3.71	0.86	0.000
14.367	0.86	3.72	0.86	0.000
14.383	0.87	3.72	0.87	0.000
14.400	0.87	3.73	0.87	0.000
14.417	0.87	3.73	0.87	0.000
14.433	0.88	3.74	0.88	0.000
14.450	0.88	3.74	0.88	0.000
14.467	0.88	3.75	0.88	0.000
14.483	0.89	3.75	0.89	0.000
14.500	0.89	3.75	0.89	0.000
14.517	0.90	3.76	0.90	0.000
14.533	0.90	3.76	0.90	0.000
14.550	0.90	3.77	0.90	0.000
14.567	0.91	3.77	0.91	0.000
14.583	0.91	3.78	0.91	0.000
14.600	0.92	3.78	0.92	0.000
14.617	0.92	3.79	0.92	0.000
14.633	0.92	3.79	0.92	0.000
14.650	0.93	3.80	0.93	0.000
14.667	0.93	3.81	0.93	0.000
14.683	0.94	3.81	0.94	0.000
14.700	0.94	3.82	0.94	0.000
14.717	0.95	3.82	0.95	0.000
14.733	0.95	3.83	0.95	0.000
14.750	0.96	3.83	0.96	0.000
14.767	0.96	3.84	0.96	0.000
14.783	0.96	3.84	0.96	0.000
14.800	0.97	3.85	0.97	0.000
14.817	0.97	3.86	0.97	0.000
14.833	0.98	3.86	0.98	0.000
14.850	0.99	3.87	0.98	0.000
14.867	0.99	3.88	0.99	0.000
14.883	1.00	3.88	1.00	0.000
14.900	1.00	3.89	1.00	0.000
14.917	1.01	3.90	1.01	0.000
14.933	1.01	3.90	1.01	0.000
14.950	1.02	3.91	1.02	0.000
14.967	1.03	3.92	1.02	0.000
14.983	1.03	3.92	1.03	0.000
15.000	1.03	3.93	1.03	0.000
15.017	1.04	3.94	1.04	0.000
15.033	1.05	3.94	1.04	0.000
15.050	1.05	3.95	1.05	0.000
15.067	1.06	3.96	1.06	0.000
15.083	1.06	3.97	1.06	0.000
15.100	1.07	3.98	1.07	0.000
15.117	1.08	3.99	1.08	0.000
15.133	1.08	3.99	1.08	0.000
15.150	1.09	4.00	1.09	0.000
15.167	1.10	4.01	1.10	0.000
15.183	1.11	4.02	1.11	0.000
15.200	1.12	4.03	1.11	0.000
15.217	1.12	4.04	1.12	0.000
15.233	1.13	4.05	1.13	0.000
15.250	1.14	4.06	1.14	0.000
15.267	1.15	4.07	1.15	0.000
15.283	1.16	4.08	1.16	0.000
15.300	1.17	4.09	1.17	0.000
15.317	1.18	4.10	1.18	0.000
15.333	1.19	4.11	1.19	0.000
15.350	1.20	4.12	1.20	0.000
15.367	1.21	4.13	1.20	0.000
15.383	1.22	4.14	1.22	0.000
15.400	1.22	4.14	1.22	0.000

			DPHIPF5	
15.417	1.23	4.15	1.23	0.000
15.433	1.24	4.16	1.24	0.000
15.450	1.25	4.17	1.25	0.000
15.467	1.26	4.17	1.26	0.000
15.483	1.26	4.18	1.26	0.000
15.500	1.27	4.19	1.27	0.000
15.517	1.28	4.20	1.28	0.000
15.533	1.29	4.20	1.29	0.000
15.550	1.29	4.21	1.29	0.000
15.567	1.30	4.22	1.30	0.000
15.583	1.31	4.23	1.31	0.000
15.600	1.32	4.23	1.32	0.000
15.617	1.33	4.24	1.32	0.000
15.633	1.33	4.25	1.33	0.000
15.650	1.34	4.26	1.34	0.000
15.667	1.35	4.27	1.35	0.000
15.683	1.36	4.28	1.36	0.000
15.700	1.37	4.28	1.37	0.000
15.717	1.38	4.29	1.38	0.000
15.733	1.39	4.31	1.39	0.000
15.750	1.41	4.32	1.40	0.000
15.767	1.42	4.33	1.42	0.000
15.783	1.44	4.35	1.44	0.000
15.800	1.45	4.36	1.45	0.000
15.817	1.47	4.38	1.47	0.000
15.833	1.49	4.40	1.49	0.000
15.850	1.52	4.42	1.52	0.000
15.867	1.54	4.45	1.54	0.000
15.883	1.57	4.47	1.56	0.000
15.900	1.59	4.50	1.59	0.000
15.917	1.62	4.53	1.62	0.000
15.933	1.65	4.55	1.65	0.000
15.950	1.68	4.58	1.68	0.000
15.967	1.72	4.62	1.71	0.000
15.983	1.75	4.64	1.75	0.000
16.000	1.79	4.67	1.79	0.000
16.017	1.83	4.70	1.83	0.000
16.033	1.87	4.73	1.87	0.000
16.050	1.93	4.77	1.93	0.000
16.067	2.01	4.83	2.00	0.000
16.083	2.09	4.89	2.08	0.000
16.100	2.17	4.95	2.16	0.000
16.117	2.24	5.00	2.24	0.000
16.133	2.31	5.05	2.31	0.000
16.150	2.39	5.09	2.39	0.000
16.167	2.47	5.14	2.46	0.000
16.183	2.54	5.18	2.54	0.000
16.200	2.60	5.22	2.60	0.000
16.217	2.65	5.25	2.65	0.000
16.233	2.70	5.28	2.70	0.000
16.250	2.73	5.30	2.73	0.000
16.267	2.76	5.31	2.76	0.000
16.283	2.78	5.32	2.78	0.000
16.300	2.79	5.33	2.79	0.000
16.317	2.80	5.33	2.80	0.000
16.333	2.80	5.34	2.80	0.000
16.350	2.80	5.34	2.80	0.000
16.367	2.80	5.33	2.80	0.000
16.383	2.79	5.33	2.79	0.000
16.400	2.79	5.33	2.79	0.000
16.417	2.78	5.33	2.78	0.000
16.433	2.78	5.32	2.78	0.000
16.450	2.77	5.32	2.77	0.000
16.467	2.77	5.32	2.77	0.000
16.483	2.76	5.31	2.76	0.000
16.500	2.75	5.31	2.75	0.000
16.517	2.75	5.30	2.75	0.000
16.533	2.74	5.30	2.74	0.000
16.550	2.73	5.30	2.73	0.000
16.567	2.72	5.29	2.72	0.000
16.583	2.72	5.29	2.72	0.000
16.600	2.71	5.28	2.71	0.000
16.617	2.70	5.28	2.70	0.000
16.633	2.70	5.27	2.70	0.000

			DPHIPF5	
16.650	2.69	5.27	2.69	0.000
16.667	2.68	5.27	2.68	0.000
16.683	2.67	5.26	2.67	0.000
16.700	2.66	5.26	2.66	0.000
16.717	2.66	5.25	2.66	0.000
16.733	2.65	5.25	2.65	0.000
16.750	2.64	5.24	2.64	0.000
16.767	2.63	5.23	2.63	0.000
16.783	2.62	5.23	2.62	0.000
16.800	2.61	5.22	2.61	0.000
16.817	2.60	5.22	2.60	0.000
16.833	2.59	5.21	2.59	0.000
16.850	2.58	5.20	2.58	0.000
16.867	2.57	5.20	2.57	0.000
16.883	2.56	5.19	2.56	0.000
16.900	2.55	5.19	2.55	0.000
16.917	2.53	5.18	2.53	0.000
16.933	2.52	5.17	2.52	0.000
16.950	2.51	5.17	2.51	0.000
16.967	2.50	5.16	2.50	0.000
16.983	2.49	5.15	2.49	0.000
17.000	2.48	5.15	2.48	0.000
17.017	2.47	5.14	2.47	0.000
17.033	2.46	5.14	2.46	0.000
17.050	2.45	5.13	2.45	0.000
17.067	2.44	5.12	2.44	0.000
17.083	2.43	5.12	2.43	0.000
17.100	2.42	5.11	2.42	0.000
17.117	2.41	5.11	2.41	0.000
17.133	2.40	5.10	2.40	0.000
17.150	2.39	5.09	2.39	0.000
17.167	2.38	5.09	2.38	0.000
17.183	2.37	5.08	2.37	0.000
17.200	2.36	5.08	2.36	0.000
17.217	2.35	5.07	2.35	0.000
17.233	2.34	5.07	2.34	0.000
17.250	2.33	5.06	2.33	0.000
17.267	2.32	5.05	2.32	0.000
17.283	2.31	5.05	2.31	0.000
17.300	2.30	5.04	2.30	0.000
17.317	2.29	5.04	2.29	0.000
17.333	2.28	5.03	2.28	0.000
17.350	2.27	5.02	2.27	0.000
17.367	2.26	5.02	2.26	0.000
17.383	2.25	5.01	2.25	0.000
17.400	2.24	5.00	2.24	0.000
17.417	2.23	5.00	2.23	0.000
17.433	2.22	4.99	2.22	0.000
17.450	2.22	4.98	2.22	0.000
17.467	2.21	4.98	2.21	0.000
17.483	2.20	4.97	2.20	0.000
17.500	2.18	4.96	2.19	0.000
17.517	2.17	4.95	2.17	0.000
17.533	2.16	4.94	2.16	0.000
17.550	2.15	4.94	2.15	0.000
17.567	2.14	4.93	2.14	0.000
17.583	2.13	4.92	2.13	0.000
17.600	2.12	4.91	2.12	0.000
17.617	2.11	4.90	2.11	0.000
17.633	2.10	4.90	2.10	0.000
17.650	2.09	4.89	2.09	0.000
17.667	2.08	4.88	2.08	0.000
17.683	2.07	4.87	2.07	0.000
17.700	2.06	4.87	2.06	0.000
17.717	2.05	4.86	2.05	0.000
17.733	2.03	4.85	2.03	0.000
17.750	2.02	4.84	2.02	0.000
17.767	2.00	4.82	2.00	0.000
17.783	1.98	4.81	1.98	0.000
17.800	1.97	4.80	1.97	0.000
17.817	1.95	4.79	1.95	0.000
17.833	1.93	4.77	1.93	0.000
17.850	1.92	4.76	1.92	0.000
17.867	1.90	4.75	1.90	0.000

			DPHIPF5	
17.883	1.88	4.74	1.88	0.000
17.900	1.87	4.72	1.87	0.000
17.917	1.85	4.71	1.85	0.000
17.933	1.83	4.70	1.83	0.000
17.950	1.82	4.69	1.82	0.000
17.967	1.80	4.68	1.80	0.000
17.983	1.79	4.67	1.79	0.000
18.000	1.77	4.66	1.77	0.000

****
FLOW PROCESS FROM NODE 1026.00 TO NODE 1026.00 IS CODE = 7

>>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
==========

****
FLOW PROCESS FROM NODE 1026.00 TO NODE 1026.00 IS CODE = 6

>>>>>STREAM NUMBER 3 CLEARED AND SET TO ZERO<<<<<
==========

****
FLOW PROCESS FROM NODE 1026.00 TO NODE 1036.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
==========

MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 253.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 4.40
DOWNSTREAM ELEVATION(FT) = 2.40
PIPE DIAMETER(FT) = 18.00

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	1.60	0.50	1.55	0.000
14.017	1.60	0.50	1.55	0.000
14.033	1.61	0.50	1.56	0.000
14.050	1.61	0.50	1.56	0.000
14.067	1.62	0.50	1.57	0.000
14.083	1.63	0.50	1.58	0.000
14.100	1.63	0.50	1.58	0.000
14.117	1.64	0.50	1.59	0.000
14.133	1.65	0.50	1.59	0.000
14.150	1.65	0.50	1.60	0.000
14.167	1.66	0.50	1.61	0.000
14.183	1.66	0.50	1.61	0.000
14.200	1.67	0.50	1.62	0.000
14.217	1.68	0.50	1.62	0.000
14.233	1.68	0.50	1.63	0.000
14.250	1.69	0.50	1.64	0.000
14.267	1.70	0.50	1.64	0.000
14.283	1.70	0.50	1.65	0.000
14.300	1.71	0.50	1.66	0.000
14.317	1.72	0.50	1.66	0.000
14.333	1.73	0.50	1.67	0.000
14.350	1.73	0.50	1.68	0.000
14.367	1.74	0.50	1.68	0.000

				DPHIPF5
14.383	1.75	0.50	1.69	0.000
14.400	1.75	0.50	1.70	0.000
14.417	1.76	0.50	1.70	0.000
14.433	1.77	0.50	1.71	0.000
14.450	1.78	0.50	1.72	0.000
14.467	1.78	0.50	1.72	0.000
14.483	1.79	0.50	1.73	0.000
14.500	1.80	0.50	1.74	0.000
14.517	1.81	0.50	1.74	0.000
14.533	1.81	0.50	1.75	0.000
14.550	1.82	0.50	1.76	0.000
14.567	1.83	0.50	1.76	0.000
14.583	1.84	0.50	1.77	0.000
14.600	1.85	0.50	1.78	0.000
14.617	1.86	0.50	1.79	0.000
14.633	1.86	0.50	1.80	0.000
14.650	1.87	0.50	1.80	0.000
14.667	1.88	0.50	1.81	0.000
14.683	1.89	0.50	1.82	0.000
14.700	1.90	0.50	1.83	0.000
14.717	1.91	0.50	1.84	0.000
14.733	1.92	0.50	1.84	0.000
14.750	1.93	0.50	1.85	0.000
14.767	1.94	0.50	1.86	0.000
14.783	1.95	0.50	1.87	0.000
14.800	1.96	0.50	1.88	0.000
14.817	1.97	0.50	1.89	0.000
14.833	1.98	0.50	1.89	0.000
14.850	1.99	0.50	1.90	0.000
14.867	2.00	0.50	1.91	0.000
14.883	2.01	0.50	1.92	0.000
14.900	2.02	0.50	1.93	0.000
14.917	2.03	0.50	1.94	0.000
14.933	2.04	0.50	1.95	0.000
14.950	2.05	0.50	1.96	0.000
14.967	2.06	0.50	1.97	0.000
14.983	2.07	0.50	1.98	0.000
15.000	2.08	0.50	1.99	0.000
15.017	2.10	0.50	2.00	0.000
15.033	2.11	0.50	2.01	0.000
15.050	2.12	0.50	2.02	0.000
15.067	2.14	0.50	2.04	0.000
15.083	2.15	0.50	2.05	0.000
15.100	2.16	0.50	2.06	0.000
15.117	2.18	0.50	2.07	0.000
15.133	2.19	0.50	2.08	0.000
15.150	2.21	0.50	2.09	0.000
15.167	2.22	0.50	2.10	0.000
15.183	2.24	0.50	2.12	0.000
15.200	2.25	0.50	2.13	0.000
15.217	2.27	0.50	2.14	0.000
15.233	2.29	0.50	2.16	0.000
15.250	2.30	0.50	2.17	0.000
15.267	2.32	0.50	2.19	0.000
15.283	2.34	0.50	2.20	0.000
15.300	2.36	0.50	2.22	0.000
15.317	2.38	0.50	2.23	0.000
15.333	2.40	0.50	2.25	0.000
15.350	2.42	0.50	2.26	0.000
15.367	2.44	0.50	2.28	0.000
15.383	2.46	0.50	2.30	0.000
15.400	2.48	0.50	2.31	0.000
15.417	2.50	0.50	2.33	0.000
15.433	2.52	0.50	2.35	0.000
15.450	2.54	0.50	2.37	0.000
15.467	2.56	0.50	2.39	0.000
15.483	2.58	0.50	2.41	0.000
15.500	2.60	0.50	2.43	0.000
15.517	2.62	0.50	2.45	0.000
15.533	2.64	0.50	2.47	0.000
15.550	2.65	0.50	2.49	0.000
15.567	2.67	0.50	2.51	0.000
15.583	2.69	0.50	2.53	0.000
15.600	2.71	0.50	2.55	0.000

15.617	2.73	0.50	2.57	0.000
15.633	2.75	0.50	2.59	0.000
15.650	2.77	0.50	2.61	0.000
15.667	2.79	0.50	2.63	0.000
15.683	2.81	0.50	2.65	0.000
15.700	2.84	0.50	2.66	0.000
15.717	2.86	0.50	2.68	0.000
15.733	2.89	0.50	2.70	0.000
15.750	2.91	0.50	2.72	0.000
15.767	2.94	0.50	2.74	0.000
15.783	2.97	0.50	2.76	0.000
15.800	3.00	0.50	2.78	0.000
15.817	3.04	0.50	2.81	0.000
15.833	3.08	0.50	2.83	0.000
15.850	3.12	0.50	2.85	0.000
15.867	3.17	0.50	2.87	0.000
15.883	3.22	0.50	2.90	0.000
15.900	3.28	0.50	2.93	0.000
15.917	3.34	0.50	2.96	0.000
15.933	3.40	0.50	2.99	0.000
15.950	3.46	0.50	3.02	0.000
15.967	3.54	0.50	3.06	0.000
15.983	3.61	0.50	3.10	0.000
16.000	3.69	0.50	3.15	0.000
16.017	3.77	0.50	3.20	0.000
16.033	3.87	0.50	3.25	0.000
16.050	3.97	0.50	3.31	0.000
16.067	4.10	0.50	3.37	0.000
16.083	4.24	0.50	3.44	0.000
16.100	4.40	0.50	3.51	0.000
16.117	4.57	0.50	3.58	0.000
16.133	4.75	0.50	3.65	0.000
16.150	4.92	0.50	3.74	0.000
16.167	5.08	0.50	3.83	0.000
16.183	5.23	0.50	3.93	0.000
16.200	5.37	0.50	4.04	0.000
16.217	5.50	0.50	4.18	0.000
16.233	5.63	0.50	4.33	0.000
16.250	5.75	0.50	4.50	0.000
16.267	5.84	0.50	4.67	0.000
16.283	5.92	0.50	4.84	0.000
16.300	5.98	0.50	5.01	0.000
16.317	6.02	0.50	5.17	0.000
16.333	6.05	0.50	5.31	0.000
16.350	6.06	0.50	5.45	0.000
16.367	6.06	0.50	5.58	0.000
16.383	6.05	0.50	5.70	0.000
16.400	6.04	0.50	5.80	0.000
16.417	6.03	0.50	5.89	0.000
16.433	6.01	0.50	5.95	0.000
16.450	6.00	0.50	6.00	0.000
16.467	5.98	0.50	6.03	0.000
16.483	5.96	0.50	6.05	0.000
16.500	5.94	0.50	6.06	0.000
16.517	5.92	0.50	6.05	0.000
16.533	5.90	0.50	6.04	0.000
16.550	5.89	0.50	6.03	0.000
16.567	5.87	0.50	6.02	0.000
16.583	5.85	0.50	6.00	0.000
16.600	5.83	0.50	5.99	0.000
16.617	5.81	0.50	5.97	0.000
16.633	5.79	0.50	5.95	0.000
16.650	5.77	0.50	5.93	0.000
16.667	5.75	0.50	5.91	0.000
16.683	5.73	0.50	5.89	0.000
16.700	5.71	0.50	5.88	0.000
16.717	5.69	0.50	5.86	0.000
16.733	5.67	0.50	5.84	0.000
16.750	5.65	0.50	5.82	0.000
16.767	5.63	0.50	5.80	0.000
16.783	5.61	0.50	5.78	0.000
16.800	5.59	0.50	5.76	0.000
16.817	5.56	0.50	5.74	0.000
16.833	5.54	0.50	5.72	0.000

				DPHIPF5
16.850	5.52	0.50	5.70	0.000
16.867	5.49	0.50	5.68	0.000
16.883	5.47	0.50	5.66	0.000
16.900	5.45	0.50	5.64	0.000
16.917	5.42	0.50	5.62	0.000
16.933	5.40	0.50	5.60	0.000
16.950	5.38	0.50	5.57	0.000
16.967	5.35	0.50	5.55	0.000
16.983	5.33	0.50	5.53	0.000
17.000	5.31	0.50	5.50	0.000
17.017	5.29	0.50	5.48	0.000
17.033	5.26	0.50	5.46	0.000
17.050	5.24	0.50	5.43	0.000
17.067	5.22	0.50	5.41	0.000
17.083	5.19	0.50	5.39	0.000
17.100	5.17	0.50	5.36	0.000
17.117	5.15	0.50	5.34	0.000
17.133	5.13	0.50	5.32	0.000
17.150	5.11	0.50	5.30	0.000
17.167	5.08	0.50	5.27	0.000
17.183	5.06	0.50	5.25	0.000
17.200	5.04	0.50	5.23	0.000
17.217	5.02	0.50	5.20	0.000
17.233	5.00	0.50	5.18	0.000
17.250	4.97	0.50	5.16	0.000
17.267	4.95	0.50	5.14	0.000
17.283	4.93	0.50	5.12	0.000
17.300	4.91	0.50	5.09	0.000
17.317	4.89	0.50	5.07	0.000
17.333	4.86	0.50	5.05	0.000
17.350	4.84	0.50	5.03	0.000
17.367	4.82	0.50	5.00	0.000
17.383	4.79	0.50	4.98	0.000
17.400	4.76	0.50	4.96	0.000
17.417	4.72	0.50	4.94	0.000
17.433	4.68	0.50	4.92	0.000
17.450	4.64	0.50	4.90	0.000
17.467	4.61	0.50	4.87	0.000
17.483	4.57	0.50	4.85	0.000
17.500	4.53	0.50	4.83	0.000
17.517	4.49	0.50	4.80	0.000
17.533	4.45	0.50	4.77	0.000
17.550	4.42	0.50	4.74	0.000
17.567	4.38	0.50	4.70	0.000
17.583	4.34	0.50	4.66	0.000
17.600	4.31	0.50	4.62	0.000
17.617	4.27	0.50	4.58	0.000
17.633	4.24	0.50	4.55	0.000
17.650	4.21	0.50	4.51	0.000
17.667	4.17	0.50	4.47	0.000
17.683	4.14	0.50	4.43	0.000
17.700	4.11	0.50	4.40	0.000
17.717	4.07	0.50	4.36	0.000
17.733	4.04	0.50	4.32	0.000
17.750	4.00	0.50	4.29	0.000
17.767	3.96	0.50	4.25	0.000
17.783	3.93	0.50	4.22	0.000
17.800	3.89	0.50	4.19	0.000
17.817	3.85	0.50	4.15	0.000
17.833	3.82	0.50	4.12	0.000
17.850	3.78	0.50	4.09	0.000
17.867	3.74	0.50	4.05	0.000
17.883	3.71	0.50	4.02	0.000
17.900	3.67	0.50	3.98	0.000
17.917	3.64	0.50	3.94	0.000
17.933	3.61	0.50	3.90	0.000
17.950	3.57	0.50	3.87	0.000
17.967	3.54	0.50	3.83	0.000
17.983	3.51	0.50	3.79	0.000
18.000	3.48	0.50	3.76	0.000

****

FLOW PROCESS FROM NODE 1036.00 TO NODE 1036.00 IS CODE = 10.3

```
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [dphipf5                        ]


****************************************************************************
  FLOW PROCESS FROM NODE   1039.00 TO NODE   1041.00 IS CODE = 1.2
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #5)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    1.36
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.040
    LOW LOSS FRACTION = 0.157
    TIME OF CONCENTRATION(MIN.) =  8.90
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68

----------------------------------------------------------------------------
    TOTAL CATCHMENT   RUNOFF  VOLUME(ACRE-FEET) =     0.33
    TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) =     0.09

----------------------------------------------------------------------------
♀
============================================================================

                    2 4 - H O U R    S T O R M
                  R U N O F F    H Y D R O G R A P H

============================================================================
              HYDROGRAPH IN  ONE-MINUTE UNIT INTERVALS(CFS)
        (Notes: Time indicated is at END of Each Unit Intervals.
                Peak 5-minute rainfall intensity is modeled as
                a constant value for entire 5-minute period.)
----------------------------------------------------------------------------
 TIME(HRS) VOLUME(AF)   Q(CFS) 0.        0.9       1.8       2.6       3.5
----------------------------------------------------------------------------
  14.000      0.1165     0.25  . Q       .  V      .         .         .
  14.017      0.1168     0.25  . Q       .  V      .         .         .
  14.033      0.1171     0.25  . Q       .  V      .         .         .
  14.050      0.1175     0.25  . Q       .  V      .         .         .
  14.067      0.1178     0.25  . Q       .  V      .         .         .
  14.083      0.1182     0.25  . Q       .  V      .         .         .
  14.100      0.1185     0.26  . Q       .  V      .         .         .
  14.117      0.1189     0.26  . Q       .  V      .         .         .
  14.133      0.1192     0.26  . Q       .  V      .         .         .
  14.150      0.1196     0.26  . Q       .  V      .         .         .
  14.167      0.1200     0.26  . Q       .  V      .         .         .
  14.183      0.1203     0.26  . Q       .  V      .         .         .
  14.200      0.1207     0.26  . Q       .  V      .         .         .
  14.217      0.1210     0.26  . Q       .  V      .         .         .
  14.233      0.1214     0.26  . Q       .  V      .         .         .
  14.250      0.1218     0.26  . Q       .  V      .         .         .
  14.267      0.1221     0.27  .  Q      .  V      .         .         .
  14.283      0.1225     0.27  .  Q      .  V      .         .         .
  14.300      0.1229     0.27  .  Q      .   V     .         .         .
  14.317      0.1232     0.27  .  Q      .   V     .         .         .
  14.333      0.1236     0.27  .  Q      .   V     .         .         .
  14.350      0.1240     0.28  .  Q      .   V     .         .         .
  14.367      0.1244     0.28  .  Q      .   V     .         .         .
  14.383      0.1248     0.28  .  Q      .   V     .         .         .
```

14.400	0.1252	0.28	.	Q	.	V	.	.	.	
14.417	0.1255	0.28	.	Q	.	V	.	.	.	
14.433	0.1259	0.28	.	Q	.	V	.	.	.	
14.450	0.1263	0.28	.	Q	.	V	.	.	.	
14.467	0.1267	0.29	.	Q	.	V	.	.	.	
14.483	0.1271	0.29	.	Q	.	V	.	.	.	
14.500	0.1275	0.29	.	Q	.	V	.	.	.	
14.517	0.1279	0.29	.	Q	.	V	.	.	.	
14.533	0.1283	0.29	.	Q	.	V	.	.	.	
14.550	0.1287	0.29	.	Q	.	V	.	.	.	
14.567	0.1291	0.30	.	Q	.	V	.	.	.	
14.583	0.1295	0.30	.	Q	.	V	.	.	.	
14.600	0.1300	0.30	.	Q	.	V	.	.	.	
14.617	0.1304	0.30	.	Q	.	V	.	.	.	
14.633	0.1308	0.31	.	Q	.	V	.	.	.	
14.650	0.1312	0.31	.	Q	.	V	.	.	.	
14.667	0.1317	0.31	.	Q	.	V	.	.	.	
14.683	0.1321	0.31	.	Q	.	V	.	.	.	
14.700	0.1325	0.32	.	Q	.	V	.	.	.	
14.717	0.1330	0.32	.	Q	.	V	.	.	.	
14.733	0.1334	0.32	.	Q	.	V	.	.	.	
14.750	0.1338	0.32	.	Q	.	V	.	.	.	
14.767	0.1343	0.32	.	Q	.	V	.	.	.	
14.783	0.1347	0.32	.	Q	.	V	.	.	.	
14.800	0.1352	0.33	.	Q	.	V	.	.	.	
14.817	0.1356	0.33	.	Q	.	V	.	.	.	
14.833	0.1361	0.33	.	Q	.	V	.	.	.	
14.850	0.1366	0.33	.	Q	.	V	.	.	.	
14.867	0.1370	0.34	.	Q	.	V	.	.	.	
14.883	0.1375	0.34	.	Q	.	V	.	.	.	
14.900	0.1380	0.35	.	Q	.	V	.	.	.	
14.917	0.1385	0.35	.	Q	.	V	.	.	.	
14.933	0.1389	0.35	.	Q	.	V	.	.	.	
14.950	0.1394	0.36	.	Q	.	V	.	.	.	
14.967	0.1399	0.36	.	Q	.	V	.	.	.	
14.983	0.1404	0.36	.	Q	.	V	.	.	.	
15.000	0.1409	0.37	.	Q	.	V	.	.	.	
15.017	0.1414	0.37	.	Q	.	V	.	.	.	
15.033	0.1419	0.37	.	Q	.	V	.	.	.	
15.050	0.1425	0.37	.	Q	.	V	.	.	.	
15.067	0.1430	0.37	.	Q	.	V	.	.	.	
15.083	0.1435	0.38	.	Q	.	V	.	.	.	
15.100	0.1440	0.38	.	Q	.	V	.	.	.	
15.117	0.1445	0.38	.	Q	.	V	.	.	.	
15.133	0.1451	0.39	.	Q	.	V	.	.	.	
15.150	0.1456	0.39	.	Q	.	V	.	.	.	
15.167	0.1462	0.40	.	Q	.	V	.	.	.	
15.183	0.1467	0.40	.	Q	.	V	.	.	.	
15.200	0.1473	0.41	.	Q	.	V	.	.	.	
15.217	0.1479	0.42	.	Q	.	V	.	.	.	
15.233	0.1484	0.42	.	Q	.	V	.	.	.	
15.250	0.1490	0.43	.	Q	.	V	.	.	.	
15.267	0.1496	0.43	.	Q	.	V	.	.	.	
15.283	0.1502	0.44	.	Q	.	V	.	.	.	
15.300	0.1508	0.44	.	Q	.	V	.	.	.	
15.317	0.1515	0.44	.	Q	.	V	.	.	.	
15.333	0.1521	0.45	.	Q	.	V	.	.	.	
15.350	0.1527	0.45	.	Q	.	V	.	.	.	
15.367	0.1533	0.46	.	Q	.	V	.	.	.	
15.383	0.1540	0.46	.	Q	.	V	.	.	.	
15.400	0.1546	0.46	.	Q	.	V	.	.	.	
15.417	0.1552	0.47	.	Q	.	V	.	.	.	
15.433	0.1559	0.47	.	Q	.	V.	.	.	.	
15.450	0.1565	0.47	.	Q	.	V.	.	.	.	
15.467	0.1572	0.47	.	Q	.	V.	.	.	.	
15.483	0.1578	0.47	.	Q	.	V.	.	.	.	
15.500	0.1585	0.47	.	Q	.	V.	.	.	.	
15.517	0.1591	0.47	.	Q	.	V.	.	.	.	
15.533	0.1598	0.48	.	Q	.	V.	.	.	.	
15.550	0.1604	0.48	.	Q	.	V.	.	.	.	
15.567	0.1611	0.48	.	Q	.	V.	.	.	.	
15.583	0.1618	0.49	.	Q	.	V.	.	.	.	
15.600	0.1624	0.49	.	Q	.	V.	.	.	.	
15.617	0.1631	0.50	.	Q	.	V.	.	.	.	

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15.633	0.1638	0.51	. Q . V . .
15.650	0.1645	0.52	. Q . V . .
15.667	0.1653	0.52	. Q . V . .
15.683	0.1660	0.53	. Q . V . .
15.700	0.1667	0.54	. Q . V . .
15.717	0.1675	0.56	. Q . V . .
15.733	0.1683	0.59	. Q . V . .
15.750	0.1692	0.62	. Q . V . .
15.767	0.1701	0.65	. Q . V . .
15.783	0.1710	0.68	. Q . V . .
15.800	0.1720	0.72	. Q . .V . .
15.817	0.1730	0.75	. Q . .V . .
15.833	0.1741	0.78	. Q . .V . .
15.850	0.1752	0.82	. Q. .V . .
15.867	0.1764	0.85	. Q. .V . .
15.883	0.1776	0.88	. Q .V . .
15.900	0.1789	0.92	. Q .V . .
15.917	0.1802	0.96	. Q . V . .
15.933	0.1816	0.99	. .Q . V . .
15.950	0.1830	1.03	. .Q . V . .
15.967	0.1845	1.06	. . Q . V . .
15.983	0.1860	1.10	. . Q . V . .
16.000	0.1875	1.14	. . Q . V . .
16.017	0.1893	1.29	. . Q . V . .
16.033	0.1915	1.55	. . Q . V . .
16.050	0.1940	1.82	. . Q V . .
16.067	0.1968	2.09	. . . QV . .
16.083	0.2001	2.35	. . . V Q . .
16.100	0.2037	2.62	. . . V Q. .
16.117	0.2076	2.88	. . . V . Q .
16.133	0.2120	3.15	. . . V . Q .
16.150	0.2168	3.52	. . . V . Q
16.167	0.2214	3.33	. . . V . Q .
16.183	0.2256	3.01	. . . V . Q .
16.200	0.2293	2.69	. . . V Q .
16.217	0.2325	2.36	. . . Q V . .
16.233	0.2353	2.04	. . . Q V . .
16.250	0.2377	1.72	. . Q. V. .
16.267	0.2396	1.40	. . Q . V. .
16.283	0.2411	1.07	. . Q . V. .
16.300	0.2421	0.76	. Q . V. .
16.317	0.2430	0.64	. Q . V. .
16.333	0.2439	0.62	. Q . V. .
16.350	0.2447	0.59	. Q . V. .
16.367	0.2455	0.57	. Q . V .
16.383	0.2462	0.55	. Q . V .
16.400	0.2469	0.52	. Q . V .
16.417	0.2476	0.50	. Q . V .
16.433	0.2483	0.48	. Q . V .
16.450	0.2489	0.45	. Q . V .
16.467	0.2495	0.44	. Q . V .
16.483	0.2501	0.44	. Q . V .
16.500	0.2507	0.43	. Q . V .
16.517	0.2513	0.43	. Q . V .
16.533	0.2519	0.42	. Q . V .
16.550	0.2525	0.42	. Q . V .
16.567	0.2530	0.42	. Q . V .
16.583	0.2536	0.41	. Q . .V .
16.600	0.2542	0.41	. Q . .V .
16.617	0.2547	0.40	. Q . .V .
16.633	0.2553	0.39	. Q . .V .
16.650	0.2558	0.39	. Q . .V .
16.667	0.2563	0.38	. Q . .V .
16.683	0.2568	0.37	. Q . .V .
16.700	0.2573	0.36	. Q . .V .
16.717	0.2578	0.36	. Q . .V .
16.733	0.2583	0.35	. Q . .V .
16.750	0.2588	0.34	. Q . .V .
16.767	0.2592	0.34	. Q . .V .
16.783	0.2597	0.33	. Q . .V .
16.800	0.2602	0.33	. Q . .V .
16.817	0.2606	0.32	. Q . .V .
16.833	0.2610	0.32	. Q . .V .
16.850	0.2615	0.32	. Q . .V .

16.867	0.2619	0.31	. Q	.	.	. V	.
16.883	0.2623	0.31	. Q	.	.	. V	.
16.900	0.2627	0.30	. Q	.	.	. V	.
16.917	0.2632	0.30	. Q	.	.	. V	.
16.933	0.2636	0.29	. Q	.	.	. V	.
16.950	0.2640	0.29	. Q	.	.	. V	.
16.967	0.2644	0.29	. Q	.	.	. V	.
16.983	0.2647	0.28	. Q	.	.	. V	.
17.000	0.2651	0.28	. Q	.	.	. V	.
17.017	0.2655	0.28	. Q	.	.	. V	.
17.033	0.2659	0.27	. Q	.	.	. V	.
17.050	0.2663	0.27	. Q	.	.	. V	.
17.067	0.2666	0.27	. Q	.	.	. V	.
17.083	0.2670	0.26	. Q	.	.	. V	.
17.100	0.2674	0.26	. Q	.	.	. V	.
17.117	0.2677	0.26	. Q	.	.	. V	.
17.133	0.2681	0.26	. Q	.	.	. V	.
17.150	0.2684	0.25	. Q	.	.	. V	.
17.167	0.2688	0.25	. Q	.	.	. V	.
17.183	0.2691	0.25	. Q	.	.	. V	.
17.200	0.2694	0.25	. Q	.	.	. V	.
17.217	0.2698	0.25	. Q	.	.	. V	.
17.233	0.2701	0.24	. Q	.	.	. V	.
17.250	0.2705	0.24	. Q	.	.	. V	.
17.267	0.2708	0.24	. Q	.	.	. V	.
17.283	0.2711	0.24	. Q	.	.	. V	.
17.300	0.2714	0.24	. Q	.	.	. V	.
17.317	0.2718	0.23	. Q	.	.	. V	.
17.333	0.2721	0.23	. Q	.	.	. V	.
17.350	0.2724	0.23	. Q	.	.	. V	.
17.367	0.2727	0.23	. Q	.	.	. V	.
17.383	0.2730	0.23	. Q	.	.	. V	.
17.400	0.2733	0.23	. Q	.	.	. V	.
17.417	0.2736	0.22	. Q	.	.	. V	.
17.433	0.2740	0.22	. Q	.	.	. V	.
17.450	0.2743	0.22	. Q	.	.	. V	.
17.467	0.2746	0.22	. Q	.	.	. V	.
17.483	0.2749	0.22	. Q	.	.	. V	.
17.500	0.2752	0.22	. Q	.	.	. V	.
17.517	0.2755	0.22	. Q	.	.	. V	.
17.533	0.2758	0.21	. Q	.	.	. V	.
17.550	0.2760	0.21	. Q	.	.	. V	.
17.567	0.2763	0.21	. Q	.	.	. V	.
17.583	0.2766	0.21	. Q	.	.	. V	.
17.600	0.2769	0.21	. Q	.	.	. V	.
17.617	0.2772	0.21	. Q	.	.	. V	.
17.633	0.2775	0.21	. Q	.	.	. V	.
17.650	0.2778	0.21	. Q	.	.	. V	.
17.667	0.2781	0.20	. Q	.	.	. V	.
17.683	0.2783	0.20	. Q	.	.	. V	.
17.700	0.2786	0.20	. Q	.	.	. V	.
17.717	0.2789	0.20	. Q	.	.	. V	.
17.733	0.2792	0.20	. Q	.	.	. V	.
17.750	0.2794	0.20	. Q	.	.	. V	.
17.767	0.2797	0.20	. Q	.	.	. V	.
17.783	0.2800	0.20	. Q	.	.	. V	.
17.800	0.2802	0.20	. Q	.	.	. V	.
17.817	0.2805	0.19	. Q	.	.	. V	.
17.833	0.2808	0.19	. Q	.	.	. V	.
17.850	0.2810	0.19	. Q	.	.	. V	.
17.867	0.2813	0.19	. Q	.	.	. V	.
17.883	0.2816	0.19	. Q	.	.	. V	.
17.900	0.2818	0.19	. Q	.	.	. V	.
17.917	0.2821	0.19	. Q	.	.	. V	.
17.933	0.2823	0.19	. Q	.	.	. V	.
17.950	0.2826	0.19	. Q	.	.	. V	.
17.967	0.2829	0.19	. Q	.	.	. V	.
17.983	0.2831	0.18	. Q	.	.	. V	.
18.000	0.2834	0.18	. Q	.	.	. V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	540.0
20%	155.0
30%	100.0
40%	70.0
50%	60.0
60%	45.0
70%	35.0
80%	25.0
90%	10.0

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FLOW PROCESS FROM NODE 1041.00 TO NODE 1045.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
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MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 82.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 5.00
DOWNSTREAM ELEVATION(FT) = 3.50
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.25	1.46	0.25	0.000
14.017	0.25	1.47	0.25	0.000
14.033	0.25	1.47	0.25	0.000
14.050	0.25	1.48	0.25	0.000
14.067	0.25	1.49	0.25	0.000
14.083	0.25	1.50	0.25	0.000
14.100	0.26	1.50	0.26	0.000
14.117	0.26	1.51	0.26	0.000
14.133	0.26	1.51	0.26	0.000
14.150	0.26	1.52	0.26	0.000
14.167	0.26	1.52	0.26	0.000
14.183	0.26	1.53	0.26	0.000
14.200	0.26	1.53	0.26	0.000
14.217	0.26	1.54	0.26	0.000
14.233	0.26	1.54	0.26	0.000
14.250	0.26	1.55	0.26	0.000
14.267	0.27	1.57	0.27	0.000
14.283	0.27	1.58	0.27	0.000
14.300	0.27	1.59	0.27	0.000
14.317	0.27	1.60	0.27	0.000
14.333	0.27	1.61	0.27	0.000
14.350	0.28	1.63	0.28	0.000
14.367	0.28	1.64	0.28	0.000
14.383	0.28	1.65	0.28	0.000
14.400	0.28	1.65	0.28	0.000
14.417	0.28	1.66	0.28	0.000
14.433	0.28	1.67	0.28	0.000
14.450	0.28	1.68	0.28	0.000
14.467	0.29	1.68	0.29	0.000
14.483	0.29	1.69	0.29	0.000
14.500	0.29	1.70	0.29	0.000
14.517	0.29	1.70	0.29	0.000

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14.533	0.29	1.71	0.29	0.000
14.550	0.29	1.73	0.29	0.000
14.567	0.30	1.75	0.30	0.000
14.583	0.30	1.76	0.30	0.000
14.600	0.30	1.78	0.30	0.000
14.617	0.30	1.79	0.30	0.000
14.633	0.31	1.81	0.31	0.000
14.650	0.31	1.83	0.31	0.000
14.667	0.31	1.84	0.31	0.000
14.683	0.31	1.85	0.31	0.000
14.700	0.32	1.86	0.32	0.000
14.717	0.32	1.87	0.32	0.000
14.733	0.32	1.88	0.32	0.000
14.750	0.32	1.89	0.32	0.000
14.767	0.32	1.90	0.32	0.000
14.783	0.32	1.91	0.32	0.000
14.800	0.33	1.92	0.33	0.000
14.817	0.33	1.93	0.33	0.000
14.833	0.33	1.95	0.33	0.000
14.850	0.33	1.97	0.33	0.000
14.867	0.34	1.99	0.34	0.000
14.883	0.34	2.01	0.34	0.000
14.900	0.35	2.04	0.35	0.000
14.917	0.35	2.06	0.35	0.000
14.933	0.35	2.08	0.35	0.000
14.950	0.36	2.10	0.36	0.000
14.967	0.36	2.12	0.36	0.000
14.983	0.36	2.14	0.36	0.000
15.000	0.37	2.15	0.37	0.000
15.017	0.37	2.17	0.37	0.000
15.033	0.37	2.18	0.37	0.000
15.050	0.37	2.19	0.37	0.000
15.067	0.37	2.21	0.37	0.000
15.083	0.38	2.22	0.38	0.000
15.100	0.38	2.23	0.38	0.000
15.117	0.38	2.25	0.38	0.000
15.133	0.39	2.28	0.39	0.000
15.150	0.39	2.31	0.39	0.000
15.167	0.40	2.35	0.40	0.000
15.183	0.40	2.38	0.40	0.000
15.200	0.41	2.41	0.41	0.000
15.217	0.42	2.45	0.42	0.000
15.233	0.42	2.48	0.42	0.000
15.250	0.43	2.52	0.43	0.000
15.267	0.43	2.55	0.43	0.000
15.283	0.44	2.57	0.44	0.000
15.300	0.44	2.59	0.44	0.000
15.317	0.44	2.62	0.44	0.000
15.333	0.45	2.64	0.45	0.000
15.350	0.45	2.66	0.45	0.000
15.367	0.46	2.68	0.46	0.000
15.383	0.46	2.70	0.46	0.000
15.400	0.46	2.73	0.46	0.000
15.417	0.47	2.74	0.47	0.000
15.433	0.47	2.75	0.47	0.000
15.450	0.47	2.76	0.47	0.000
15.467	0.47	2.77	0.47	0.000
15.483	0.47	2.77	0.47	0.000
15.500	0.47	2.78	0.47	0.000
15.517	0.47	2.79	0.47	0.000
15.533	0.48	2.80	0.48	0.000
15.550	0.48	2.80	0.48	0.000
15.567	0.48	2.82	0.48	0.000
15.583	0.49	2.86	0.49	0.000
15.600	0.49	2.91	0.49	0.000
15.617	0.50	2.95	0.50	0.000
15.633	0.51	3.00	0.51	0.000
15.650	0.52	3.04	0.52	0.000
15.667	0.52	3.09	0.52	0.000
15.683	0.53	3.13	0.53	0.000
15.700	0.54	3.18	0.54	0.000
15.717	0.56	3.27	0.56	0.000
15.733	0.59	3.46	0.59	0.000
15.750	0.62	3.65	0.62	0.000

			DPHIPF5	
15.767	0.65	3.84	0.65	0.000
15.783	0.68	4.03	0.68	0.000
15.800	0.72	4.19	0.72	0.000
15.817	0.75	4.23	0.74	0.000
15.833	0.78	4.27	0.77	0.000
15.850	0.82	4.31	0.81	0.000
15.867	0.85	4.35	0.84	0.000
15.883	0.88	4.40	0.88	0.000
15.900	0.92	4.44	0.91	0.000
15.917	0.96	4.49	0.95	0.000
15.933	0.99	4.53	0.98	0.000
15.950	1.03	4.58	1.02	0.000
15.967	1.06	4.62	1.06	0.000
15.983	1.10	4.67	1.09	0.000
16.000	1.14	4.71	1.13	0.000
16.017	1.29	4.90	1.26	0.000
16.033	1.55	5.19	1.50	0.000
16.050	1.82	5.45	1.77	0.000
16.067	2.09	5.70	2.04	0.000
16.083	2.35	5.91	2.31	0.000
16.100	2.62	6.11	2.58	0.000
16.117	2.88	6.30	2.84	0.000
16.133	3.15	6.45	3.11	0.000
16.150	3.52	6.67	3.47	0.000
16.167	3.33	6.56	3.36	0.000
16.183	3.01	6.37	3.06	0.000
16.200	2.69	6.16	2.73	0.000
16.217	2.36	5.92	2.41	0.000
16.233	2.04	5.66	2.09	0.000
16.250	1.72	5.35	1.77	0.000
16.267	1.40	5.03	1.46	0.000
16.283	1.07	4.63	1.14	0.000
16.300	0.76	4.24	0.83	0.000
16.317	0.64	3.76	0.65	0.000
16.333	0.62	3.62	0.62	0.000
16.350	0.59	3.48	0.59	0.000
16.367	0.57	3.35	0.57	0.000
16.383	0.55	3.21	0.55	0.000
16.400	0.52	3.07	0.52	0.000
16.417	0.50	2.94	0.50	0.000
16.433	0.48	2.80	0.48	0.000
16.450	0.45	2.67	0.45	0.000
16.467	0.44	2.61	0.44	0.000
16.483	0.44	2.58	0.44	0.000
16.500	0.43	2.56	0.43	0.000
16.517	0.43	2.53	0.43	0.000
16.533	0.42	2.50	0.42	0.000
16.550	0.42	2.47	0.42	0.000
16.567	0.42	2.44	0.42	0.000
16.583	0.41	2.42	0.41	0.000
16.600	0.41	2.39	0.41	0.000
16.617	0.40	2.35	0.40	0.000
16.633	0.39	2.31	0.39	0.000
16.650	0.39	2.27	0.39	0.000
16.667	0.38	2.23	0.38	0.000
16.683	0.37	2.19	0.37	0.000
16.700	0.36	2.15	0.36	0.000
16.717	0.36	2.11	0.36	0.000
16.733	0.35	2.06	0.35	0.000
16.750	0.34	2.03	0.34	0.000
16.767	0.34	2.00	0.34	0.000
16.783	0.33	1.97	0.33	0.000
16.800	0.33	1.94	0.33	0.000
16.817	0.32	1.91	0.32	0.000
16.833	0.32	1.88	0.32	0.000
16.850	0.32	1.86	0.32	0.000
16.867	0.31	1.83	0.31	0.000
16.883	0.31	1.80	0.31	0.000
16.900	0.30	1.77	0.30	0.000
16.917	0.30	1.75	0.30	0.000
16.933	0.29	1.73	0.29	0.000
16.950	0.29	1.71	0.29	0.000
16.967	0.29	1.69	0.29	0.000
16.983	0.28	1.67	0.28	0.000

DPHIPF5

17.000	0.28	1.65	0.28	0.000
17.017	0.28	1.63	0.28	0.000
17.033	0.27	1.61	0.27	0.000
17.050	0.27	1.59	0.27	0.000
17.067	0.27	1.57	0.27	0.000
17.083	0.26	1.56	0.26	0.000
17.100	0.26	1.54	0.26	0.000
17.117	0.26	1.53	0.26	0.000
17.133	0.26	1.51	0.26	0.000
17.150	0.25	1.50	0.25	0.000
17.167	0.25	1.48	0.25	0.000
17.183	0.25	1.47	0.25	0.000
17.200	0.25	1.46	0.25	0.000
17.217	0.25	1.45	0.25	0.000
17.233	0.24	1.43	0.24	0.000
17.250	0.24	1.42	0.24	0.000
17.267	0.24	1.41	0.24	0.000
17.283	0.24	1.40	0.24	0.000
17.300	0.24	1.39	0.24	0.000
17.317	0.23	1.38	0.23	0.000
17.333	0.23	1.37	0.23	0.000
17.350	0.23	1.36	0.23	0.000
17.367	0.23	1.35	0.23	0.000
17.383	0.23	1.34	0.23	0.000
17.400	0.23	1.33	0.23	0.000
17.417	0.22	1.32	0.22	0.000
17.433	0.22	1.31	0.22	0.000
17.450	0.22	1.30	0.22	0.000
17.467	0.22	1.29	0.22	0.000
17.483	0.22	1.29	0.22	0.000
17.500	0.22	1.28	0.22	0.000
17.517	0.22	1.27	0.22	0.000
17.533	0.21	1.26	0.21	0.000
17.550	0.21	1.25	0.21	0.000
17.567	0.21	1.25	0.21	0.000
17.583	0.21	1.24	0.21	0.000
17.600	0.21	1.23	0.21	0.000
17.617	0.21	1.22	0.21	0.000
17.633	0.21	1.22	0.21	0.000
17.650	0.21	1.21	0.21	0.000
17.667	0.20	1.20	0.20	0.000
17.683	0.20	1.19	0.20	0.000
17.700	0.20	1.19	0.20	0.000
17.717	0.20	1.18	0.20	0.000
17.733	0.20	1.17	0.20	0.000
17.750	0.20	1.17	0.20	0.000
17.767	0.20	1.16	0.20	0.000
17.783	0.20	1.16	0.20	0.000
17.800	0.20	1.15	0.20	0.000
17.817	0.19	1.14	0.19	0.000
17.833	0.19	1.14	0.19	0.000
17.850	0.19	1.13	0.19	0.000
17.867	0.19	1.13	0.19	0.000
17.883	0.19	1.12	0.19	0.000
17.900	0.19	1.11	0.19	0.000
17.917	0.19	1.11	0.19	0.000
17.933	0.19	1.10	0.19	0.000
17.950	0.19	1.10	0.19	0.000
17.967	0.19	1.09	0.19	0.000
17.983	0.18	1.09	0.18	0.000
18.000	0.18	1.08	0.18	0.000

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****************************************************************************
  FLOW PROCESS FROM NODE    1045.00 TO NODE    1045.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 5 STORED IN FILE [dphipf5                      ]


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DPHIPF5

FLOW PROCESS FROM NODE 1042.00 TO NODE 1044.00 IS CODE = 1.2

>>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<

(SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #2)

RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
TOTAL CATCHMENT AREA(ACRES) = 0.50
SOIL-LOSS RATE, Fm,(INCH/HR) = 0.076
LOW LOSS FRACTION = 0.242
TIME OF CONCENTRATION(MIN.) = 5.98
SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
RETURN FREQUENCY(YEARS) = 10
5-MINUTE POINT RAINFALL VALUE(INCHES) = 0.34
30-MINUTE POINT RAINFALL VALUE(INCHES) = 0.72
1-HOUR POINT RAINFALL VALUE(INCHES) = 0.95
3-HOUR POINT RAINFALL VALUE(INCHES) = 1.59
6-HOUR POINT RAINFALL VALUE(INCHES) = 2.20
24-HOUR POINT RAINFALL VALUE(INCHES) = 3.68

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 0.11
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.04

♀

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	0.4	0.8	1.2	1.6
14.000	0.0387	0.08	. Q	. V	.	.	.
14.017	0.0388	0.08	. Q	. V	.	.	.
14.033	0.0389	0.08	. Q	. V	.	.	.
14.050	0.0390	0.08	. Q	. V	.	.	.
14.067	0.0392	0.08	. Q	. V	.	.	.
14.083	0.0393	0.08	. Q	. V	.	.	.
14.100	0.0394	0.09	. Q	. V	.	.	.
14.117	0.0395	0.09	. Q	. V	.	.	.
14.133	0.0396	0.09	. Q	. V	.	.	.
14.150	0.0397	0.09	. Q	. V	.	.	.
14.167	0.0399	0.09	. Q	. V	.	.	.
14.183	0.0400	0.09	. Q	. V	.	.	.
14.200	0.0401	0.09	. Q	. V	.	.	.
14.217	0.0402	0.09	. Q	. V	.	.	.
14.233	0.0403	0.09	. Q	. V	.	.	.
14.250	0.0405	0.09	. Q	. V	.	.	.
14.267	0.0406	0.09	. Q	. V	.	.	.
14.283	0.0407	0.09	. Q	. V	.	.	.
14.300	0.0408	0.09	. Q	. V	.	.	.
14.317	0.0410	0.09	. Q	. V	.	.	.
14.333	0.0411	0.09	. Q	. V	.	.	.
14.350	0.0412	0.09	. Q	. V	.	.	.
14.367	0.0413	0.09	. Q	. V	.	.	.
14.383	0.0415	0.09	. Q	. V	.	.	.
14.400	0.0416	0.09	. Q	. V	.	.	.
14.417	0.0417	0.09	. Q	. V	.	.	.
14.433	0.0418	0.09	. Q	. V	.	.	.
14.450	0.0420	0.09	. Q	. V	.	.	.
14.467	0.0421	0.09	. Q	. V	.	.	.
14.483	0.0422	0.10	. Q	. V	.	.	.
14.500	0.0424	0.10	. Q	. V	.	.	.
14.517	0.0425	0.10	. Q	. V	.	.	.
14.533	0.0426	0.10	. Q	. V	.	.	.

DPHIPF5

14.550	0.0428	0.10	.	Q	.	V	.	.	.
14.567	0.0429	0.10	.	Q	.	V	.	.	.
14.583	0.0430	0.10	.	Q	.	V	.	.	.
14.600	0.0432	0.10	.	Q	.	V	.	.	.
14.617	0.0433	0.10	.	Q	.	V	.	.	.
14.633	0.0435	0.10	.	Q	.	V	.	.	.
14.650	0.0436	0.10	.	Q	.	V	.	.	.
14.667	0.0437	0.10	.	Q	.	V	.	.	.
14.683	0.0439	0.10	.	Q	.	V	.	.	.
14.700	0.0440	0.10	.	Q	.	V	.	.	.
14.717	0.0442	0.10	.	Q	.	V	.	.	.
14.733	0.0443	0.10	.	Q	.	V	.	.	.
14.750	0.0444	0.10	.	Q	.	V	.	.	.
14.767	0.0446	0.11	.	Q	.	V	.	.	.
14.783	0.0447	0.11	.	Q	.	V	.	.	.
14.800	0.0449	0.11	.	Q	.	V	.	.	.
14.817	0.0450	0.11	.	Q	.	V	.	.	.
14.833	0.0452	0.11	.	Q	.	V	.	.	.
14.850	0.0453	0.11	.	Q	.	V	.	.	.
14.867	0.0455	0.11	.	Q	.	V	.	.	.
14.883	0.0456	0.11	.	Q	.	V	.	.	.
14.900	0.0458	0.11	.	Q	.	V	.	.	.
14.917	0.0460	0.12	.	Q	.	V	.	.	.
14.933	0.0461	0.12	.	Q	.	V	.	.	.
14.950	0.0463	0.12	.	Q	.	V	.	.	.
14.967	0.0464	0.12	.	Q	.	V	.	.	.
14.983	0.0466	0.12	.	Q	.	V	.	.	.
15.000	0.0468	0.12	.	Q	.	V	.	.	.
15.017	0.0469	0.12	.	Q	.	V	.	.	.
15.033	0.0471	0.12	.	Q	.	V	.	.	.
15.050	0.0473	0.12	.	Q	.	V	.	.	.
15.067	0.0474	0.13	.	Q	.	V	.	.	.
15.083	0.0476	0.13	.	Q	.	V	.	.	.
15.100	0.0478	0.13	.	Q	.	V	.	.	.
15.117	0.0480	0.13	.	Q	.	V	.	.	.
15.133	0.0482	0.13	.	Q	.	V	.	.	.
15.150	0.0483	0.13	.	Q	.	V	.	.	.
15.167	0.0485	0.13	.	Q	.	V	.	.	.
15.183	0.0487	0.14	.	Q	.	V	.	.	.
15.200	0.0489	0.14	.	Q	.	V	.	.	.
15.217	0.0491	0.14	.	Q	.	V	.	.	.
15.233	0.0493	0.14	.	Q	.	V	.	.	.
15.250	0.0495	0.14	.	Q	.	V	.	.	.
15.267	0.0497	0.15	.	Q	.	V	.	.	.
15.283	0.0499	0.15	.	Q	.	V	.	.	.
15.300	0.0501	0.15	.	Q	.	V	.	.	.
15.317	0.0503	0.15	.	Q	.	V	.	.	.
15.333	0.0505	0.15	.	Q	.	V	.	.	.
15.350	0.0507	0.16	.	Q	.	V	.	.	.
15.367	0.0509	0.16	.	Q	.	V	.	.	.
15.383	0.0512	0.16	.	Q	.	V	.	.	.
15.400	0.0514	0.16	.	Q	.	V	.	.	.
15.417	0.0516	0.16	.	Q	.	V	.	.	.
15.433	0.0518	0.16	.	Q	.	V	.	.	.
15.450	0.0520	0.16	.	Q	.	V	.	.	.
15.467	0.0523	0.16	.	Q	.	V	.	.	.
15.483	0.0525	0.16	.	Q	.	V.	.	.	.
15.500	0.0527	0.16	.	Q	.	V.	.	.	.
15.517	0.0529	0.16	.	Q	.	V.	.	.	.
15.533	0.0531	0.16	.	Q	.	V.	.	.	.
15.550	0.0533	0.16	.	Q	.	V.	.	.	.
15.567	0.0536	0.16	.	Q	.	V.	.	.	.
15.583	0.0538	0.17	.	Q	.	V.	.	.	.
15.600	0.0540	0.17	.	Q	.	V.	.	.	.
15.617	0.0543	0.17	.	Q	.	V.	.	.	.
15.633	0.0545	0.18	.	Q	.	V.	.	.	.
15.650	0.0548	0.19	.	Q	.	V.	.	.	.
15.667	0.0550	0.19	.	Q	.	V.	.	.	.
15.683	0.0553	0.20	.	Q	.	V	.	.	.
15.700	0.0556	0.21	.	Q	.	V	.	.	.
15.717	0.0559	0.21	.	Q	.	V	.	.	.
15.733	0.0562	0.22	.	Q	.	V	.	.	.
15.750	0.0565	0.23	.	Q	.	V	.	.	.
15.767	0.0568	0.24	.	Q	.	V	.	.	.

			DPHIPF5
15.783	0.0572	0.24	
15.800	0.0575	0.25	
15.817	0.0579	0.26	
15.833	0.0583	0.28	
15.850	0.0587	0.30	
15.867	0.0591	0.32	
15.883	0.0596	0.34	
15.900	0.0601	0.36	
15.917	0.0607	0.39	
15.933	0.0612	0.41	
15.950	0.0618	0.44	
15.967	0.0625	0.46	
15.983	0.0631	0.49	
16.000	0.0638	0.51	
16.017	0.0647	0.61	
16.033	0.0658	0.80	
16.050	0.0671	0.98	
16.067	0.0687	1.17	
16.083	0.0706	1.35	
16.100	0.0728	1.62	
16.117	0.0749	1.51	
16.133	0.0767	1.29	
16.150	0.0781	1.06	
16.167	0.0793	0.84	
16.183	0.0802	0.62	
16.200	0.0807	0.40	
16.217	0.0811	0.29	
16.233	0.0815	0.27	
16.250	0.0818	0.25	
16.267	0.0822	0.23	
16.283	0.0825	0.22	
16.300	0.0827	0.20	
16.317	0.0830	0.18	
16.333	0.0832	0.18	
16.350	0.0835	0.17	
16.367	0.0837	0.16	
16.383	0.0839	0.15	
16.400	0.0841	0.15	
16.417	0.0843	0.14	
16.433	0.0845	0.14	
16.450	0.0847	0.14	
16.467	0.0849	0.14	
16.483	0.0851	0.14	
16.500	0.0853	0.14	
16.517	0.0855	0.14	
16.533	0.0857	0.14	
16.550	0.0858	0.14	
16.567	0.0860	0.13	
16.583	0.0862	0.13	
16.600	0.0864	0.13	
16.617	0.0866	0.12	
16.633	0.0867	0.12	
16.650	0.0869	0.12	
16.667	0.0870	0.12	
16.683	0.0872	0.11	
16.700	0.0874	0.11	
16.717	0.0875	0.11	
16.733	0.0877	0.11	
16.750	0.0878	0.11	
16.767	0.0879	0.10	
16.783	0.0881	0.10	
16.800	0.0882	0.10	
16.817	0.0884	0.10	
16.833	0.0885	0.10	
16.850	0.0886	0.10	
16.867	0.0888	0.10	
16.883	0.0889	0.10	
16.900	0.0890	0.09	
16.917	0.0892	0.09	
16.933	0.0893	0.09	
16.950	0.0894	0.09	
16.967	0.0895	0.09	
16.983	0.0897	0.09	
17.000	0.0898	0.09	

17.017	0.0899	0.09	. Q	.	.	. V	.
17.033	0.0900	0.09	. Q	.	.	. V	.
17.050	0.0902	0.09	. Q	.	.	. V	.
17.067	0.0903	0.09	. Q	.	.	. V	.
17.083	0.0904	0.09	. Q	.	.	. V	.
17.100	0.0905	0.08	. Q	.	.	. V	.
17.117	0.0906	0.08	. Q	.	.	. V	.
17.133	0.0907	0.08	. Q	.	.	. V	.
17.150	0.0908	0.08	. Q	.	.	. V	.
17.167	0.0910	0.08	. Q	.	.	. V	.
17.183	0.0911	0.08	.Q	.	.	. V	.
17.200	0.0912	0.08	.Q	.	.	. V	.
17.217	0.0913	0.08	.Q	.	.	. V	.
17.233	0.0914	0.08	.Q	.	.	. V	.
17.250	0.0915	0.08	.Q	.	.	. V	.
17.267	0.0916	0.08	.Q	.	.	. V	.
17.283	0.0917	0.08	.Q	.	.	. V	.
17.300	0.0918	0.08	.Q	.	.	. V	.
17.317	0.0919	0.08	.Q	.	.	. V	.
17.333	0.0920	0.08	.Q	.	.	. V	.
17.350	0.0921	0.07	.Q	.	.	. V	.
17.367	0.0922	0.07	.Q	.	.	. V	.
17.383	0.0923	0.07	.Q	.	.	. V	.
17.400	0.0924	0.07	.Q	.	.	. V	.
17.417	0.0925	0.07	.Q	.	.	. V	.
17.433	0.0926	0.07	.Q	.	.	. V	.
17.450	0.0927	0.07	.Q	.	.	. V	.
17.467	0.0928	0.07	.Q	.	.	. V	.
17.483	0.0929	0.07	.Q	.	.	. V	.
17.500	0.0930	0.07	.Q	.	.	. V	.
17.517	0.0931	0.07	.Q	.	.	. V	.
17.533	0.0932	0.07	.Q	.	.	. V	.
17.550	0.0933	0.07	.Q	.	.	. V	.
17.567	0.0934	0.07	.Q	.	.	. V	.
17.583	0.0935	0.07	.Q	.	.	. V	.
17.600	0.0936	0.07	.Q	.	.	. V	.
17.617	0.0937	0.07	.Q	.	.	. V	.
17.633	0.0938	0.07	.Q	.	.	. V	.
17.650	0.0939	0.07	.Q	.	.	. V	.
17.667	0.0940	0.07	.Q	.	.	. V	.
17.683	0.0941	0.07	.Q	.	.	. V	.
17.700	0.0942	0.07	.Q	.	.	. V	.
17.717	0.0943	0.07	.Q	.	.	. V	.
17.733	0.0943	0.07	.Q	.	.	. V	.
17.750	0.0944	0.06	.Q	.	.	. V	.
17.767	0.0945	0.06	.Q	.	.	. V	.
17.783	0.0946	0.06	.Q	.	.	. V	.
17.800	0.0947	0.06	.Q	.	.	. V	.
17.817	0.0948	0.06	.Q	.	.	. V	.
17.833	0.0949	0.06	.Q	.	.	. V	.
17.850	0.0950	0.06	.Q	.	.	. V	.
17.867	0.0950	0.06	.Q	.	.	. V	.
17.883	0.0951	0.06	.Q	.	.	. V	.
17.900	0.0952	0.06	.Q	.	.	. V	.
17.917	0.0953	0.06	.Q	.	.	. V	.
17.933	0.0954	0.06	.Q	.	.	. V	.
17.950	0.0955	0.06	.Q	.	.	. V	.
17.967	0.0955	0.06	.Q	.	.	. V	.
17.983	0.0956	0.06	.Q	.	.	. V	.
18.000	0.0957	0.06	.Q	.	.	. V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	240.0
20%	105.0
30%	60.0
40%	45.0
50%	40.0

	DPHIPF5
60%	35.0
70%	25.0
80%	15.0
90%	10.0

```
****************************************************************************
  FLOW PROCESS FROM NODE   1044.00 TO NODE   1045.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #2<<<<<
============================================================================
```

MODEL PIPEFLOW ROUTING OF STREAM 2 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 35.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 3.70
DOWNSTREAM ELEVATION(FT) = 3.50
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.08	0.50	0.08	0.000
14.017	0.08	0.50	0.08	0.000
14.033	0.08	0.50	0.08	0.000
14.050	0.08	0.50	0.08	0.000
14.067	0.08	0.50	0.08	0.000
14.083	0.08	0.50	0.08	0.000
14.100	0.09	0.50	0.08	0.000
14.117	0.09	0.50	0.09	0.000
14.133	0.09	0.51	0.09	0.000
14.150	0.09	0.51	0.09	0.000
14.167	0.09	0.51	0.09	0.000
14.183	0.09	0.51	0.09	0.000
14.200	0.09	0.51	0.09	0.000
14.217	0.09	0.51	0.09	0.000
14.233	0.09	0.52	0.09	0.000
14.250	0.09	0.52	0.09	0.000
14.267	0.09	0.52	0.09	0.000
14.283	0.09	0.53	0.09	0.000
14.300	0.09	0.53	0.09	0.000
14.317	0.09	0.53	0.09	0.000
14.333	0.09	0.54	0.09	0.000
14.350	0.09	0.54	0.09	0.000
14.367	0.09	0.54	0.09	0.000
14.383	0.09	0.54	0.09	0.000
14.400	0.09	0.54	0.09	0.000
14.417	0.09	0.55	0.09	0.000
14.433	0.09	0.55	0.09	0.000
14.450	0.09	0.55	0.09	0.000
14.467	0.09	0.56	0.09	0.000
14.483	0.10	0.56	0.10	0.000
14.500	0.10	0.57	0.10	0.000
14.517	0.10	0.57	0.10	0.000
14.533	0.10	0.57	0.10	0.000
14.550	0.10	0.57	0.10	0.000
14.567	0.10	0.58	0.10	0.000
14.583	0.10	0.58	0.10	0.000
14.600	0.10	0.58	0.10	0.000
14.617	0.10	0.58	0.10	0.000
14.633	0.10	0.59	0.10	0.000
14.650	0.10	0.59	0.10	0.000
14.667	0.10	0.60	0.10	0.000

14.683	0.10	0.60	0.10	0.000
14.700	0.10	0.61	0.10	0.000
14.717	0.10	0.61	0.10	0.000
14.733	0.10	0.62	0.10	0.000
14.750	0.10	0.62	0.10	0.000
14.767	0.11	0.62	0.11	0.000
14.783	0.11	0.62	0.11	0.000
14.800	0.11	0.63	0.11	0.000
14.817	0.11	0.63	0.11	0.000
14.833	0.11	0.64	0.11	0.000
14.850	0.11	0.65	0.11	0.000
14.867	0.11	0.65	0.11	0.000
14.883	0.11	0.66	0.11	0.000
14.900	0.11	0.67	0.11	0.000
14.917	0.12	0.68	0.12	0.000
14.933	0.12	0.68	0.12	0.000
14.950	0.12	0.69	0.12	0.000
14.967	0.12	0.69	0.12	0.000
14.983	0.12	0.70	0.12	0.000
15.000	0.12	0.70	0.12	0.000
15.017	0.12	0.71	0.12	0.000
15.033	0.12	0.72	0.12	0.000
15.050	0.12	0.73	0.12	0.000
15.067	0.13	0.74	0.13	0.000
15.083	0.13	0.75	0.13	0.000
15.100	0.13	0.76	0.13	0.000
15.117	0.13	0.77	0.13	0.000
15.133	0.13	0.78	0.13	0.000
15.150	0.13	0.78	0.13	0.000
15.167	0.13	0.79	0.13	0.000
15.183	0.14	0.80	0.14	0.000
15.200	0.14	0.80	0.14	0.000
15.217	0.14	0.81	0.14	0.000
15.233	0.14	0.83	0.14	0.000
15.250	0.14	0.84	0.14	0.000
15.267	0.15	0.86	0.15	0.000
15.283	0.15	0.87	0.15	0.000
15.300	0.15	0.89	0.15	0.000
15.317	0.15	0.90	0.15	0.000
15.333	0.15	0.91	0.15	0.000
15.350	0.16	0.92	0.16	0.000
15.367	0.16	0.92	0.16	0.000
15.383	0.16	0.93	0.16	0.000
15.400	0.16	0.94	0.16	0.000
15.417	0.16	0.94	0.16	0.000
15.433	0.16	0.94	0.16	0.000
15.450	0.16	0.93	0.16	0.000
15.467	0.16	0.93	0.16	0.000
15.483	0.16	0.92	0.16	0.000
15.500	0.16	0.91	0.16	0.000
15.517	0.16	0.92	0.16	0.000
15.533	0.16	0.93	0.16	0.000
15.550	0.16	0.95	0.16	0.000
15.567	0.16	0.96	0.16	0.000
15.583	0.17	0.97	0.17	0.000
15.600	0.17	0.99	0.17	0.000
15.617	0.17	1.02	0.17	0.000
15.633	0.18	1.06	0.18	0.000
15.650	0.19	1.10	0.19	0.000
15.667	0.19	1.14	0.19	0.000
15.683	0.20	1.18	0.20	0.000
15.700	0.21	1.22	0.21	0.000
15.717	0.21	1.26	0.21	0.000
15.733	0.22	1.31	0.22	0.000
15.750	0.23	1.35	0.23	0.000
15.767	0.24	1.39	0.24	0.000
15.783	0.24	1.44	0.24	0.000
15.800	0.25	1.48	0.25	0.000
15.817	0.26	1.56	0.26	0.000
15.833	0.28	1.68	0.28	0.000
15.850	0.30	1.79	0.30	0.000
15.867	0.32	1.91	0.32	0.000
15.883	0.34	2.03	0.34	0.000
15.900	0.36	2.15	0.36	0.000

			DPHIPF5	
15.917	0.39	2.28	0.39	0.000
15.933	0.41	2.35	0.41	0.000
15.950	0.44	2.39	0.43	0.000
15.967	0.46	2.42	0.46	0.000
15.983	0.49	2.45	0.48	0.000
16.000	0.51	2.48	0.51	0.000
16.017	0.61	2.61	0.60	0.000
16.033	0.80	2.83	0.77	0.000
16.050	0.98	3.01	0.96	0.000
16.067	1.17	3.19	1.14	0.000
16.083	1.35	3.33	1.33	0.000
16.100	1.62	3.52	1.59	0.000
16.117	1.51	3.44	1.52	0.000
16.133	1.29	3.28	1.31	0.000
16.150	1.06	3.09	1.09	0.000
16.167	0.84	2.88	0.87	0.000
16.183	0.62	2.62	0.66	0.000
16.200	0.40	2.34	0.44	0.000
16.217	0.29	1.71	0.29	0.000
16.233	0.27	1.60	0.27	0.000
16.250	0.25	1.49	0.25	0.000
16.267	0.23	1.38	0.23	0.000
16.283	0.22	1.27	0.22	0.000
16.300	0.20	1.15	0.20	0.000
16.317	0.18	1.08	0.18	0.000
16.333	0.18	1.04	0.18	0.000
16.350	0.17	0.99	0.17	0.000
16.367	0.16	0.95	0.16	0.000
16.383	0.15	0.90	0.15	0.000
16.400	0.15	0.86	0.15	0.000
16.417	0.14	0.84	0.14	0.000
16.433	0.14	0.84	0.14	0.000
16.450	0.14	0.84	0.14	0.000
16.467	0.14	0.84	0.14	0.000
16.483	0.14	0.85	0.14	0.000
16.500	0.14	0.85	0.14	0.000
16.517	0.14	0.84	0.14	0.000
16.533	0.14	0.82	0.14	0.000
16.550	0.14	0.80	0.14	0.000
16.567	0.13	0.78	0.13	0.000
16.583	0.13	0.76	0.13	0.000
16.600	0.13	0.74	0.13	0.000
16.617	0.12	0.73	0.12	0.000
16.633	0.12	0.71	0.12	0.000
16.650	0.12	0.70	0.12	0.000
16.667	0.12	0.68	0.12	0.000
16.683	0.11	0.67	0.11	0.000
16.700	0.11	0.66	0.11	0.000
16.717	0.11	0.65	0.11	0.000
16.733	0.11	0.64	0.11	0.000
16.750	0.11	0.63	0.11	0.000
16.767	0.10	0.62	0.10	0.000
16.783	0.10	0.61	0.10	0.000
16.800	0.10	0.60	0.10	0.000
16.817	0.10	0.59	0.10	0.000
16.833	0.10	0.59	0.10	0.000
16.850	0.10	0.58	0.10	0.000
16.867	0.10	0.57	0.10	0.000
16.883	0.10	0.57	0.10	0.000
16.900	0.09	0.56	0.09	0.000
16.917	0.09	0.55	0.09	0.000
16.933	0.09	0.55	0.09	0.000
16.950	0.09	0.54	0.09	0.000
16.967	0.09	0.54	0.09	0.000
16.983	0.09	0.53	0.09	0.000
17.000	0.09	0.52	0.09	0.000
17.017	0.09	0.52	0.09	0.000
17.033	0.09	0.52	0.09	0.000
17.050	0.09	0.51	0.09	0.000
17.067	0.09	0.51	0.09	0.000
17.083	0.09	0.50	0.09	0.000
17.100	0.08	0.50	0.08	0.000
17.117	0.08	0.50	0.08	0.000
17.133	0.08	0.50	0.08	0.000

			DPHIPF5	
17.150	0.08	0.50	0.08	0.000
17.167	0.08	0.50	0.08	0.000
17.183	0.08	0.50	0.08	0.000
17.200	0.08	0.50	0.08	0.000
17.217	0.08	0.50	0.08	0.000
17.233	0.08	0.50	0.08	0.000
17.250	0.08	0.50	0.08	0.000
17.267	0.08	0.50	0.08	0.000
17.283	0.08	0.50	0.08	0.000
17.300	0.08	0.50	0.08	0.000
17.317	0.08	0.50	0.08	0.000
17.333	0.08	0.50	0.08	0.000
17.350	0.07	0.50	0.08	0.000
17.367	0.07	0.50	0.08	0.000
17.383	0.07	0.50	0.07	0.000
17.400	0.07	0.50	0.07	0.000
17.417	0.07	0.50	0.07	0.000
17.433	0.07	0.50	0.07	0.000
17.450	0.07	0.50	0.07	0.000
17.467	0.07	0.50	0.07	0.000
17.483	0.07	0.50	0.07	0.000
17.500	0.07	0.50	0.07	0.000
17.517	0.07	0.50	0.07	0.000
17.533	0.07	0.50	0.07	0.000
17.550	0.07	0.50	0.07	0.000
17.567	0.07	0.50	0.07	0.000
17.583	0.07	0.50	0.07	0.000
17.600	0.07	0.50	0.07	0.000
17.617	0.07	0.50	0.07	0.000
17.633	0.07	0.50	0.07	0.000
17.650	0.07	0.50	0.07	0.000
17.667	0.07	0.50	0.07	0.000
17.683	0.07	0.50	0.07	0.000
17.700	0.07	0.50	0.07	0.000
17.717	0.07	0.50	0.07	0.000
17.733	0.07	0.50	0.07	0.000
17.750	0.06	0.50	0.07	0.000
17.767	0.06	0.50	0.06	0.000
17.783	0.06	0.50	0.06	0.000
17.800	0.06	0.50	0.06	0.000
17.817	0.06	0.50	0.06	0.000
17.833	0.06	0.50	0.06	0.000
17.850	0.06	0.50	0.06	0.000
17.867	0.06	0.50	0.06	0.000
17.883	0.06	0.50	0.06	0.000
17.900	0.06	0.50	0.06	0.000
17.917	0.06	0.50	0.06	0.000
17.933	0.06	0.50	0.06	0.000
17.950	0.06	0.50	0.06	0.000
17.967	0.06	0.50	0.06	0.000
17.983	0.06	0.50	0.06	0.000
18.000	0.06	0.50	0.06	0.000

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****************************************************************************
  FLOW PROCESS FROM NODE    1045.00 TO NODE    1045.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 5<<<<<
============================================================================


****************************************************************************
  FLOW PROCESS FROM NODE    1045.00 TO NODE    1036.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #5<<<<<
============================================================================

        MODEL PIPEFLOW ROUTING OF STREAM 5 WHERE
        STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
        VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
        EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
        OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
        UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
```

(0.938)(DIAMETER):

PIPELENGTH(FT) = 110.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 3.50
DOWNSTREAM ELEVATION(FT) = 2.40
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.33	1.94	0.33	0.000
14.017	0.33	1.95	0.33	0.000
14.033	0.33	1.96	0.33	0.000
14.050	0.34	1.97	0.34	0.000
14.067	0.34	1.98	0.34	0.000
14.083	0.34	1.99	0.34	0.000
14.100	0.34	2.00	0.34	0.000
14.117	0.34	2.01	0.34	0.000
14.133	0.34	2.02	0.34	0.000
14.150	0.34	2.02	0.34	0.000
14.167	0.34	2.03	0.34	0.000
14.183	0.35	2.04	0.35	0.000
14.200	0.35	2.04	0.35	0.000
14.217	0.35	2.05	0.35	0.000
14.233	0.35	2.06	0.35	0.000
14.250	0.35	2.07	0.35	0.000
14.267	0.36	2.09	0.36	0.000
14.283	0.36	2.11	0.36	0.000
14.300	0.36	2.12	0.36	0.000
14.317	0.36	2.14	0.36	0.000
14.333	0.37	2.15	0.37	0.000
14.350	0.37	2.16	0.37	0.000
14.367	0.37	2.18	0.37	0.000
14.383	0.37	2.19	0.37	0.000
14.400	0.37	2.20	0.37	0.000
14.417	0.37	2.21	0.37	0.000
14.433	0.38	2.22	0.38	0.000
14.450	0.38	2.23	0.38	0.000
14.467	0.38	2.24	0.38	0.000
14.483	0.38	2.25	0.38	0.000
14.500	0.38	2.26	0.38	0.000
14.517	0.39	2.27	0.39	0.000
14.533	0.39	2.29	0.39	0.000
14.550	0.39	2.30	0.39	0.000
14.567	0.39	2.32	0.39	0.000
14.583	0.40	2.34	0.40	0.000
14.600	0.40	2.36	0.40	0.000
14.617	0.40	2.38	0.40	0.000
14.633	0.41	2.40	0.41	0.000
14.650	0.41	2.42	0.41	0.000
14.667	0.41	2.44	0.41	0.000
14.683	0.42	2.46	0.42	0.000
14.700	0.42	2.47	0.42	0.000
14.717	0.42	2.48	0.42	0.000
14.733	0.42	2.50	0.42	0.000
14.750	0.43	2.51	0.43	0.000
14.767	0.43	2.52	0.43	0.000
14.783	0.43	2.53	0.43	0.000
14.800	0.43	2.54	0.43	0.000
14.817	0.43	2.56	0.43	0.000
14.833	0.44	2.58	0.44	0.000
14.850	0.44	2.61	0.44	0.000
14.867	0.45	2.65	0.45	0.000
14.883	0.45	2.68	0.45	0.000
14.900	0.46	2.71	0.46	0.000
14.917	0.46	2.73	0.46	0.000
14.933	0.47	2.76	0.47	0.000
14.950	0.47	2.79	0.47	0.000
14.967	0.48	2.82	0.48	0.000
14.983	0.48	2.84	0.48	0.000

			DPHIPF5	
15.000	0.48	2.85	0.48	0.000
15.017	0.49	2.87	0.49	0.000
15.033	0.49	2.90	0.49	0.000
15.050	0.50	2.92	0.50	0.000
15.067	0.50	2.95	0.50	0.000
15.083	0.50	2.97	0.50	0.000
15.100	0.51	2.99	0.51	0.000
15.117	0.51	3.02	0.51	0.000
15.133	0.52	3.06	0.52	0.000
15.150	0.53	3.09	0.53	0.000
15.167	0.53	3.10	0.53	0.000
15.183	0.54	3.11	0.54	0.000
15.200	0.55	3.12	0.54	0.000
15.217	0.55	3.13	0.55	0.000
15.233	0.56	3.14	0.56	0.000
15.250	0.57	3.15	0.57	0.000
15.267	0.58	3.16	0.57	0.000
15.283	0.59	3.17	0.58	0.000
15.300	0.59	3.17	0.59	0.000
15.317	0.60	3.18	0.59	0.000
15.333	0.60	3.19	0.60	0.000
15.350	0.61	3.19	0.61	0.000
15.367	0.61	3.20	0.61	0.000
15.383	0.62	3.21	0.62	0.000
15.400	0.62	3.21	0.62	0.000
15.417	0.63	3.22	0.62	0.000
15.433	0.63	3.22	0.63	0.000
15.450	0.63	3.22	0.63	0.000
15.467	0.63	3.22	0.63	0.000
15.483	0.63	3.22	0.63	0.000
15.500	0.63	3.22	0.63	0.000
15.517	0.63	3.22	0.63	0.000
15.533	0.63	3.23	0.63	0.000
15.550	0.64	3.23	0.64	0.000
15.567	0.64	3.24	0.64	0.000
15.583	0.65	3.25	0.65	0.000
15.600	0.66	3.26	0.66	0.000
15.617	0.67	3.28	0.67	0.000
15.633	0.69	3.29	0.68	0.000
15.650	0.70	3.31	0.70	0.000
15.667	0.72	3.33	0.71	0.000
15.683	0.73	3.35	0.73	0.000
15.700	0.75	3.37	0.74	0.000
15.717	0.77	3.40	0.76	0.000
15.733	0.81	3.44	0.79	0.000
15.750	0.85	3.49	0.83	0.000
15.767	0.89	3.54	0.87	0.000
15.783	0.93	3.59	0.92	0.000
15.800	0.97	3.64	0.95	0.000
15.817	1.01	3.69	0.99	0.000
15.833	1.06	3.75	1.04	0.000
15.850	1.11	3.80	1.09	0.000
15.867	1.17	3.86	1.15	0.000
15.883	1.22	3.91	1.20	0.000
15.900	1.28	3.96	1.26	0.000
15.917	1.34	4.02	1.32	0.000
15.933	1.39	4.07	1.38	0.000
15.950	1.45	4.13	1.43	0.000
15.967	1.51	4.19	1.50	0.000
15.983	1.57	4.25	1.56	0.000
16.000	1.63	4.29	1.62	0.000
16.017	1.85	4.46	1.79	0.000
16.033	2.27	4.74	2.16	0.000
16.050	2.73	5.00	2.61	0.000
16.067	3.18	5.24	3.07	0.000
16.083	3.63	5.41	3.51	0.000
16.100	4.16	5.60	4.03	0.000
16.117	4.36	5.66	4.31	0.000
16.133	4.42	5.68	4.41	0.000
16.150	4.56	5.72	4.53	0.000
16.167	4.23	5.63	4.31	0.000
16.183	3.71	5.43	3.84	0.000
16.200	3.18	5.24	3.32	0.000
16.217	2.71	4.99	2.82	0.000

				DPHIPF5
16.233	2.37	4.79	2.45	0.000
16.250	2.03	4.58	2.12	0.000
16.267	1.69	4.33	1.79	0.000
16.283	1.35	4.03	1.45	0.000
16.300	1.03	3.71	1.13	0.000
16.317	0.83	3.48	0.90	0.000
16.333	0.79	3.42	0.81	0.000
16.350	0.76	3.38	0.77	0.000
16.367	0.73	3.35	0.74	0.000
16.383	0.70	3.31	0.71	0.000
16.400	0.67	3.27	0.68	0.000
16.417	0.64	3.24	0.65	0.000
16.433	0.62	3.21	0.63	0.000
16.450	0.60	3.18	0.61	0.000
16.467	0.59	3.17	0.59	0.000
16.483	0.58	3.16	0.58	0.000
16.500	0.58	3.16	0.58	0.000
16.517	0.57	3.15	0.57	0.000
16.533	0.56	3.14	0.57	0.000
16.550	0.56	3.13	0.56	0.000
16.567	0.55	3.12	0.55	0.000
16.583	0.54	3.11	0.54	0.000
16.600	0.53	3.10	0.54	0.000
16.617	0.52	3.08	0.53	0.000
16.633	0.51	3.02	0.51	0.000
16.650	0.50	2.97	0.50	0.000
16.667	0.49	2.91	0.49	0.000
16.683	0.49	2.86	0.49	0.000
16.700	0.48	2.80	0.48	0.000
16.717	0.47	2.75	0.47	0.000
16.733	0.46	2.70	0.46	0.000
16.750	0.45	2.65	0.45	0.000
16.767	0.44	2.61	0.44	0.000
16.783	0.44	2.58	0.44	0.000
16.800	0.43	2.54	0.43	0.000
16.817	0.43	2.50	0.43	0.000
16.833	0.42	2.47	0.42	0.000
16.850	0.41	2.44	0.41	0.000
16.867	0.41	2.40	0.41	0.000
16.883	0.40	2.36	0.40	0.000
16.900	0.40	2.33	0.40	0.000
16.917	0.39	2.30	0.39	0.000
16.933	0.39	2.28	0.39	0.000
16.950	0.38	2.25	0.38	0.000
16.967	0.38	2.22	0.38	0.000
16.983	0.37	2.20	0.37	0.000
17.000	0.37	2.17	0.37	0.000
17.017	0.36	2.15	0.36	0.000
17.033	0.36	2.12	0.36	0.000
17.050	0.36	2.10	0.36	0.000
17.067	0.35	2.08	0.35	0.000
17.083	0.35	2.06	0.35	0.000
17.100	0.35	2.04	0.35	0.000
17.117	0.34	2.02	0.34	0.000
17.133	0.34	2.01	0.34	0.000
17.150	0.34	1.99	0.34	0.000
17.167	0.33	1.97	0.33	0.000
17.183	0.33	1.95	0.33	0.000
17.200	0.33	1.93	0.33	0.000
17.217	0.33	1.92	0.33	0.000
17.233	0.32	1.90	0.32	0.000
17.250	0.32	1.89	0.32	0.000
17.267	0.32	1.87	0.32	0.000
17.283	0.32	1.86	0.32	0.000
17.300	0.31	1.85	0.31	0.000
17.317	0.31	1.83	0.31	0.000
17.333	0.31	1.82	0.31	0.000
17.350	0.31	1.81	0.31	0.000
17.367	0.30	1.79	0.31	0.000
17.383	0.30	1.78	0.30	0.000
17.400	0.30	1.77	0.30	0.000
17.417	0.30	1.75	0.30	0.000
17.433	0.30	1.74	0.30	0.000
17.450	0.29	1.73	0.29	0.000

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                                                DPHIPF5
        17.467      0.29        1.72        0.29          0.000
        17.483      0.29        1.71        0.29          0.000
        17.500      0.29        1.69        0.29          0.000
        17.517      0.29        1.68        0.29          0.000
        17.533      0.28        1.67        0.28          0.000
        17.550      0.28        1.66        0.28          0.000
        17.567      0.28        1.65        0.28          0.000
        17.583      0.28        1.64        0.28          0.000
        17.600      0.28        1.63        0.28          0.000
        17.617      0.28        1.62        0.28          0.000
        17.633      0.27        1.61        0.27          0.000
        17.650      0.27        1.60        0.27          0.000
        17.667      0.27        1.60        0.27          0.000
        17.683      0.27        1.59        0.27          0.000
        17.700      0.27        1.58        0.27          0.000
        17.717      0.27        1.57        0.27          0.000
        17.733      0.27        1.56        0.27          0.000
        17.750      0.26        1.55        0.26          0.000
        17.767      0.26        1.54        0.26          0.000
        17.783      0.26        1.53        0.26          0.000
        17.800      0.26        1.53        0.26          0.000
        17.817      0.26        1.52        0.26          0.000
        17.833      0.26        1.51        0.26          0.000
        17.850      0.26        1.50        0.26          0.000
        17.867      0.25        1.50        0.25          0.000
        17.883      0.25        1.49        0.25          0.000
        17.900      0.25        1.48        0.25          0.000
        17.917      0.25        1.47        0.25          0.000
        17.933      0.25        1.47        0.25          0.000
        17.950      0.25        1.46        0.25          0.000
        17.967      0.25        1.45        0.25          0.000
        17.983      0.25        1.44        0.25          0.000
        18.000      0.24        1.44        0.24          0.000

****************************************************************************
  FLOW PROCESS FROM NODE   1036.00 TO NODE   1036.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 5 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1036.00 TO NODE   1036.00 IS CODE = 10.3
----------------------------------------------------------------------------
  >>>>>WRITE STREAM HYDROGRAPH TO A FILE<<<<<
============================================================================

      STREAM HYDROGRAPH # 1 STORED IN FILE [dphipf5                    ]


****************************************************************************
  FLOW PROCESS FROM NODE   1037.00 TO NODE   1038.00 IS CODE = 1.2
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (SMALL AREA UNIT-HYDROGRAPH ANALYSIS) <<<<<
============================================================================

  (SMALL AREA UNIT-HYDROGRAPH ADDED TO STREAM #3)

    RATIONAL METHOD CALIBRATION COEFFICIENT = 0.90
    TOTAL CATCHMENT AREA(ACRES) =    1.05
    SOIL-LOSS RATE, Fm,(INCH/HR) =  0.163
    LOW LOSS FRACTION = 0.444
    TIME OF CONCENTRATION(MIN.) =  6.34
    SMALL AREA PEAK Q COMPUTED USING PEAK FLOW RATE FORMULA
    ORANGE COUNTY "VALLEY" RAINFALL VALUES ARE USED:
    RETURN FREQUENCY(YEARS) =  10
       5-MINUTE POINT RAINFALL VALUE(INCHES) =  0.34
      30-MINUTE POINT RAINFALL VALUE(INCHES) =  0.72
       1-HOUR   POINT RAINFALL VALUE(INCHES) =  0.95
       3-HOUR   POINT RAINFALL VALUE(INCHES) =  1.59
       6-HOUR   POINT RAINFALL VALUE(INCHES) =  2.20
      24-HOUR   POINT RAINFALL VALUE(INCHES) =  3.68
```

TOTAL CATCHMENT RUNOFF VOLUME(ACRE-FEET) = 0.18
TOTAL CATCHMENT SOIL-LOSS VOLUME(ACRE-FEET) = 0.14

♀

24-HOUR STORM RUNOFF HYDROGRAPH

HYDROGRAPH IN ONE-MINUTE UNIT INTERVALS(CFS)
(Notes: Time indicated is at END of Each Unit Intervals.
Peak 5-minute rainfall intensity is modeled as
a constant value for entire 5-minute period.)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	0.8	1.6	2.4	3.2
14.000	0.0596	0.13	.Q	. V	.	.	.
14.017	0.0598	0.13	.Q	. V	.	.	.
14.033	0.0600	0.13	.Q	. V	.	.	.
14.050	0.0602	0.13	.Q	. V	.	.	.
14.067	0.0604	0.13	.Q	. V	.	.	.
14.083	0.0605	0.13	.Q	. V	.	.	.
14.100	0.0607	0.13	.Q	. V	.	.	.
14.117	0.0609	0.13	.Q	. V	.	.	.
14.133	0.0611	0.13	.Q	. V	.	.	.
14.150	0.0613	0.13	.Q	. V	.	.	.
14.167	0.0614	0.13	.Q	. V	.	.	.
14.183	0.0616	0.13	.Q	. V	.	.	.
14.200	0.0618	0.13	.Q	. V	.	.	.
14.217	0.0620	0.14	.Q	. V	.	.	.
14.233	0.0622	0.14	.Q	. V	.	.	.
14.250	0.0624	0.14	.Q	. V	.	.	.
14.267	0.0626	0.14	.Q	. V	.	.	.
14.283	0.0627	0.14	.Q	. V	.	.	.
14.300	0.0629	0.14	.Q	. V	.	.	.
14.317	0.0631	0.14	.Q	. V	.	.	.
14.333	0.0633	0.14	.Q	. V	.	.	.
14.350	0.0635	0.14	.Q	. V	.	.	.
14.367	0.0637	0.14	.Q	. V	.	.	.
14.383	0.0639	0.14	.Q	. V	.	.	.
14.400	0.0641	0.14	.Q	. V	.	.	.
14.417	0.0643	0.14	.Q	. V	.	.	.
14.433	0.0645	0.14	.Q	. V	.	.	.
14.450	0.0647	0.15	.Q	. V	.	.	.
14.467	0.0649	0.15	.Q	. V	.	.	.
14.483	0.0651	0.15	.Q	. V	.	.	.
14.500	0.0653	0.15	.Q	. V	.	.	.
14.517	0.0655	0.15	.Q	. V	.	.	.
14.533	0.0657	0.15	.Q	. V	.	.	.
14.550	0.0659	0.15	.Q	. V	.	.	.
14.567	0.0661	0.15	.Q	. V	.	.	.
14.583	0.0663	0.15	.Q	. V	.	.	.
14.600	0.0665	0.15	.Q	. V	.	.	.
14.617	0.0668	0.15	.Q	. V	.	.	.
14.633	0.0670	0.16	.Q	. V	.	.	.
14.650	0.0672	0.16	.Q	. V	.	.	.
14.667	0.0674	0.16	.Q	. V	.	.	.
14.683	0.0676	0.16	.Q	. V	.	.	.
14.700	0.0678	0.16	.Q	. V	.	.	.
14.717	0.0680	0.16	.Q	. V	.	.	.
14.733	0.0683	0.16	.Q	. V	.	.	.
14.750	0.0685	0.16	. Q	. V	.	.	.
14.767	0.0687	0.16	. Q	. V	.	.	.
14.783	0.0689	0.16	. Q	. V	.	.	.
14.800	0.0692	0.16	. Q	. V	.	.	.
14.817	0.0694	0.17	. Q	. V	.	.	.
14.833	0.0696	0.17	. Q	. V	.	.	.
14.850	0.0699	0.17	. Q	. V	.	.	.
14.867	0.0701	0.17	. Q	. V	.	.	.
14.883	0.0703	0.17	. Q	. V	.	.	.

DPHIPF5

14.900	0.0706	0.17	. Q . V . . .
14.917	0.0708	0.17	. Q . V . . .
14.933	0.0710	0.17	. Q . V . . .
14.950	0.0713	0.17	. Q . V . . .
14.967	0.0715	0.18	. Q . V . . .
14.983	0.0718	0.18	. Q . V . . .
15.000	0.0720	0.18	. Q . V . . .
15.017	0.0723	0.18	. Q . V . . .
15.033	0.0725	0.18	. Q . V . . .
15.050	0.0728	0.19	. Q . V . . .
15.067	0.0730	0.19	. Q . V . . .
15.083	0.0733	0.19	. Q . V . . .
15.100	0.0735	0.19	. Q . V . . .
15.117	0.0738	0.19	. Q . V . . .
15.133	0.0741	0.19	. Q . V . . .
15.150	0.0743	0.19	. Q . V . . .
15.167	0.0746	0.20	. Q . V . . .
15.183	0.0749	0.20	. Q . V . . .
15.200	0.0752	0.21	. Q . V . . .
15.217	0.0755	0.21	. Q . V . . .
15.233	0.0758	0.22	. Q . V . . .
15.250	0.0761	0.22	. Q . V . . .
15.267	0.0764	0.22	. Q . V . . .
15.283	0.0767	0.23	. Q . V . . .
15.300	0.0770	0.23	. Q . V . . .
15.317	0.0773	0.23	. Q . V . . .
15.333	0.0777	0.24	. Q . V . . .
15.350	0.0780	0.24	. Q . V . . .
15.367	0.0783	0.24	. Q . V . . .
15.383	0.0787	0.24	. Q . V . . .
15.400	0.0790	0.24	. Q . V . . .
15.417	0.0793	0.24	. Q . V . . .
15.433	0.0796	0.24	. Q . V . . .
15.450	0.0800	0.23	. Q . V . . .
15.467	0.0803	0.23	. Q . V . . .
15.483	0.0806	0.23	. Q . V . . .
15.500	0.0809	0.23	. Q . V . . .
15.517	0.0812	0.24	. Q . V . . .
15.533	0.0816	0.24	. Q . V . . .
15.550	0.0819	0.25	. Q . V . . .
15.567	0.0823	0.25	. Q . V . . .
15.583	0.0826	0.26	. Q . V . . .
15.600	0.0830	0.27	. Q . V . . .
15.617	0.0834	0.28	. Q . V . . .
15.633	0.0838	0.30	. Q . V . . .
15.650	0.0842	0.31	. Q . V . . .
15.667	0.0847	0.32	. Q . V . . .
15.683	0.0851	0.34	. Q . V . . .
15.700	0.0856	0.35	. Q . V . . .
15.717	0.0861	0.36	. Q . V. . .
15.733	0.0866	0.38	. Q . V. . .
15.750	0.0872	0.39	. Q . V. . .
15.767	0.0877	0.40	. Q . V. . .
15.783	0.0883	0.42	. Q . V. . .
15.800	0.0889	0.44	. Q . V. . .
15.817	0.0896	0.47	. Q . V. . .
15.833	0.0903	0.51	. Q . V. . .
15.850	0.0910	0.55	. Q . V . . .
15.867	0.0918	0.59	. Q . V . . .
15.883	0.0927	0.63	. Q . V . . .
15.900	0.0936	0.67	. Q . V . . .
15.917	0.0946	0.72	. Q . V . . .
15.933	0.0957	0.76	. Q. .V . . .
15.950	0.0968	0.81	. Q .V . . .
15.967	0.0980	0.86	. Q .V . . .
15.983	0.0992	0.91	. .Q .V . . .
16.000	0.1005	0.95	. .Q . V . . .
16.017	0.1021	1.15	. . Q . V . . .
16.033	0.1042	1.50	. . Q . V . . .
16.050	0.1068	1.86	. . . Q . . .
16.067	0.1098	2.21	. . . V Q . . .
16.083	0.1133	2.56	. . . V .Q . .
16.100	0.1173	2.91	. . . V . Q .
16.117	0.1217	3.20	. . . V . Q

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16.133	0.1255	2.71	. . . V . Q .
16.150	0.1286	2.29	. . . Q . .
16.167	0.1312	1.87	. . . Q V. .
16.183	0.1332	1.45	. . Q . V. .
16.200	0.1346	1.03	. . Q . V. .
16.217	0.1355	0.62	. Q . . V. .
16.233	0.1362	0.50	. Q . . V .
16.250	0.1368	0.46	. Q . . V .
16.267	0.1374	0.42	. Q . . V .
16.283	0.1379	0.39	. Q . . V .
16.300	0.1384	0.35	. Q . . V .
16.317	0.1388	0.32	. Q . . V .
16.333	0.1392	0.29	. Q . . V .
16.350	0.1396	0.28	. Q . . V .
16.367	0.1400	0.27	. Q . . V .
16.383	0.1404	0.26	. Q . . .V .
16.400	0.1407	0.25	. Q . . .V .
16.417	0.1411	0.25	. Q . . .V .
16.433	0.1414	0.24	. Q . . .V .
16.450	0.1417	0.23	. Q . . .V .
16.467	0.1420	0.23	. Q . . .V .
16.483	0.1423	0.22	. Q . . .V .
16.500	0.1426	0.22	. Q . . .V .
16.517	0.1429	0.21	. Q . . .V .
16.533	0.1432	0.21	. Q . . .V .
16.550	0.1435	0.21	. Q . . .V .
16.567	0.1438	0.20	. Q . . .V .
16.583	0.1440	0.20	. Q . . .V .
16.600	0.1443	0.19	. Q . . .V .
16.617	0.1446	0.19	. Q . . .V .
16.633	0.1448	0.18	. Q . . . V .
16.650	0.1451	0.18	. Q . . . V .
16.667	0.1453	0.18	. Q . . . V .
16.683	0.1455	0.17	. Q . . . V .
16.700	0.1458	0.17	. Q . . . V .
16.717	0.1460	0.17	. Q . . . V .
16.733	0.1462	0.17	. Q . . . V .
16.750	0.1465	0.16	. Q . . . V .
16.767	0.1467	0.16	. Q . . . V .
16.783	0.1469	0.16	.Q . . . V .
16.800	0.1471	0.16	.Q . . . V .
16.817	0.1473	0.16	.Q . . . V .
16.833	0.1476	0.15	.Q . . . V .
16.850	0.1478	0.15	.Q . . . V .
16.867	0.1480	0.15	.Q . . . V .
16.883	0.1482	0.15	.Q . . . V .
16.900	0.1484	0.15	.Q . . . V .
16.917	0.1486	0.15	.Q . . . V .
16.933	0.1488	0.14	.Q . . . V .
16.950	0.1490	0.14	.Q . . . V .
16.967	0.1492	0.14	.Q . . . V .
16.983	0.1494	0.14	.Q . . . V .
17.000	0.1495	0.14	.Q . . . V .
17.017	0.1497	0.14	.Q . . . V .
17.033	0.1499	0.14	.Q . . . V .
17.050	0.1501	0.13	.Q . . . V .
17.067	0.1503	0.13	.Q . . . V .
17.083	0.1505	0.13	.Q . . . V .
17.100	0.1506	0.13	.Q . . . V .
17.117	0.1508	0.13	.Q . . . V .
17.133	0.1510	0.13	.Q . . . V .
17.150	0.1512	0.13	.Q . . . V .
17.167	0.1513	0.13	.Q . . . V .
17.183	0.1515	0.12	.Q . . . V .
17.200	0.1517	0.12	.Q . . . V .
17.217	0.1519	0.12	.Q . . . V .
17.233	0.1520	0.12	.Q . . . V .
17.250	0.1522	0.12	.Q . . . V .
17.267	0.1524	0.12	.Q . . . V .
17.283	0.1525	0.12	.Q . . . V .
17.300	0.1527	0.12	.Q . . . V .
17.317	0.1528	0.12	.Q . . . V .
17.333	0.1530	0.12	.Q . . . V .
17.350	0.1532	0.12	.Q . . . V .

17.367	0.1533	0.11	.Q	.	.	.	V	.
17.383	0.1535	0.11	.Q	.	.	.	V	.
17.400	0.1536	0.11	.Q	.	.	.	V	.
17.417	0.1538	0.11	.Q	.	.	.	V	.
17.433	0.1540	0.11	.Q	.	.	.	V	.
17.450	0.1541	0.11	.Q	.	.	.	V	.
17.467	0.1543	0.11	.Q	.	.	.	V	.
17.483	0.1544	0.11	.Q	.	.	.	V	.
17.500	0.1546	0.11	.Q	.	.	.	V	.
17.517	0.1547	0.11	.Q	.	.	.	V	.
17.533	0.1549	0.11	.Q	.	.	.	V	.
17.550	0.1550	0.11	.Q	.	.	.	V	.
17.567	0.1551	0.11	.Q	.	.	.	V	.
17.583	0.1553	0.11	.Q	.	.	.	V	.
17.600	0.1554	0.11	.Q	.	.	.	V	.
17.617	0.1556	0.10	.Q	.	.	.	V	.
17.633	0.1557	0.10	.Q	.	.	.	V	.
17.650	0.1559	0.10	.Q	.	.	.	V	.
17.667	0.1560	0.10	.Q	.	.	.	V	.
17.683	0.1561	0.10	.Q	.	.	.	V	.
17.700	0.1563	0.10	.Q	.	.	.	V	.
17.717	0.1564	0.10	.Q	.	.	.	V	.
17.733	0.1566	0.10	.Q	.	.	.	V	.
17.750	0.1567	0.10	.Q	.	.	.	V	.
17.767	0.1568	0.10	.Q	.	.	.	V	.
17.783	0.1570	0.10	.Q	.	.	.	V	.
17.800	0.1571	0.10	.Q	.	.	.	V	.
17.817	0.1572	0.10	.Q	.	.	.	V	.
17.833	0.1574	0.10	.Q	.	.	.	V	.
17.850	0.1575	0.10	.Q	.	.	.	V	.
17.867	0.1576	0.10	.Q	.	.	.	V	.
17.883	0.1578	0.10	.Q	.	.	.	V	.
17.900	0.1579	0.10	.Q	.	.	.	V	.
17.917	0.1580	0.09	.Q	.	.	.	V	.
17.933	0.1582	0.09	.Q	.	.	.	V	.
17.950	0.1583	0.09	.Q	.	.	.	V	.
17.967	0.1584	0.09	.Q	.	.	.	V	.
17.983	0.1586	0.09	.Q	.	.	.	V	.
18.000	0.1587	0.09	.Q	.	.	.	V	.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1081.0
10%	195.0
20%	95.0
30%	60.0
40%	50.0
50%	40.0
60%	30.0
70%	25.0
80%	15.0
90%	10.0

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FLOW PROCESS FROM NODE 1038.00 TO NODE 1036.00 IS CODE = 4

>>>>>MODEL PIPEFLOW ROUTING OF STREAM #3<<<<<
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MODEL PIPEFLOW ROUTING OF STREAM 3 WHERE
STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
(0.938)(DIAMETER):

PIPELENGTH(FT) = 245.00 MANNINGS FACTOR = 0.013
UPSTREAM ELEVATION(FT) = 5.70
DOWNSTREAM ELEVATION(FT) = 2.40
PIPE DIAMETER(FT) = 1.50

NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	0.13	0.75	0.13	0.000
14.017	0.13	0.75	0.13	0.000
14.033	0.13	0.76	0.13	0.000
14.050	0.13	0.76	0.13	0.000
14.067	0.13	0.76	0.13	0.000
14.083	0.13	0.76	0.13	0.000
14.100	0.13	0.77	0.13	0.000
14.117	0.13	0.77	0.13	0.000
14.133	0.13	0.77	0.13	0.000
14.150	0.13	0.78	0.13	0.000
14.167	0.13	0.78	0.13	0.000
14.183	0.13	0.79	0.13	0.000
14.200	0.13	0.79	0.13	0.000
14.217	0.14	0.80	0.14	0.000
14.233	0.14	0.80	0.14	0.000
14.250	0.14	0.80	0.14	0.000
14.267	0.14	0.81	0.14	0.000
14.283	0.14	0.81	0.14	0.000
14.300	0.14	0.81	0.14	0.000
14.317	0.14	0.81	0.14	0.000
14.333	0.14	0.82	0.14	0.000
14.350	0.14	0.82	0.14	0.000
14.367	0.14	0.83	0.14	0.000
14.383	0.14	0.84	0.14	0.000
14.400	0.14	0.84	0.14	0.000
14.417	0.14	0.85	0.15	0.000
14.433	0.14	0.85	0.14	0.000
14.450	0.15	0.85	0.15	0.000
14.467	0.15	0.86	0.15	0.000
14.483	0.15	0.86	0.15	0.000
14.500	0.15	0.86	0.15	0.000
14.517	0.15	0.87	0.15	0.000
14.533	0.15	0.87	0.15	0.000
14.550	0.15	0.88	0.15	0.000
14.567	0.15	0.89	0.15	0.000
14.583	0.15	0.89	0.15	0.000
14.600	0.15	0.90	0.15	0.000
14.617	0.15	0.91	0.15	0.000
14.633	0.16	0.91	0.16	0.000
14.650	0.16	0.92	0.16	0.000
14.667	0.16	0.92	0.16	0.000
14.683	0.16	0.92	0.16	0.000
14.700	0.16	0.93	0.16	0.000
14.717	0.16	0.93	0.16	0.000
14.733	0.16	0.94	0.16	0.000
14.750	0.16	0.94	0.16	0.000
14.767	0.16	0.95	0.16	0.000
14.783	0.16	0.96	0.16	0.000
14.800	0.16	0.97	0.16	0.000
14.817	0.17	0.98	0.16	0.000
14.833	0.17	0.99	0.17	0.000
14.850	0.17	0.99	0.17	0.000
14.867	0.17	1.00	0.17	0.000
14.883	0.17	1.00	0.17	0.000
14.900	0.17	1.01	0.17	0.000
14.917	0.17	1.01	0.17	0.000
14.933	0.17	1.02	0.17	0.000
14.950	0.17	1.03	0.17	0.000
14.967	0.18	1.04	0.17	0.000
14.983	0.18	1.05	0.18	0.000
15.000	0.18	1.06	0.18	0.000
15.017	0.18	1.07	0.18	0.000

			DPHIPF5	
15.033	0.18	1.08	0.18	0.000
15.050	0.19	1.09	0.19	0.000
15.067	0.19	1.10	0.19	0.000
15.083	0.19	1.11	0.19	0.000
15.100	0.19	1.12	0.19	0.000
15.117	0.19	1.12	0.19	0.000
15.133	0.19	1.13	0.19	0.000
15.150	0.19	1.14	0.19	0.000
15.167	0.20	1.15	0.19	0.000
15.183	0.20	1.18	0.20	0.000
15.200	0.21	1.21	0.20	0.000
15.217	0.21	1.24	0.20	0.000
15.233	0.22	1.27	0.21	0.000
15.250	0.22	1.30	0.22	0.000
15.267	0.22	1.32	0.22	0.000
15.283	0.23	1.34	0.23	0.000
15.300	0.23	1.36	0.23	0.000
15.317	0.23	1.38	0.24	0.000
15.333	0.24	1.40	0.24	0.000
15.350	0.24	1.41	0.25	0.000
15.367	0.24	1.43	0.24	0.000
15.383	0.24	1.43	0.25	0.000
15.400	0.24	1.42	0.25	0.000
15.417	0.24	1.40	0.24	0.000
15.433	0.24	1.39	0.24	0.000
15.450	0.23	1.37	0.23	0.000
15.467	0.23	1.36	0.23	0.000
15.483	0.23	1.36	0.23	0.000
15.500	0.23	1.38	0.23	0.000
15.517	0.24	1.41	0.23	0.000
15.533	0.24	1.44	0.24	0.000
15.550	0.25	1.47	0.25	0.000
15.567	0.25	1.49	0.25	0.000
15.583	0.26	1.52	0.26	0.000
15.600	0.27	1.59	0.26	0.000
15.617	0.28	1.67	0.27	0.000
15.633	0.30	1.75	0.29	0.000
15.650	0.31	1.83	0.31	0.000
15.667	0.32	1.91	0.32	0.000
15.683	0.34	1.99	0.34	0.000
15.700	0.35	2.06	0.35	0.000
15.717	0.36	2.14	0.37	0.000
15.733	0.38	2.22	0.40	0.000
15.750	0.39	2.30	0.39	0.000
15.767	0.40	2.37	0.40	0.000
15.783	0.42	2.45	0.42	0.000
15.800	0.44	2.56	0.43	0.000
15.817	0.47	2.79	0.45	0.000
15.833	0.51	3.02	0.51	0.000
15.850	0.55	3.25	0.55	0.000
15.867	0.59	3.48	0.59	0.000
15.883	0.63	3.61	0.63	0.000
15.900	0.67	3.66	0.65	0.000
15.917	0.72	3.72	0.68	0.000
15.933	0.76	3.78	0.72	0.000
15.950	0.81	3.84	0.77	0.000
15.967	0.86	3.90	0.82	0.000
15.983	0.91	3.96	0.87	0.000
16.000	0.95	4.02	0.92	0.000
16.017	1.15	4.26	1.02	0.000
16.033	1.50	4.62	1.29	0.000
16.050	1.86	4.95	1.65	0.000
16.067	2.21	5.21	2.01	0.000
16.083	2.56	5.45	2.37	0.000
16.100	2.91	5.66	2.73	0.000
16.117	3.20	5.82	3.06	0.000
16.133	2.71	5.54	2.96	0.000
16.150	2.29	5.27	2.52	0.000
16.167	1.87	4.96	2.11	0.000
16.183	1.45	4.57	1.69	0.000
16.200	1.03	4.11	1.30	0.000
16.217	0.62	3.60	1.02	0.000
16.233	0.50	2.93	0.54	0.000
16.250	0.46	2.71	0.38	0.000

			DPHIPF5	
16.267	0.42	2.50	0.42	0.000
16.283	0.39	2.28	0.39	0.000
16.300	0.35	2.07	0.35	0.000
16.317	0.32	1.85	0.32	0.000
16.333	0.29	1.72	0.34	0.000
16.350	0.28	1.66	0.25	0.000
16.367	0.27	1.61	0.24	0.000
16.383	0.26	1.55	0.26	0.000
16.400	0.25	1.50	0.25	0.000
16.417	0.25	1.44	0.25	0.000
16.433	0.24	1.40	0.24	0.000
16.450	0.23	1.37	0.23	0.000
16.467	0.23	1.34	0.22	0.000
16.483	0.22	1.31	0.22	0.000
16.500	0.22	1.29	0.23	0.000
16.517	0.21	1.26	0.22	0.000
16.533	0.21	1.24	0.21	0.000
16.550	0.21	1.21	0.21	0.000
16.567	0.20	1.18	0.20	0.000
16.583	0.20	1.16	0.20	0.000
16.600	0.19	1.13	0.19	0.000
16.617	0.19	1.10	0.19	0.000
16.633	0.18	1.07	0.18	0.000
16.650	0.18	1.05	0.18	0.000
16.667	0.18	1.04	0.17	0.000
16.683	0.17	1.02	0.17	0.000
16.700	0.17	1.01	0.17	0.000
16.717	0.17	0.99	0.17	0.000
16.733	0.17	0.98	0.17	0.000
16.750	0.16	0.96	0.17	0.000
16.767	0.16	0.95	0.16	0.000
16.783	0.16	0.94	0.16	0.000
16.800	0.16	0.93	0.16	0.000
16.817	0.16	0.92	0.15	0.000
16.833	0.15	0.90	0.15	0.000
16.850	0.15	0.89	0.15	0.000
16.867	0.15	0.88	0.15	0.000
16.883	0.15	0.87	0.15	0.000
16.900	0.15	0.86	0.15	0.000
16.917	0.15	0.86	0.14	0.000
16.933	0.14	0.85	0.14	0.000
16.950	0.14	0.84	0.14	0.000
16.967	0.14	0.83	0.14	0.000
16.983	0.14	0.82	0.14	0.000
17.000	0.14	0.81	0.14	0.000
17.017	0.14	0.80	0.14	0.000
17.033	0.14	0.80	0.13	0.000
17.050	0.13	0.79	0.13	0.000
17.067	0.13	0.78	0.14	0.000
17.083	0.13	0.77	0.13	0.000
17.100	0.13	0.77	0.13	0.000
17.117	0.13	0.76	0.13	0.000
17.133	0.13	0.75	0.13	0.000
17.150	0.13	0.75	0.13	0.000
17.167	0.13	0.74	0.13	0.000
17.183	0.12	0.73	0.12	0.000
17.200	0.12	0.73	0.12	0.000
17.217	0.12	0.72	0.12	0.000
17.233	0.12	0.72	0.12	0.000
17.250	0.12	0.71	0.12	0.000
17.267	0.12	0.71	0.12	0.000
17.283	0.12	0.70	0.12	0.000
17.300	0.12	0.70	0.12	0.000
17.317	0.12	0.69	0.12	0.000
17.333	0.12	0.69	0.12	0.000
17.350	0.12	0.68	0.12	0.000
17.367	0.11	0.68	0.11	0.000
17.383	0.11	0.67	0.11	0.000
17.400	0.11	0.67	0.11	0.000
17.417	0.11	0.66	0.11	0.000
17.433	0.11	0.66	0.11	0.000
17.450	0.11	0.65	0.12	0.000
17.467	0.11	0.65	0.11	0.000
17.483	0.11	0.65	0.11	0.000

17.500	0.11	0.64	0.11	0.000
17.517	0.11	0.64	0.11	0.000
17.533	0.11	0.63	0.11	0.000
17.550	0.11	0.63	0.11	0.000
17.567	0.11	0.63	0.11	0.000
17.583	0.11	0.62	0.11	0.000
17.600	0.11	0.62	0.10	0.000
17.617	0.10	0.61	0.10	0.000
17.633	0.10	0.61	0.10	0.000
17.650	0.10	0.61	0.10	0.000
17.667	0.10	0.60	0.10	0.000
17.683	0.10	0.60	0.10	0.000
17.700	0.10	0.60	0.10	0.000
17.717	0.10	0.59	0.10	0.000
17.733	0.10	0.59	0.10	0.000
17.750	0.10	0.59	0.10	0.000
17.767	0.10	0.58	0.10	0.000
17.783	0.10	0.58	0.10	0.000
17.800	0.10	0.58	0.10	0.000
17.817	0.10	0.58	0.10	0.000
17.833	0.10	0.57	0.10	0.000
17.850	0.10	0.57	0.10	0.000
17.867	0.10	0.57	0.10	0.000
17.883	0.10	0.56	0.10	0.000
17.900	0.10	0.56	0.10	0.000
17.917	0.09	0.56	0.09	0.000
17.933	0.09	0.56	0.09	0.000
17.950	0.09	0.55	0.09	0.000
17.967	0.09	0.55	0.09	0.000
17.983	0.09	0.55	0.09	0.000
18.000	0.09	0.55	0.09	0.000

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****************************************************************************
  FLOW PROCESS FROM NODE   1036.00 TO NODE   1036.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE   1036.00 TO NODE   1047.00 IS CODE =   4
----------------------------------------------------------------------------
  >>>>>MODEL PIPEFLOW ROUTING OF STREAM #1<<<<<
============================================================================

        MODEL PIPEFLOW ROUTING OF STREAM 1 WHERE
        STORAGE EFFECTS ARE NEGLECTED WITHIN THE PIPE, FLOW
        VELOCITIES ARE ESTIMATED BY ASSUMING STEADY FLOW FOR
        EACH UNIT INTERVAL(NORMAL DEPTH, Dn), AND FLOWS IN EXCESS
        OF (.82)(DIAMETER) ARE PONDED AT THE UPSTREAM INLET:
        UNIT INTERVAL FLOW VELOCITY COMPUTED USING Dn UP TO
        (0.938)(DIAMETER):


        PIPELENGTH(FT) =      20.00     MANNINGS FACTOR = 0.013
        UPSTREAM ELEVATION(FT) =      2.40
        DOWNSTREAM ELEVATION(FT) =      0.10
        PIPE DIAMETER(FT) =   2.00


        NORMAL DEPTH VELOCITY PIPE ROUTING RESULTS:
```

TIME (HRS)	INFLOW (CFS)	VELOCITY (FPS)	OUTFLOW (CFS)	UPSTREAM PONDING(AF)
14.000	2.01	6.64	2.01	0.000
14.017	2.01	6.66	2.01	0.000
14.033	2.02	6.69	2.02	0.000
14.050	2.03	6.72	2.03	0.000
14.067	2.04	6.75	2.04	0.000
14.083	2.05	6.77	2.05	0.000
14.100	2.05	6.80	2.05	0.000

				DPHIPF5
14.117	2.06	6.82	2.06	0.000
14.133	2.07	6.85	2.07	0.000
14.150	2.08	6.87	2.08	0.000
14.167	2.08	6.89	2.08	0.000
14.183	2.09	6.92	2.09	0.000
14.200	2.10	6.95	2.10	0.000
14.217	2.11	6.98	2.11	0.000
14.233	2.12	7.01	2.12	0.000
14.250	2.13	7.04	2.13	0.000
14.267	2.14	7.07	2.14	0.000
14.283	2.15	7.10	2.15	0.000
14.300	2.15	7.13	2.15	0.000
14.317	2.16	7.16	2.16	0.000
14.333	2.17	7.19	2.17	0.000
14.350	2.18	7.22	2.18	0.000
14.367	2.19	7.25	2.19	0.000
14.383	2.20	7.28	2.20	0.000
14.400	2.21	7.32	2.21	0.000
14.417	2.22	7.36	2.22	0.000
14.433	2.23	7.38	2.23	0.000
14.450	2.24	7.42	2.24	0.000
14.467	2.25	7.45	2.25	0.000
14.483	2.26	7.48	2.26	0.000
14.500	2.27	7.51	2.27	0.000
14.517	2.28	7.54	2.28	0.000
14.533	2.29	7.57	2.29	0.000
14.550	2.30	7.61	2.30	0.000
14.567	2.31	7.64	2.31	0.000
14.583	2.32	7.68	2.32	0.000
14.600	2.33	7.72	2.33	0.000
14.617	2.35	7.76	2.35	0.000
14.633	2.36	7.81	2.36	0.000
14.650	2.37	7.85	2.37	0.000
14.667	2.38	7.89	2.38	0.000
14.683	2.40	7.93	2.40	0.000
14.700	2.41	7.97	2.41	0.000
14.717	2.42	8.00	2.42	0.000
14.733	2.43	8.03	2.43	0.000
14.750	2.44	8.07	2.44	0.000
14.767	2.45	8.11	2.45	0.000
14.783	2.46	8.14	2.46	0.000
14.800	2.47	8.18	2.47	0.000
14.817	2.49	8.23	2.49	0.000
14.833	2.50	8.28	2.50	0.000
14.850	2.52	8.33	2.52	0.000
14.867	2.53	8.38	2.53	0.000
14.883	2.55	8.44	2.55	0.000
14.900	2.56	8.49	2.56	0.000
14.917	2.58	8.54	2.58	0.000
14.933	2.59	8.59	2.59	0.000
14.950	2.61	8.64	2.61	0.000
14.967	2.62	8.69	2.62	0.000
14.983	2.64	8.74	2.64	0.000
15.000	2.66	8.79	2.66	0.000
15.017	2.67	8.85	2.67	0.000
15.033	2.69	8.90	2.69	0.000
15.050	2.71	8.96	2.71	0.000
15.067	2.72	9.02	2.72	0.000
15.083	2.74	9.07	2.74	0.000
15.100	2.76	9.13	2.76	0.000
15.117	2.77	9.18	2.77	0.000
15.133	2.79	9.23	2.79	0.000
15.150	2.81	9.30	2.81	0.000
15.167	2.83	9.36	2.83	0.000
15.183	2.85	9.43	2.85	0.000
15.200	2.87	9.50	2.87	0.000
15.217	2.90	9.59	2.90	0.000
15.233	2.93	9.70	2.93	0.000
15.250	2.96	9.79	2.96	0.000
15.267	2.99	9.89	2.99	0.000
15.283	3.01	9.97	3.01	0.000
15.300	3.04	10.06	3.04	0.000
15.317	3.06	10.15	3.06	0.000
15.333	3.09	10.21	3.09	0.000

				DPHIPF5
15.350	3.12	10.32	3.12	0.000
15.367	3.13	10.37	3.13	0.000
15.383	3.16	10.45	3.16	0.000
15.400	3.18	10.54	3.18	0.000
15.417	3.20	10.59	3.20	0.000
15.433	3.21	10.64	3.21	0.000
15.450	3.23	10.69	3.23	0.000
15.467	3.25	10.75	3.25	0.000
15.483	3.27	10.81	3.27	0.000
15.500	3.28	10.87	3.28	0.000
15.517	3.31	10.96	3.31	0.000
15.533	3.34	11.07	3.34	0.000
15.550	3.38	11.18	3.38	0.000
15.567	3.40	11.27	3.40	0.000
15.583	3.44	11.38	3.44	0.000
15.600	3.47	11.49	3.47	0.000
15.617	3.51	11.61	3.51	0.000
15.633	3.56	11.80	3.56	0.000
15.650	3.62	11.97	3.62	0.000
15.667	3.66	12.13	3.66	0.000
15.683	3.71	12.28	3.71	0.000
15.700	3.76	12.44	3.76	0.000
15.717	3.82	12.64	3.82	0.000
15.733	3.89	12.74	3.89	0.000
15.750	3.95	12.78	3.95	0.000
15.767	4.02	12.83	4.02	0.000
15.783	4.09	12.88	4.09	0.000
15.800	4.17	12.93	4.17	0.000
15.817	4.25	12.99	4.25	0.000
15.833	4.38	13.08	4.38	0.000
15.850	4.50	13.16	4.49	0.000
15.867	4.61	13.24	4.61	0.000
15.883	4.73	13.33	4.73	0.000
15.900	4.84	13.40	4.84	0.000
15.917	4.95	13.48	4.95	0.000
15.933	5.09	13.58	5.09	0.000
15.950	5.23	13.67	5.23	0.000
15.967	5.38	13.78	5.37	0.000
15.983	5.53	13.88	5.53	0.000
16.000	5.68	13.99	5.68	0.000
16.017	6.00	14.22	6.00	0.000
16.033	6.70	14.71	6.69	0.000
16.050	7.57	15.31	7.56	0.000
16.067	8.45	15.81	8.44	0.000
16.083	9.32	16.28	9.31	0.000
16.100	10.26	16.79	10.25	0.000
16.117	10.95	17.16	10.94	0.000
16.133	11.02	17.20	11.02	0.000
16.150	10.78	17.07	10.78	0.000
16.167	10.25	16.78	10.25	0.000
16.183	9.46	16.35	9.47	0.000
16.200	8.66	15.92	8.67	0.000
16.217	8.02	15.57	8.03	0.000
16.233	7.33	15.14	7.34	0.000
16.250	7.00	14.92	7.01	0.000
16.267	6.88	14.83	6.88	0.000
16.283	6.68	14.69	6.69	0.000
16.300	6.50	14.56	6.50	0.000
16.317	6.38	14.48	6.38	0.000
16.333	6.46	14.54	6.46	0.000
16.350	6.47	14.54	6.47	0.000
16.367	6.56	14.61	6.56	0.000
16.383	6.67	14.69	6.67	0.000
16.400	6.74	14.73	6.74	0.000
16.417	6.78	14.76	6.78	0.000
16.433	6.82	14.78	6.81	0.000
16.450	6.83	14.80	6.83	0.000
16.467	6.85	14.81	6.85	0.000
16.483	6.86	14.82	6.86	0.000
16.500	6.87	14.82	6.87	0.000
16.517	6.85	14.81	6.85	0.000
16.533	6.82	14.79	6.82	0.000
16.550	6.80	14.77	6.80	0.000
16.567	6.77	14.75	6.77	0.000

			DPHIPF5	
16.583	6.74	14.74	6.74	0.000
16.600	6.72	14.71	6.72	0.000
16.617	6.68	14.69	6.68	0.000
16.633	6.65	14.67	6.65	0.000
16.650	6.61	14.64	6.62	0.000
16.667	6.58	14.62	6.58	0.000
16.683	6.55	14.60	6.55	0.000
16.700	6.52	14.58	6.52	0.000
16.717	6.49	14.56	6.49	0.000
16.733	6.46	14.54	6.46	0.000
16.750	6.44	14.52	6.44	0.000
16.767	6.41	14.50	6.41	0.000
16.783	6.38	14.48	6.38	0.000
16.800	6.35	14.46	6.35	0.000
16.817	6.32	14.44	6.32	0.000
16.833	6.30	14.42	6.30	0.000
16.850	6.27	14.40	6.27	0.000
16.867	6.24	14.38	6.24	0.000
16.883	6.21	14.36	6.21	0.000
16.900	6.18	14.34	6.18	0.000
16.917	6.15	14.32	6.15	0.000
16.933	6.13	14.30	6.13	0.000
16.950	6.10	14.28	6.10	0.000
16.967	6.07	14.26	6.07	0.000
16.983	6.04	14.24	6.04	0.000
17.000	6.01	14.22	6.01	0.000
17.017	5.98	14.20	5.98	0.000
17.033	5.95	14.18	5.95	0.000
17.050	5.92	14.16	5.92	0.000
17.067	5.90	14.14	5.90	0.000
17.083	5.87	14.12	5.87	0.000
17.100	5.84	14.10	5.84	0.000
17.117	5.81	14.08	5.81	0.000
17.133	5.79	14.06	5.79	0.000
17.150	5.76	14.05	5.76	0.000
17.167	5.73	14.03	5.73	0.000
17.183	5.71	14.01	5.71	0.000
17.200	5.68	13.99	5.68	0.000
17.217	5.65	13.97	5.65	0.000
17.233	5.63	13.95	5.63	0.000
17.250	5.60	13.93	5.60	0.000
17.267	5.58	13.92	5.58	0.000
17.283	5.55	13.90	5.55	0.000
17.300	5.52	13.88	5.53	0.000
17.317	5.50	13.86	5.50	0.000
17.333	5.48	13.85	5.48	0.000
17.350	5.45	13.83	5.45	0.000
17.367	5.43	13.81	5.43	0.000
17.383	5.40	13.79	5.40	0.000
17.400	5.37	13.78	5.38	0.000
17.417	5.35	13.76	5.35	0.000
17.433	5.33	13.74	5.33	0.000
17.450	5.31	13.73	5.31	0.000
17.467	5.28	13.71	5.28	0.000
17.483	5.25	13.69	5.25	0.000
17.500	5.22	13.67	5.23	0.000
17.517	5.20	13.65	5.20	0.000
17.533	5.16	13.63	5.16	0.000
17.550	5.13	13.60	5.13	0.000
17.567	5.08	13.57	5.09	0.000
17.583	5.04	13.54	5.04	0.000
17.600	5.00	13.52	5.00	0.000
17.617	4.96	13.49	4.96	0.000
17.633	4.92	13.46	4.92	0.000
17.650	4.88	13.43	4.88	0.000
17.667	4.84	13.40	4.84	0.000
17.683	4.80	13.38	4.80	0.000
17.700	4.77	13.35	4.77	0.000
17.717	4.73	13.32	4.73	0.000
17.733	4.69	13.30	4.69	0.000
17.750	4.65	13.27	4.65	0.000
17.767	4.62	13.24	4.62	0.000
17.783	4.58	13.22	4.58	0.000
17.800	4.54	13.19	4.54	0.000

				DPHIPF5
17.817	4.51	13.17	4.51	0.000
17.833	4.47	13.15	4.47	0.000
17.850	4.44	13.12	4.44	0.000
17.867	4.40	13.10	4.41	0.000
17.883	4.37	13.07	4.37	0.000
17.900	4.33	13.04	4.33	0.000
17.917	4.29	13.01	4.29	0.000
17.933	4.25	12.99	4.25	0.000
17.950	4.21	12.96	4.21	0.000
17.967	4.17	12.93	4.17	0.000
17.983	4.13	12.91	4.13	0.000
18.000	4.10	12.88	4.10	0.000

END OF FLOODSCx ROUTING ANALYSIS

APPENDIX F

F. Water Surface and Pressure Gradient (WSPG) Hydraulic Modeling

F.1 Line 'D' Interim
F.2 Lateral 'D-1'
F.3 Lateral 'D-2'
F.4 Lateral 'D-3'
F.5 Lateral 'D-4'
F.6 Lateral 'D-5'
F.7 Lateral 'D-6'

APPENDIX F.1

F.1 Line 'D' Interim

Dana Point Harbor
Line D Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
80.020	-9.320	14.360	5.040	11.00	6.22	.60	5.64	.00	1.27	.00	1.500	.000	.00	1 .0
29.980	.1001					.0110	.33	14.36	.00	.59	.013	.00	.00	PIPE
110.000	-6.320	11.689	5.369	11.00	6.22	.60	5.97	.00	1.27	.00	1.500	.000	.00	1 .0
15.000	.2813					.0110	.16	11.69	.00	.45	.013	.00	.00	PIPE
125.000	-2.100	7.633	5.533	11.00	6.22	.60	6.13	.00	1.27	.00	1.500	.000	.00	1 .0
JUNCT STR	.0400					.0056	.03	7.63	.00		.013	.00	.00	PIPE
130.000	-1.900	8.039	6.139	6.10	1.24	.02	6.16	.00	.82	.00	2.500	.000	.00	1 .0
104.820	.0224					.0002	.02	8.04	.00	.53	.013	.00	.00	PIPE
234.820	.450	5.712	6.162	6.10	1.24	.02	6.19	.00	.82	.00	2.500	.000	.00	1 .0
57.980	.0228					.0002	.01	.00	.00	.53	.013	.00	.00	PIPE
292.800	1.770	4.408	6.178	6.10	1.24	.02	6.20	.00	.82	.00	2.500	.000	.00	1 .0
86.919	.0222					.0002	.02	.00	.00	.53	.013	.00	.00	PIPE
379.719	3.701	2.500	6.201	6.10	1.24	.02	6.22	2.50	.82	.00	2.500	.000	.00	1 .0
10.378	.0222					.0002	.00	2.50	.00	.53	.013	.00	.00	PIPE
390.097	3.931	2.268	6.199	6.10	1.30	.03	6.23	.00	.82	1.45	2.500	.000	.00	1 .0
5.995	.0222					.0002	.00	2.27	.13	.53	.013	.00	.00	PIPE
396.092	4.064	2.134	6.198	6.10	1.37	.03	6.23	.00	.82	1.77	2.500	.000	.00	1 .0
4.915	.0222					.0002	.00	2.13	.15	.53	.013	.00	.00	PIPE

Dana Point Harbor
Line D Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch

401.007	4.173	2.023	6.196	6.10	1.43	.03	6.23	.00	.82	1.97	2.500	.000	.00	1	.0
1.193	.0222					.0002	.00	2.02	.17	.53	.013	.00	.00	PIPE	
402.200	4.200	1.996	6.196	6.10	1.45	.03	6.23	.00	.82	2.01	2.500	.000	.00	1	.0
JUNCT STR	.0400					.0001	.00	2.00	.18		.013	.00	.00	PIPE	
407.200	4.400	1.827	6.227	2.30	.60	.01	6.23	.00	.50	2.22	2.500	.000	.00	1	.0
2.497	.0316					.0000	.00	1.83	.08	.30	.013	.00	.00	PIPE	
409.697	4.479	1.747	6.226	2.30	.63	.01	6.23	.00	.50	2.29	2.500	.000	.00	1	.0
2.310	.0316					.0000	.00	1.75	.09	.30	.013	.00	.00	PIPE	
412.007	4.552	1.674	6.226	2.30	.66	.01	6.23	.00	.50	2.35	2.500	.000	.00	1	.0
2.149	.0316					.0001	.00	1.67	.10	.30	.013	.00	.00	PIPE	
414.156	4.620	1.606	6.225	2.30	.69	.01	6.23	.00	.50	2.40	2.500	.000	.00	1	.0
2.014	.0316					.0001	.00	1.61	.10	.30	.013	.00	.00	PIPE	
416.171	4.683	1.541	6.224	2.30	.72	.01	6.23	.00	.50	2.43	2.500	.000	.00	1	.0
1.895	.0316					.0001	.00	1.54	.11	.30	.013	.00	.00	PIPE	
418.066	4.743	1.481	6.224	2.30	.76	.01	6.23	.00	.50	2.46	2.500	.000	.00	1	.0
1.785	.0316					.0001	.00	1.48	.12	.30	.013	.00	.00	PIPE	
419.851	4.799	1.424	6.223	2.30	.80	.01	6.23	.00	.50	2.48	2.500	.000	.00	1	.0
1.691	.0316					.0001	.00	1.42	.13	.30	.013	.00	.00	PIPE	

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 2:43:36

Dana Point Harbor
Line D Insurance Policy Condition
3-25-14-SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
421.542	4.853	1.370	6.222	2.30	.84	.01	6.23	.00	.50	2.49	2.500	.000	.00	1 .0
1.599	.0316					.0001	.00	1.37	.14	.30	.013	.00	.00	PIPE
423.141	4.903	1.318	6.221	2.30	.88	.01	6.23	.00	.50	2.50	2.500	.000	.00	1 .0
1.514	.0316					.0001	.00	1.32	.15	.30	.013	.00	.00	PIPE
424.655	4.951	1.269	6.220	2.30	.92	.01	6.23	.00	.50	2.50	2.500	.000	.00	1 .0
1.441	.0316					.0001	.00	1.27	.16	.30	.013	.00	.00	PIPE
426.095	4.996	1.223	6.219	2.30	.96	.01	6.23	.00	.50	2.50	2.500	.000	.00	1 .0

1.370	.0316					.0001	.00	1.22	.17	.30	.013	.00	.00	PIPE
427.466	5.040	1.178	6.218	2.30	1.01	.02	6.23	.00	.50	2.50	2.500	.000	.00	1 .0
1.303	.0316					.0002	.00	1.18	.19	.30	.013	.00	.00	PIPE
428.769	5.081	1.136	6.216	2.30	1.06	.02	6.23	.00	.50	2.49	2.500	.000	.00	1 .0
1.238	.0316					.0002	.00	1.14	.20	.30	.013	.00	.00	PIPE
430.007	5.120	1.095	6.215	2.30	1.11	.02	6.23	.00	.50	2.48	2.500	.000	.00	1 .0
1.180	.0316					.0002	.00	1.10	.21	.30	.013	.00	.00	PIPE
431.187	5.157	1.056	6.213	2.30	1.17	.02	6.23	.00	.50	2.47	2.500	.000	.00	1 .0
1.120	.0316					.0002	.00	1.06	.23	.30	.013	.00	.00	PIPE
432.307	5.192	1.019	6.211	2.30	1.22	.02	6.23	.00	.50	2.46	2.500	.000	.00	1 .0
1.067	.0316					.0003	.00	1.02	.25	.30	.013	.00	.00	PIPE

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 2:43:36

Dana Point Harbor
Line D Insurance Policy Condition
3-25-14-SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
433.374	5.226	.983	6.209	2.30	1.28	.03	6.23	.00	.50	2.44	2.500	.000	.00	1 .0
1.016	.0316					.0003	.00	.98	.26	.30	.013	.00	.00	PIPE
434.390	5.258	.949	6.207	2.30	1.35	.03	6.24	.00	.50	2.43	2.500	.000	.00	1 .0
.964	.0316					.0004	.00	.95	.28	.30	.013	.00	.00	PIPE
435.354	5.289	.916	6.205	2.30	1.41	.03	6.24	.00	.50	2.41	2.500	.000	.00	1 .0
.915	.0316					.0004	.00	.92	.30	.30	.013	.00	.00	PIPE
436.269	5.318	.885	6.202	2.30	1.48	.03	6.24	.00	.50	2.39	2.500	.000	.00	1 .0
.868	.0316					.0005	.00	.88	.32	.30	.013	.00	.00	PIPE
437.137	5.345	.854	6.199	2.30	1.55	.04	6.24	.00	.50	2.37	2.500	.000	.00	1 .0
.820	.0316					.0005	.00	.85	.35	.30	.013	.00	.00	PIPE
437.958	5.371	.825	6.196	2.30	1.63	.04	6.24	.00	.50	2.35	2.500	.000	.00	1 .0
.775	.0316					.0006	.00	.82	.37	.30	.013	.00	.00	PIPE
438.733	5.395	.797	6.192	2.30	1.71	.05	6.24	.00	.50	2.33	2.500	.000	.00	1 .0

.728	.0316					.0007	.00	.80	.40	.30	.013	.00	.00	PIPE			
439.461	5.418	.770	6.188	2.30	1.79	.05	6.24	.00	.50	2.31	2.500	.000	.00	1	.0		
.683	.0316					.0008	.00	.77	.42	.30	.013	.00	.00	PIPE			
440.144	5.440	.744	6.184	2.30	1.88	.05	6.24	.00	.50	2.29	2.500	.000	.00	1	.0		
.640	.0316					.0009	.00	.74	.45	.30	.013	.00	.00	PIPE			

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
440.784	5.460	.719	6.179	2.30	1.97	.06	6.24	.00	.50	2.26	2.500	.000	.00	1 .0
.563	.0316					.0010	.00	.72	.48	.30	.013	.00	.00	PIPE
441.347	5.478	.695	6.172	2.30	2.07	.07	6.24	.00	.50	2.24	2.500	.000	.00	1 .0
HYDRAULIC JUMP														
441.347	5.478	.339	5.817	2.30	5.77	.52	6.33	.00	.50	1.71	2.500	.000	.00	1 .0
2.759	.0316					.0190	.05	.34	2.11	.30	.013	.00	.00	PIPE
444.106	5.565	.350	5.915	2.30	5.50	.47	6.39	.00	.50	1.74	2.500	.000	.00	1 .0
2.064	.0316					.0165	.03	.35	1.98	.30	.013	.00	.00	PIPE
446.170	5.630	.362	5.992	2.30	5.25	.43	6.42	.03	.50	1.76	2.500	.000	.00	1 .0
20.750	.0154					.0154	.32	.40	1.85	.36	.013	.00	.00	PIPE
466.920	5.950	.362	6.312	2.30	5.24	.43	6.74	.00	.50	1.76	2.500	.000	.00	1 .0
14.078	.0154					.0154	.22	.36	1.85	.36	.013	.00	.00	PIPE
480.998	6.167	.362	6.529	2.30	5.24	.43	6.96	.00	.50	1.76	2.500	.000	.00	1 .0
27.512	.0154					.0149	.41	.36	1.85	.36	.013	.00	.00	PIPE
508.510	6.590	.367	6.957	2.30	5.14	.41	7.37	.06	.50	1.77	2.500	.000	.00	1 .0
7.062	.0159					.0140	.10	.43	1.80	.36	.013	.00	.00	PIPE
515.572	6.702	.373	7.076	2.30	5.01	.39	7.47	.06	.50	1.78	2.500	.000	.00	1 .0
7.155	.0159					.0127	.09	.44	1.74	.36	.013	.00	.00	PIPE

Line D Insurance Policy Condition
3-25-14-SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
522.727	6.816	.386	7.202	2.30	4.78	.35	7.56	.06	.50	1.81	2.500	.000	.00	1 .0
4.013	.0159					.0111	.04	.44	1.63	.36	.013	.00	.00	PIPE
526.740	6.880	.399	7.279	2.30	4.56	.32	7.60	.00	.50	1.83	2.500	.000	.00	1 .0
1.698	.0149					.0100	.02	.40	1.53	.37	.013	.00	.00	PIPE
528.438	6.905	.405	7.310	2.30	4.45	.31	7.62	.00	.50	1.84	2.500	.000	.00	1 .0
2.490	.0149					.0091	.02	.41	1.48	.37	.013	.00	.00	PIPE
530.928	6.942	.419	7.361	2.30	4.25	.28	7.64	.00	.50	1.87	2.500	.000	.00	1 .0
1.653	.0149					.0079	.01	.42	1.39	.37	.013	.00	.00	PIPE
532.581	6.967	.433	7.399	2.30	4.05	.25	7.65	.00	.50	1.89	2.500	.000	.00	1 .0
1.077	.0149					.0069	.01	.43	1.30	.37	.013	.00	.00	PIPE
533.658	6.983	.447	7.430	2.30	3.86	.23	7.66	.00	.50	1.92	2.500	.000	.00	1 .0
.674	.0149					.0060	.00	.45	1.22	.37	.013	.00	.00	PIPE
534.332	6.993	.462	7.455	2.30	3.68	.21	7.67	.00	.50	1.94	2.500	.000	.00	1 .0
.369	.0149					.0053	.00	.46	1.14	.37	.013	.00	.00	PIPE
534.701	6.998	.478	7.476	2.30	3.51	.19	7.67	.00	.50	1.97	2.500	.000	.00	1 .0
.119	.0149					.0046	.00	.48	1.07	.37	.013	.00	.00	PIPE
534.820	7.000	.495	7.495	2.30	3.34	.17	7.67	.00	.50	1.99	2.500	.000	.00	1 .0

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APPENDIX F.2

F.2 Lateral 'D-1'

Dana Point Harbor
Proposed Lateral D1-Insurance Policy Condition
3-25-14-SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
100.000	-1.900	8.040	6.140	3.10	1.75	.05	6.19	.00	.67	.00	1.500	.000	.00	1 .0
4.830	.0228					.0009	.00	8.04	.00	.45	.013	.00	.00	PIPE
104.830	-1.790	7.934	6.144	3.10	1.75	.05	6.19	.00	.67	.00	1.500	.000	.00	1 .0
17.670	.0226					.0009	.02	.00	.00	.45	.013	.00	.00	PIPE
122.500	-1.390	7.556	6.166	3.10	1.75	.05	6.21	.00	.67	.00	1.500	.000	.00	1 .0
33.460	.0227					.0009	.03	7.56	.00	.45	.013	.00	.00	PIPE
155.960	-.630	6.825	6.195	3.10	1.75	.05	6.24	.00	.67	.00	1.500	.000	.00	1 .0
54.600	.0227					.0009	.05	.00	.00	.45	.013	.00	.00	PIPE
210.560	.610	5.641	6.251	3.10	1.75	.05	6.30	.00	.67	.00	1.500	.000	.00	1 .0
114.420	.0227					.0009	.10	5.64	.00	.45	.013	.00	.00	PIPE
324.980	3.210	3.141	6.351	3.10	1.75	.05	6.40	.00	.67	.00	1.500	.000	.00	1 .0
34.720	.0228					.0009	.03	.00	.00	.45	.013	.00	.00	PIPE
359.700	4.000	2.391	6.391	3.10	1.75	.05	6.44	.00	.67	.00	1.500	.000	.00	1 .0

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APPENDIX F.3

F.3 Lateral 'D-2'

Dana Point Harbor
Proposed Lateral D2
3/26/14 SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
100.000	-1.900	8.040	6.140	4.50	2.55	.10	6.24	.00	.81	.00	1.500	.000	.00	1 .0
160.640	.0330					.0018	.29	8.04	.00	.50	.013	.00	.00	PIPE
260.640	3.400	3.035	6.435	4.50	2.55	.10	6.54	.00	.81	.00	1.500	.000	.00	1 .0
JUNCT STR	.0400					.0015	.01	3.03	.00		.013	.00	.00	PIPE
265.640	3.600	2.915	6.515	3.50	1.98	.06	6.58	.00	.71	.00	1.500	.000	.00	1 .0
21.360	.0206					.0011	.02	2.91	.00	.49	.013	.00	.00	PIPE
287.000	4.040	2.498	6.538	3.50	1.98	.06	6.60	.00	.71	.00	1.500	.000	.00	1 .0
21.410	.0210					.0011	.02	.00	.00	.49	.013	.00	.00	PIPE
308.410	4.490	2.082	6.572	3.50	1.98	.06	6.63	.00	.71	.00	1.500	.000	.00	1 .0
24.820	.0205					.0011	.03	2.08	.00	.49	.013	.00	.00	PIPE
333.230	5.000	1.599	6.599	3.50	1.98	.06	6.66	.00	.71	.00	1.500	.000	.00	1 .0

APPENDIX F.4

F.4 Lateral 'D-3'

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 4:17:56

Dana Point Harbor
Proposed Lateral D3-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/Dia.-FT / No Wth Prs/Pip	Base Wt or I.D. / ZL
100.000	3.600	2.920	6.520	1.60	.91	.01	6.53	.00	.48	.00	1.500	.000 / .00
146.630	.0050					.0002	.03	2.92	.00	.47	.013	.00 / .00
												PIPE
246.630	4.330	2.224	6.554	1.60	.91	.01	6.57	.00	.48	.00	1.500	.000 / .00
35.810	.0047					.0002	.01	.00	.00	.48	.013	.00 / .00
												PIPE
282.440	4.500	2.065	6.565	1.60	.91	.01	6.58	.00	.48	.00	1.500	.000 / .00

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APPENDIX F.5

F.5 Lateral 'D-4'

Dana Point Harbor
Proposed Lateral D4-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
100.000	4.400	1.830	6.230	1.00	.57	.00	6.23	.00	.37	.00	1.500	.000	.00	1 .0
11.435	.0289					.0001	.00	1.83	.00	.24	.013	.00	.00	PIPE
111.435	4.731	1.500	6.231	1.00	.57	.00	6.24	.00	.37	.00	1.500	.000	.00	1 .0
4.767	.0289					.0001	.00	1.50	.00	.24	.013	.00	.00	PIPE
116.201	4.869	1.361	6.230	1.00	.59	.01	6.24	.00	.37	.87	1.500	.000	.00	1 .0
2.780	.0289					.0001	.00	1.36	.08	.24	.013	.00	.00	PIPE
118.981	4.950	1.280	6.230	1.00	.62	.01	6.24	.00	.37	1.06	1.500	.000	.00	1 .0
2.287	.0289					.0001	.00	1.28	.09	.24	.013	.00	.00	PIPE
121.268	5.016	1.214	6.229	1.00	.65	.01	6.24	.00	.37	1.18	1.500	.000	.00	1 .0
1.998	.0289					.0001	.00	1.21	.10	.24	.013	.00	.00	PIPE
123.266	5.074	1.155	6.229	1.00	.68	.01	6.24	.00	.37	1.26	1.500	.000	.00	1 .0
1.795	.0289					.0001	.00	1.16	.11	.24	.013	.00	.00	PIPE
125.061	5.126	1.103	6.228	1.00	.72	.01	6.24	.00	.37	1.32	1.500	.000	.00	1 .0
1.641	.0289					.0001	.00	1.10	.12	.24	.013	.00	.00	PIPE
126.702	5.173	1.055	6.228	1.00	.75	.01	6.24	.00	.37	1.37	1.500	.000	.00	1 .0
1.514	.0289					.0001	.00	1.05	.13	.24	.013	.00	.00	PIPE
128.215	5.217	1.010	6.227	1.00	.79	.01	6.24	.00	.37	1.41	1.500	.000	.00	1 .0
1.404	.0289					.0002	.00	1.01	.15	.24	.013	.00	.00	PIPE

Dana Point Harbor
Proposed Lateral D4-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch

129.619	5.257	.969	6.226	1.00	.83	.01	6.24	.00	.37	1.43	1.500	.000	.00	1	.0
1.315	.0289					.0002	.00	.97	.16	.24	.013	.00	.00	PIPE	
130.934	5.296	.930	6.225	1.00	.87	.01	6.24	.00	.37	1.46	1.500	.000	.00	1	.0
1.229	.0289					.0002	.00	.93	.17	.24	.013	.00	.00	PIPE	
132.163	5.331	.893	6.224	1.00	.91	.01	6.24	.00	.37	1.47	1.500	.000	.00	1	.0
1.159	.0289					.0002	.00	.89	.19	.24	.013	.00	.00	PIPE	
133.322	5.365	.859	6.223	1.00	.96	.01	6.24	.00	.37	1.48	1.500	.000	.00	1	.0
1.090	.0289					.0002	.00	.86	.20	.24	.013	.00	.00	PIPE	
134.412	5.396	.826	6.222	1.00	1.00	.02	6.24	.00	.37	1.49	1.500	.000	.00	1	.0
1.027	.0289					.0003	.00	.83	.22	.24	.013	.00	.00	PIPE	
135.439	5.426	.795	6.221	1.00	1.05	.02	6.24	.00	.37	1.50	1.500	.000	.00	1	.0
.974	.0289					.0003	.00	.80	.23	.24	.013	.00	.00	PIPE	
136.413	5.454	.765	6.220	1.00	1.10	.02	6.24	.00	.37	1.50	1.500	.000	.00	1	.0
.917	.0289					.0004	.00	.77	.25	.24	.013	.00	.00	PIPE	
137.329	5.481	.737	6.218	1.00	1.16	.02	6.24	.00	.37	1.50	1.500	.000	.00	1	.0
.866	.0289					.0004	.00	.74	.27	.24	.013	.00	.00	PIPE	
138.196	5.506	.711	6.216	1.00	1.21	.02	6.24	.00	.37	1.50	1.500	.000	.00	1	.0
.822	.0289					.0005	.00	.71	.29	.24	.013	.00	.00	PIPE	

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 4:28:38

Dana Point Harbor
Proposed Lateral D4-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
139.018	5.530	.685	6.214	1.00	1.27	.03	6.24	.00	.37	1.49	1.500	.000	.00	1	.0
.774	.0289					.0005	.00	.68	.31	.24	.013	.00	.00	PIPE	
139.791	5.552	.660	6.212	1.00	1.33	.03	6.24	.00	.37	1.49	1.500	.000	.00	1	.0
.731	.0289					.0006	.00	.66	.33	.24	.013	.00	.00	PIPE	
140.523	5.573	.637	6.210	1.00	1.40	.03	6.24	.00	.37	1.48	1.500	.000	.00	1	.0
.685	.0289					.0007	.00	.64	.36	.24	.013	.00	.00	PIPE	
141.208	5.593	.614	6.207	1.00	1.47	.03	6.24	.00	.37	1.48	1.500	.000	.00	1	.0

.648	.0289					.0008	.00	.61	.38	.24	.013	.00	.00	PIPE
141.856	5.612	.593	6.205	1.00	1.54	.04	6.24	.00	.37	1.47	1.500	.000	.00	1 .0
.607	.0289					.0009	.00	.59	.41	.24	.013	.00	.00	PIPE
142.463	5.629	.572	6.201	1.00	1.61	.04	6.24	.00	.37	1.46	1.500	.000	.00	1 .0
.564	.0289					.0010	.00	.57	.44	.24	.013	.00	.00	PIPE
143.027	5.646	.552	6.198	1.00	1.69	.04	6.24	.00	.37	1.45	1.500	.000	.00	1 .0
.132	.0289					.0012	.00	.55	.47	.24	.013	.00	.00	PIPE
143.158	5.649	.533	6.183	1.00	1.78	.05	6.23	.00	.37	1.44	1.500	.000	.00	1 .0
HYDRAULIC JUMP														
143.158	5.649	.241	5.890	1.00	5.45	.46	6.35	.00	.37	1.10	1.500	.000	.00	1 .0
9.692	.0289					.0283	.27	.24	2.35	.24	.013	.00	.00	PIPE

Dana Point Harbor
Proposed Lateral D4-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip	Base Wt or I.D. / ZL
152.850	5.930	.243	6.173	1.00	5.37	.45	6.62	.04	.37	1.11	1.500	.000 .00 1 .0
3.626	.0348					.0260	.09	.29	2.30	.23	.013	.00 .00 PIPE
156.477	6.056	.251	6.307	1.00	5.13	.41	6.72	.04	.37	1.12	1.500	.000 .00 1 .0
2.400	.0348					.0228	.05	.29	2.17	.23	.013	.00 .00 PIPE
158.877	6.140	.260	6.399	1.00	4.89	.37	6.77	.04	.37	1.13	1.500	.000 .00 1 .0
1.686	.0348					.0199	.03	.30	2.03	.23	.013	.00 .00 PIPE
160.563	6.198	.268	6.467	1.00	4.66	.34	6.80	.03	.37	1.15	1.500	.000 .00 1 .0
1.242	.0348					.0174	.02	.30	1.90	.23	.013	.00 .00 PIPE
161.805	6.242	.277	6.519	1.00	4.45	.31	6.83	.03	.37	1.16	1.500	.000 .00 1 .0
.950	.0348					.0152	.01	.31	1.78	.23	.013	.00 .00 PIPE
162.755	6.275	.287	6.561	1.00	4.24	.28	6.84	.03	.37	1.18	1.500	.000 .00 1 .0
.725	.0348					.0133	.01	.32	1.67	.23	.013	.00 .00 PIPE
163.480	6.300	.296	6.596	1.00	4.04	.25	6.85	.00	.37	1.19	1.500	.000 .00 1 .0

1.668	.0179					.0118	.02	.30	1.57	.27	.013	.00	.00	PIPE		
165.148	6.330	.304	6.634	1.00	3.90	.24	6.87	.00	.37	1.21	1.500	.000	.00	1	.0	
1.504	.0179					.0105	.02	.30	1.49	.27	.013	.00	.00	PIPE		
166.652	6.357	.314	6.671	1.00	3.72	.21	6.89	.00	.37	1.22	1.500	.000	.00	1	.0	
1.008	.0179					.0092	.01	.31	1.40	.27	.013	.00	.00	PIPE		

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 4:28:38

Dana Point Harbor
Proposed Lateral D4-Insurance Policy Condition
3-25-14-SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
167.660	6.375	.325	6.700	1.00	3.54	.19	6.89	.00	.37	1.24	1.500	.000	.00	1 .0
.680	.0179					.0080	.01	.33	1.31	.27	.013	.00	.00	PIPE
168.340	6.387	.336	6.723	1.00	3.38	.18	6.90	.00	.37	1.25	1.500	.000	.00	1 .0
.424	.0179					.0070	.00	.34	1.22	.27	.013	.00	.00	PIPE
168.763	6.395	.348	6.742	1.00	3.22	.16	6.90	.00	.37	1.27	1.500	.000	.00	1 .0
.233	.0179					.0061	.00	.35	1.15	.27	.013	.00	.00	PIPE
168.997	6.399	.360	6.758	1.00	3.07	.15	6.90	.00	.37	1.28	1.500	.000	.00	1 .0
.073	.0179					.0053	.00	.36	1.07	.27	.013	.00	.00	PIPE
169.070	6.400	.373	6.773	1.00	2.92	.13	6.91	.00	.37	1.30	1.500	.000	.00	1 .0

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APPENDIX F.6

F.6 Lateral 'D-5'

Dana Point Harbor
Proposed Lateral D5-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
100.000	4.400	1.830	6.230	2.80	1.58	.04	6.27	.00	.64	.00	1.500	.000	.00	1 .0
9.700	.0103					.0007	.01	1.83	.00	.52	.013	.00	.00	PIPE
109.700	4.500	1.737	6.237	2.80	1.58	.04	6.28	.00	.64	.00	1.500	.000	.00	1 .0
6.520	.0092					.0007	.00	.00	.00	.54	.013	.00	.00	PIPE
116.220	4.560	1.684	6.244	2.80	1.58	.04	6.28	.00	.64	.00	1.500	.000	.00	1 .0
JUNCT STR	.0100					.0004	.00	.00	.00		.013	.00	.00	PIPE
121.220	4.610	1.685	6.295	1.40	.79	.01	6.30	.00	.44	.00	1.500	.000	.00	1 .0
16.340	.0098					.0002	.00	.00	.00	.37	.013	.00	.00	PIPE
137.560	4.770	1.529	6.299	1.40	.79	.01	6.31	.00	.44	.00	1.500	.000	.00	1 .0
2.946	.0099					.0002	.00	1.53	.00	.37	.013	.00	.00	PIPE
140.506	4.799	1.500	6.299	1.40	.79	.01	6.31	.00	.44	.00	1.500	.000	.00	1 .0
14.063	.0099					.0002	.00	1.50	.00	.37	.013	.00	.00	PIPE
154.569	4.939	1.361	6.300	1.40	.83	.01	6.31	.00	.44	.87	1.500	.000	.00	1 .0
8.174	.0099					.0002	.00	1.36	.11	.37	.013	.00	.00	PIPE
162.743	5.020	1.280	6.300	1.40	.87	.01	6.31	.00	.44	1.06	1.500	.000	.00	1 .0
6.716	.0099					.0002	.00	1.28	.12	.37	.013	.00	.00	PIPE
169.460	5.086	1.214	6.300	1.40	.91	.01	6.31	.00	.44	1.18	1.500	.000	.00	1 .0
5.863	.0099					.0002	.00	1.21	.14	.37	.013	.00	.00	PIPE

Dana Point Harbor
Proposed Lateral D5-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch

175.322	5.144	1.155	6.300	1.40	.96	.01	6.31	.00	.44	1.26	1.500	.000	.00	1	.0
5.264	.0099					.0002	.00	1.16	.16	.37	.013	.00	.00	PIPE	
180.587	5.197	1.103	6.299	1.40	1.01	.02	6.31	.00	.44	1.32	1.500	.000	.00	1	.0
4.808	.0099					.0002	.00	1.10	.17	.37	.013	.00	.00	PIPE	
185.395	5.244	1.055	6.299	1.40	1.05	.02	6.32	.00	.44	1.37	1.500	.000	.00	1	.0
4.433	.0099					.0003	.00	1.05	.19	.37	.013	.00	.00	PIPE	
189.828	5.288	1.010	6.298	1.40	1.11	.02	6.32	.00	.44	1.41	1.500	.000	.00	1	.0
4.108	.0099					.0003	.00	1.01	.21	.37	.013	.00	.00	PIPE	
193.936	5.329	.969	6.298	1.40	1.16	.02	6.32	.00	.44	1.43	1.500	.000	.00	1	.0
3.843	.0099					.0003	.00	.97	.22	.37	.013	.00	.00	PIPE	
197.779	5.367	.930	6.297	1.40	1.22	.02	6.32	.00	.44	1.46	1.500	.000	.00	1	.0
3.587	.0099					.0004	.00	.93	.24	.37	.013	.00	.00	PIPE	
201.366	5.403	.893	6.296	1.40	1.28	.03	6.32	.00	.44	1.47	1.500	.000	.00	1	.0
3.381	.0099					.0004	.00	.89	.26	.37	.013	.00	.00	PIPE	
204.747	5.436	.859	6.295	1.40	1.34	.03	6.32	.00	.44	1.48	1.500	.000	.00	1	.0
3.173	.0099					.0005	.00	.86	.28	.37	.013	.00	.00	PIPE	
207.921	5.468	.826	6.294	1.40	1.40	.03	6.32	.00	.44	1.49	1.500	.000	.00	1	.0
2.984	.0099					.0006	.00	.83	.30	.37	.013	.00	.00	PIPE	

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 4:56:17

Dana Point Harbor
Proposed Lateral D5-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT) / SF Ave	Water Elev / HF	Q (CFS) / SE Dpth	Vel (FPS) / Froude N	Vel Head / Norm Dp	Energy Grd.El. / "N"	Super Elev / X-Fall	Critical Depth / ZR	Flow Top Width / Type Ch	Height/ Dia.-FT / No Wth Prs/Pip	Base Wt or I.D. /	ZL /
210.904	5.497	.795	6.292	1.40	1.47	.03	6.33	.00	.44	1.50	1.500	.000	.00	1	.0
2.824	.0099					.0006	.00	.80	.33	.37	.013	.00	.00	PIPE	
213.728	5.525	.765	6.291	1.40	1.54	.04	6.33	.00	.44	1.50	1.500	.000	.00	1	.0
2.650	.0099					.0007	.00	.77	.35	.37	.013	.00	.00	PIPE	
216.378	5.551	.737	6.289	1.40	1.62	.04	6.33	.00	.44	1.50	1.500	.000	.00	1	.0
2.495	.0099					.0008	.00	.74	.38	.37	.013	.00	.00	PIPE	
218.873	5.576	.711	6.287	1.40	1.70	.04	6.33	.00	.44	1.50	1.500	.000	.00	1	.0

2.358	.0099					.0009	.00	.71	.40	.37	.013	.00	.00	PIPE	
221.231	5.600	.685	6.284	1.40	1.78	.05	6.33	.00	.44	1.49	1.500	.000	.00	1	.0
2.206	.0099					.0010	.00	.68	.43	.37	.013	.00	.00	PIPE	
223.437	5.621	.660	6.282	1.40	1.87	.05	6.34	.00	.44	1.49	1.500	.000	.00	1	.0
2.071	.0099					.0012	.00	.66	.46	.37	.013	.00	.00	PIPE	
225.507	5.642	.637	6.279	1.40	1.96	.06	6.34	.00	.44	1.48	1.500	.000	.00	1	.0
1.919	.0099					.0013	.00	.64	.50	.37	.013	.00	.00	PIPE	
227.426	5.661	.614	6.275	1.40	2.05	.07	6.34	.00	.44	1.48	1.500	.000	.00	1	.0
1.795	.0099					.0015	.00	.61	.53	.37	.013	.00	.00	PIPE	
229.221	5.679	.593	6.272	1.40	2.16	.07	6.34	.00	.44	1.47	1.500	.000	.00	1	.0
1.652	.0099					.0017	.00	.59	.57	.37	.013	.00	.00	PIPE	

Dana Point Harbor
Proposed Lateral D5-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
230.873	5.695	.572	6.267	1.40	2.26	.08	6.35	.00	.44	1.46	1.500	.000	.00	1	.0
1.498	.0099					.0020	.00	.57	.61	.37	.013	.00	.00	PIPE	
232.371	5.710	.552	6.262	1.40	2.37	.09	6.35	.00	.44	1.45	1.500	.000	.00	1	.0
1.357	.0099					.0023	.00	.55	.65	.37	.013	.00	.00	PIPE	
233.728	5.723	.533	6.257	1.40	2.49	.10	6.35	.00	.44	1.44	1.500	.000	.00	1	.0
.515	.0099					.0026	.00	.53	.70	.37	.013	.00	.00	PIPE	
234.244	5.729	.515	6.243	1.40	2.61	.11	6.35	.00	.44	1.42	1.500	.000	.00	1	.0
HYDRAULIC JUMP															
234.244	5.729	.371	6.099	1.40	4.12	.26	6.36	.00	.44	1.29	1.500	.000	.00	1	.0
184.606	.0099					.0099	1.83	.37	1.42	.37	.013	.00	.00	PIPE	
418.850	7.559	.371	7.929	1.40	4.12	.26	8.19	.00	.44	1.29	1.500	.000	.00	1	.0
20.290	.0099					.0099	.20	.37	1.42	.37	.013	.00	.00	PIPE	
439.140	7.760	.371	8.131	1.40	4.12	.26	8.39	.03	.44	1.29	1.500	.000	.00	1	.0

16.463	.0099					.0099	.16	.40	1.42	.37	.013	.00	.00	PIPE
455.603	7.923	.371	8.294	1.40	4.12	.26	8.56	.03	.44	1.29	1.500	.000	.00	1 .0
18.887	.0099					.0098	.19	.40	1.42	.37	.013	.00	.00	PIPE
474.490	8.110	.372	8.482	1.40	4.10	.26	8.74	.00	.44	1.30	1.500	.000	.00	1 .0
17.567	.0098					.0097	.17	.37	1.41	.37	.013	.00	.00	PIPE

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 4:56:17

Dana Point Harbor
Proposed Lateral D5-Insurance Policy Condition
3-25-14-SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
492.057	8.282	.373	8.655	1.40	4.08	.26	8.91	.00	.44	1.30	1.500	.000	.00	1 .0
14.872	.0098					.0091	.13	.37	1.40	.37	.013	.00	.00	PIPE
506.928	8.427	.386	8.813	1.40	3.89	.24	9.05	.00	.44	1.31	1.500	.000	.00	1 .0
4.353	.0098					.0079	.03	.39	1.31	.37	.013	.00	.00	PIPE
511.282	8.470	.399	8.869	1.40	3.71	.21	9.08	.00	.44	1.33	1.500	.000	.00	1 .0
1.979	.0098					.0069	.01	.40	1.23	.37	.013	.00	.00	PIPE
513.261	8.489	.413	8.902	1.40	3.54	.19	9.10	.00	.44	1.34	1.500	.000	.00	1 .0
.880	.0098					.0061	.01	.41	1.15	.37	.013	.00	.00	PIPE
514.140	8.497	.427	8.925	1.40	3.37	.18	9.10	.00	.44	1.35	1.500	.000	.00	1 .0
.260	.0098					.0053	.00	.43	1.07	.37	.013	.00	.00	PIPE
514.400	8.500	.443	8.943	1.40	3.21	.16	9.10	.00	.44	1.37	1.500	.000	.00	1 .0

†

APPENDIX F.7

F.7 Lateral 'D-6'

Dana Point Harbor
Proposed Lateral D-6 - Insurance Policy Condition
3/26/14 SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
100.000	4.610	1.690	6.300	1.40	.79	.01	6.31	.00	.44	.00	1.500	.000	.00	1 .0
1.951	.0976					.0002	.00	1.69	.00	.21	.013	.00	.00	PIPE
101.951	4.800	1.500	6.300	1.40	.79	.01	6.31	.00	.44	.00	1.500	.000	.00	1 .0
1.408	.0976					.0002	.00	1.50	.00	.21	.013	.00	.00	PIPE
103.358	4.938	1.361	6.299	1.40	.83	.01	6.31	.00	.44	.87	1.500	.000	.00	1 .0
.818	.0976					.0002	.00	1.36	.11	.21	.013	.00	.00	PIPE
104.177	5.018	1.280	6.298	1.40	.87	.01	6.31	.00	.44	1.06	1.500	.000	.00	1 .0
.672	.0976					.0002	.00	1.28	.12	.21	.013	.00	.00	PIPE
104.848	5.083	1.214	6.297	1.40	.91	.01	6.31	.00	.44	1.18	1.500	.000	.00	1 .0
.585	.0976					.0002	.00	1.21	.14	.21	.013	.00	.00	PIPE
105.434	5.140	1.155	6.295	1.40	.96	.01	6.31	.00	.44	1.26	1.500	.000	.00	1 .0
.525	.0976					.0002	.00	1.16	.16	.21	.013	.00	.00	PIPE
105.958	5.191	1.103	6.294	1.40	1.01	.02	6.31	.00	.44	1.32	1.500	.000	.00	1 .0
.478	.0976					.0002	.00	1.10	.17	.21	.013	.00	.00	PIPE
106.436	5.238	1.055	6.293	1.40	1.05	.02	6.31	.00	.44	1.37	1.500	.000	.00	1 .0
.440	.0976					.0003	.00	1.05	.19	.21	.013	.00	.00	PIPE
106.876	5.281	1.010	6.291	1.40	1.11	.02	6.31	.00	.44	1.41	1.500	.000	.00	1 .0
.406	.0976					.0003	.00	1.01	.21	.21	.013	.00	.00	PIPE

Dana Point Harbor
Proposed Lateral D-6 - Insurance Policy Condition
3/26/14 SS

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch

107.282	5.321	.969	6.289	1.40	1.16	.02	6.31	.00	.44	1.43	1.500	.000	.00	1	.0
.379	.0976					.0003	.00	.97	.22	.21	.013	.00	.00	PIPE	
107.660	5.357	.930	6.287	1.40	1.22	.02	6.31	.00	.44	1.46	1.500	.000	.00	1	.0
.352	.0976					.0004	.00	.93	.24	.21	.013	.00	.00	PIPE	
108.012	5.392	.893	6.285	1.40	1.28	.03	6.31	.00	.44	1.47	1.500	.000	.00	1	.0
.330	.0976					.0004	.00	.89	.26	.21	.013	.00	.00	PIPE	
108.342	5.424	.859	6.283	1.40	1.34	.03	6.31	.00	.44	1.48	1.500	.000	.00	1	.0
.308	.0976					.0005	.00	.86	.28	.21	.013	.00	.00	PIPE	
108.651	5.454	.826	6.280	1.40	1.40	.03	6.31	.00	.44	1.49	1.500	.000	.00	1	.0
.288	.0976					.0006	.00	.83	.30	.21	.013	.00	.00	PIPE	
108.939	5.482	.795	6.277	1.40	1.47	.03	6.31	.00	.44	1.50	1.500	.000	.00	1	.0
.271	.0976					.0006	.00	.80	.33	.21	.013	.00	.00	PIPE	
109.209	5.509	.765	6.274	1.40	1.54	.04	6.31	.00	.44	1.50	1.500	.000	.00	1	.0
.252	.0976					.0007	.00	.77	.35	.21	.013	.00	.00	PIPE	
109.461	5.533	.737	6.270	1.40	1.62	.04	6.31	.00	.44	1.50	1.500	.000	.00	1	.0
.230	.0976					.0008	.00	.74	.38	.21	.013	.00	.00	PIPE	
109.691	5.556	.711	6.266	1.40	1.70	.04	6.31	.00	.44	1.50	1.500	.000	.00	1	.0

HYDRAULIC JUMP

Program Package Serial Number: 1863

WATER SURFACE PROFILE LISTING Date: 3-26-2014 Time: 5: 0:57

Dana Point Harbor
Proposed Lateral D-6 - Insurance Policy Condition
3/26/14 SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
109.691	5.556	.250	5.806	1.40	7.23	.81	6.62	.00	.44	1.12	1.500	.000	.00	1 .0
.065	.0976					.0456	.00	.25	3.06	.21	.013	.00	.00	PIPE
109.756	5.562	.258	5.820	1.40	6.89	.74	6.56	.00	.44	1.13	1.500	.000	.00	1 .0
1.011	.0976					.0398	.04	.26	2.87	.21	.013	.00	.00	PIPE
110.767	5.661	.267	5.928	1.40	6.57	.67	6.60	.00	.44	1.15	1.500	.000	.00	1 .0
.828	.0976					.0348	.03	.27	2.69	.21	.013	.00	.00	PIPE
111.595	5.741	.276	6.018	1.40	6.27	.61	6.63	.00	.44	1.16	1.500	.000	.00	1 .0

.687	.0976					.0304	.02	.28	2.52	.21	.013	.00	.00	PIPE	
112.282	5.808	.285	6.094	1.40	5.98	.55	6.65	.00	.44	1.18	1.500	.000	.00	1	.0
.574	.0976					.0266	.02	.29	2.36	.21	.013	.00	.00	PIPE	
112.857	5.865	.295	6.160	1.40	5.70	.50	6.66	.00	.44	1.19	1.500	.000	.00	1	.0
.482	.0976					.0232	.01	.30	2.21	.21	.013	.00	.00	PIPE	
113.338	5.911	.305	6.217	1.40	5.43	.46	6.67	.00	.44	1.21	1.500	.000	.00	1	.0
.404	.0976					.0203	.01	.31	2.07	.21	.013	.00	.00	PIPE	
113.742	5.951	.315	6.266	1.40	5.18	.42	6.68	.00	.44	1.22	1.500	.000	.00	1	.0
.340	.0976					.0177	.01	.32	1.94	.21	.013	.00	.00	PIPE	
114.083	5.984	.326	6.310	1.40	4.94	.38	6.69	.00	.44	1.24	1.500	.000	.00	1	.0
.284	.0976					.0155	.00	.33	1.82	.21	.013	.00	.00	PIPE	

Dana Point Harbor
Proposed Lateral D-6 - Insurance Policy Condition
3/26/14 SS

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
114.367	6.012	.337	6.349	1.40	4.71	.34	6.69	.00	.44	1.25	1.500	.000	.00	1	.0
.236	.0976					.0135	.00	.34	1.70	.21	.013	.00	.00	PIPE	
114.602	6.035	.349	6.384	1.40	4.49	.31	6.70	.00	.44	1.27	1.500	.000	.00	1	.0
.192	.0976					.0118	.00	.35	1.59	.21	.013	.00	.00	PIPE	
114.794	6.054	.361	6.414	1.40	4.28	.28	6.70	.00	.44	1.28	1.500	.000	.00	1	.0
.154	.0976					.0104	.00	.36	1.49	.21	.013	.00	.00	PIPE	
114.949	6.069	.373	6.442	1.40	4.08	.26	6.70	.00	.44	1.30	1.500	.000	.00	1	.0
.121	.0976					.0091	.00	.37	1.40	.21	.013	.00	.00	PIPE	
115.070	6.080	.386	6.466	1.40	3.89	.24	6.70	.00	.44	1.31	1.500	.000	.00	1	.0
.090	.0976					.0079	.00	.39	1.31	.21	.013	.00	.00	PIPE	
115.160	6.089	.399	6.488	1.40	3.71	.21	6.70	.00	.44	1.33	1.500	.000	.00	1	.0
.062	.0976					.0069	.00	.40	1.23	.21	.013	.00	.00	PIPE	
115.222	6.095	.413	6.508	1.40	3.54	.19	6.70	.00	.44	1.34	1.500	.000	.00	1	.0

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.036	.0976					.0061	.00	.41	1.15	.21	.013	.00	.00	PIPE					
115.257	6.099	.427	6.526	1.40	3.37	.18	6.70	.00	.44	1.35	1.500	.000	.00	1	.0				
.013	.0976					.0053	.00	.43	1.07	.21	.013	.00	.00	PIPE					
115.270	6.100	.443	6.543	1.40	3.21	.16	6.70	.00	.44	1.37	1.500	.000	.00	1	.0				

♀

APPENDIX G

10-Year Proposed Condition Hydrology Map

DANA POINT HARBOR REVITALIZATION

COUNTY OF ORANGE
DANA POINT HARBOR DRIVE
DANA POINT, CALIFORNIA

PROJECT DIMENSIONS

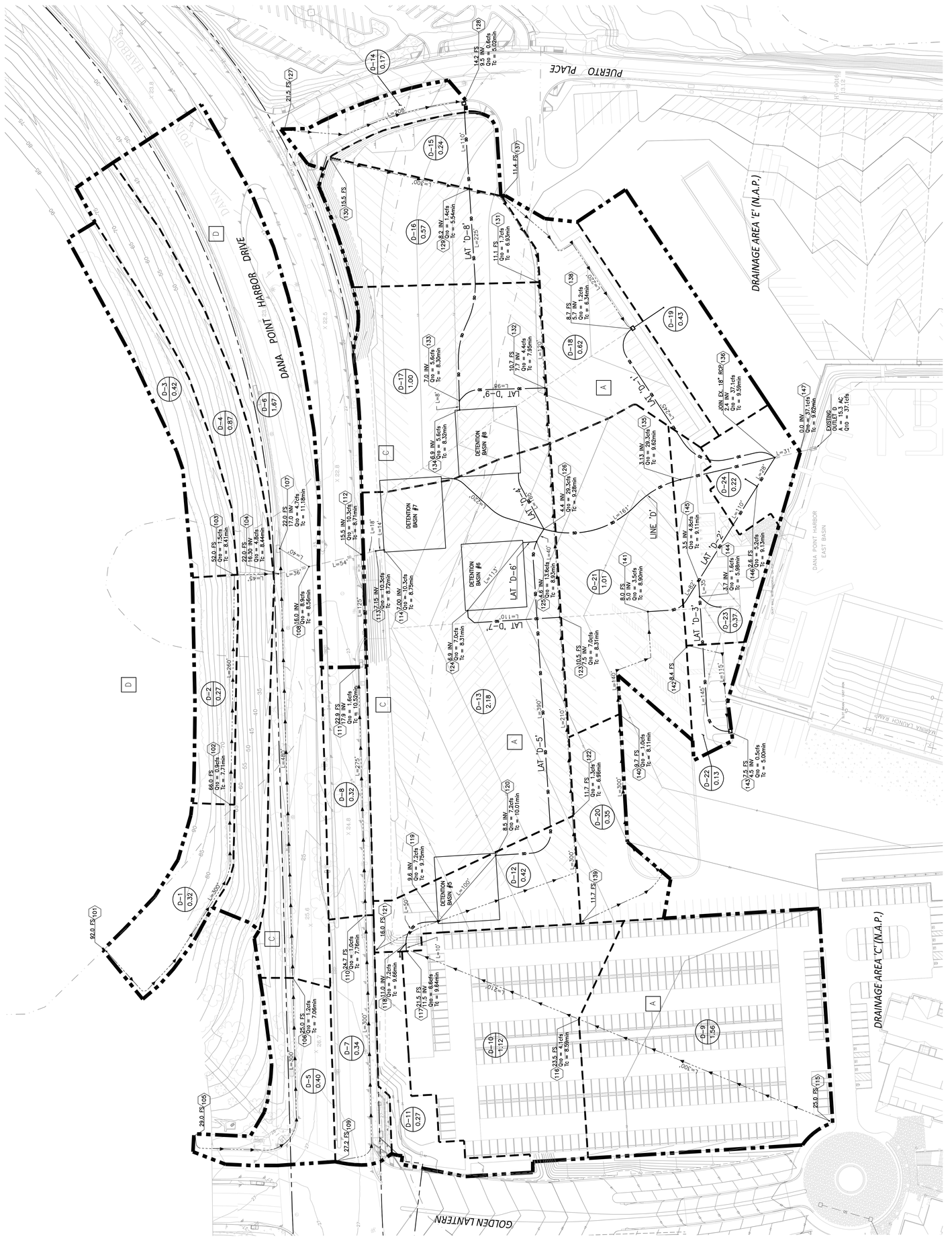
FUSCOE ENGINEERING
16795 Von Karman, Suite 100
Irvine, California 92606
tel 949.474.1960 • fax 949.474.5315
www.fuscoe.com

DATE: 3/27/14
PROJECT #: 307.08.01
SCALE:

NORTH
SHEET #: C-1

PROPOSED WATERSHED 'D' INTERIM DRAINAGE HYDROLOGY MAP

SCALE: 1" = 40'



LEGEND

- PROPOSED MAJOR DRAINAGE BOUNDARY
- PROPOSED MINOR DRAINAGE BOUNDARY
- PROPOSED STORM DRAIN PIPE
- EXISTING STORM DRAIN PIPE
- A — SOIL GROUP DESIGNATION
- SOIL GROUP BOUNDARY