Hydrology Study

Dixie State University
New Student Housing

REGISTERED PROFESSIONAL ENGINEER
5/28/15
NO. 5834913
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MADSEN
STATE OF UTAH

May 2015

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Part I. Introduction

This report is being prepared for the proposed Dixie State University (DSU) New Student Housing Project located on the DSU campus in St. George, Utah. The purpose of this report is to analyze existing and proposed hydrologic conditions, evaluate changes, and establish recommendations to mitigate such changes based on City of St. George hydrology requirements and guidelines. Additionally, it has been historically observed that flows within the adjacent roadway may result in flooding of the site. Further analysis of this roadway will be included with this report.

A. Study Area Location

The property is located at 1000 East 100 South in St. George, Utah. The proposed project will ultimately build out to consist of several multi-level student housing units with footprints of approximately 20,000 square feet all located on the DSU property. The scope of this report will only cover the first unit and associated site improvements, which is to be located on the northwest corner of the site. See **Appendix A, Exh 1 Existing Conditions Plan** for the study area.

B. Pre-Development Conditions

The overall area of the site is approximately two acres. It is currently being used as a grass field with mild slopes of about 3%-4% draining to the south. There are sections of concrete and asphalt along the north, west and south edges of the site. It is surrounded by 100 South Street to the north; housing units and landscaping to the east; and parking and DSU facilities to the west and south. As the site is covered in either hardscape or grass, there are no significant drainage channels that have developed from site runoff.

Runoff from the property drains to the south, through the DSU campus, into the City of St. George roadways and drainage system, and ultimately is conveyed into the Virgin River, which is located approximately two miles downstream to the south. There are no tributary flows onto the site from the east or west, and tributary flows from the north are assumed to be intercepted by 100 South Street. As part of this report, the capacity of 100 South Street will be analyzed to verify tributary flows will not overflow onto the site during a significant storm event. The study area was verified to be located outside of a FEMA flood hazard area as shown on Panels 49053C1027G and 49053C1031G, dated April 2, 2009 (see **Appendix A, Exh 3 FEMA Floodplain Exhibit**).

C. Post-Development Conditions

The proposed development consists of re-grading the site and the construction of a new housing unit with associated site and utility improvements. Site improvements will include concrete sidewalk, desert and grass landscaping, and an asphalt roundabout. The site will be graded to maintain drainage to the south with a small portion being redirected north into 100 South. Storm runoff for the site will be conveyed through gutter and channels with the exception of runoff for the building which will be conveyed through roof drains and subsurface storm drain. It is also anticipated that french drains will be required to intercept and convey groundwater around the building to daylight. See **Appendix A, Exh 2 Proposed Site Plan** for the proposed layout of the site.

As required by city code, flows leaving the site will be equal to or lower than the pre-development conditions. In addition, any points along the downstream ends of the site where storm runoff flow characteristics are modified (ie. sheet flow versus point discharges), proper mitigation and erosion control methods will be incorporated to match pre-development conditions as much as possible.

Part II. Methodology

A. Software

The *HEC-1 Flood Hydrograph Package* developed by the United States Army Corps of Engineers as revised June 1, 1988 was used to determine the flows for this study.

B. Soils Classification

The soils classification was obtained from the *Soil Survey of Washington County Area, Utah* published by the U.S. Soil Conservation Service. The soil type for this site is *Sb*, which is classified as hydrologic group "C". See to **Appendix A, Exh 4 Soil Exhibit** for an exhibit reflecting soil types in the vicinity of the site.

C. Precipitation

Precipitation analysis was based on a 3-hour duration storm with estimates for the 100-year and 10-year events. The precipitation values for the 100-year and 10-year events for this study area are 2.26 and 1.40 inches, respectively, as taken from *City of St. George: Drainage Guidelines & Hydrology Manual*.

Part III. Hydrologic Analysis

A. Drainage Basins

The subbasins for the pre-development and post-development conditions were delineated based on existing and the estimated final topography and are shown in Appendix A, Exh 5 and 6. For the pre-development conditions, the site was treated as two subbasins. *Subbasin E1* drains into the southeast parking lot and *Subbasin E2* drains to the southwest. For the post-development conditions, the site was treated as four subbasins. *Subbasin P1* is the building footprint draining through subsurface storm drains to the southeast, *Subbasin P2* drains north into 100 South, *Subbasin P3* drains into the southeast parking lot, and *Subbasin P4* drains to the southwest.

To verify flows in 100 South, an additional subbasin was analyzed covering the tributary basin to the north of the study area. Delineation of this subbasin was taken from the *City of St. George Storm Drain Master Plan* and is referred to in this study as *Subbasin T1*. The areas and characteristics of each of the drainage subbasins are discussed in the following sections and summarized in **Appendix B, Tables I and II**.

B. SCS Curve Numbers

The SCS Curve Numbers used in this drainage study are shown in **Appendix B, Table IA and IB**. The study area for pre- and post-development conditions is considered to have ground covers of either *Open Space (Good Condition)* or *Impervious*. As mentioned in **Section II.B**, the soils are classified into hydrologic group "C". The curve numbers were prorated by area and the composite curve numbers for each subbasin are as follows:

Subbasin	Area	Composite Curve Number
E1	0.8 acres	81
E2	1.2 acres	77
P1	0.5 acres	98
P2	0.2 acres	79
P3	0.4 acres	91
P4	0.9 acres	89
T1*	83.5 acres	91

Subbasin T1 is assumed to be 100% Urban District (Industrial).

C. Times of Concentration

The time of concentration for each subbasin was calculated using equations out of the *Clark County Drainage Manual* and *City of St. George: Drainage Guidelines & Hydrology Manual*. The calculations were iteratively calibrated with flows generated in the HEC-1 model and are summarized in **Appendix B, Table II**, which also shows the equations used in calculating the time of concentration.

D. Flows

The peak flows calculated in the HEC-1 analysis – along with the subbasins' areas and composite curve numbers – are summarized in the following table:

Subbasin	Area	Composite Curve Number	100-year Peak Flow	10-year Peak Flow
E1	0.8 acres	81	1 cfs	<1 cfs
E2	1.2 acres	77	1 cfs	<1 cfs
Total Existing	**2.0 acres**	**80**	**1 cfs**	**<1 cfs**
P1	0.5 acres	98	2 cfs	1 cfs
P2	0.2 acres	79	<1 cfs	<1 cfs
P3	0.4 acres	91	1 cfs	<1 cfs
P4	0.9 acres	89	1 cfs	1 cfs
Total Proposed	**2.0 acres**	**91**	**3 cfs**	**1 cfs**
T1	83.5 acres	91	129 cfs	59 cfs

The output from the HEC-1 model is shown in **Appendix D**.

E. Detention Requirements & Recommendations

As shown in the flow tables above, there is an increase in runoff of approximately 2 cfs between the pre- and post- development conditions, and therefore, detention is required. By comparing the hydrographs produced in the HEC-1 model, the required detention volume is 5,100 cubic feet (see **Appendix C** for calculations). Due to site constraints, it is recommended that detention be obtained through subsurface pipe storage. Based on preliminary design, there is approximately 750 feet of pipe to be installed downstream in an easterly and southerly direction before daylighting into 1000 East. The required diameter of pipe at this length to meet the required detention volume is 36 inches. An 8-inch diameter pipe would need to be installed on the downstream end prior to daylighting in order to limit flows to 1 cfs and cause the upstream detention pipe to fill up.

According to the HEC-1 model, *Subbasin T1* has a peak 100-year flow of 129 cfs, which is consistent with the *City of St. George Drainage Master Plan's* flow for this basin of 136 cfs. This

flow exceeds the capacity of 100 South Street and overtops the existing berm. It is recommended that the existing berm be raised one foot to reduce the chance of flows overtopping the berm. Raising the berm will also provide freeboard to further reduce overtopping as flows are forced from southerly direction to an easterly direction. Velocities within 100 South Street may potentially reach up to 4 feet per second. The velocity coupled with the change in flow direction creates a higher potential for scour and erosion along the berm due to turbulence within the flow. It is further recommended to line the berm with large rip rap, pavers, or other erosion-resistant landscaping.

Part IV. Conclusion

A hydrologic analysis was performed for the proposed DSU Student Housing Project.. The 100- and 10-year design storms were modeled to determine changes in runoff due to the proposed development, in which the pre-development conditions were compared to the post-development conditions. Detention is required during the 100-yr storm and is recommended to be accomplished through sub-surface storm drain. Surface drainage for this site will otherwise be accomplished through site grading and roadway curb and gutters. Flows within 100 South Street were also analyzed against the existing capacity within the roadway. To avoid overtopping the roadway, the existing berm along the south side of 100 South will need to be raised by one foot.

Appendix A. Figures

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DATE	MAY 28, 2015
SCALE	AS NOTED
SHEET	EXH 1
	1 of 7
FILE	1111-02 HYD.DWG

TITLE

EXISTING SITE PLAN

PROJECT

DSU STUDENT HOUSING
ST. GEORGE, UTAH

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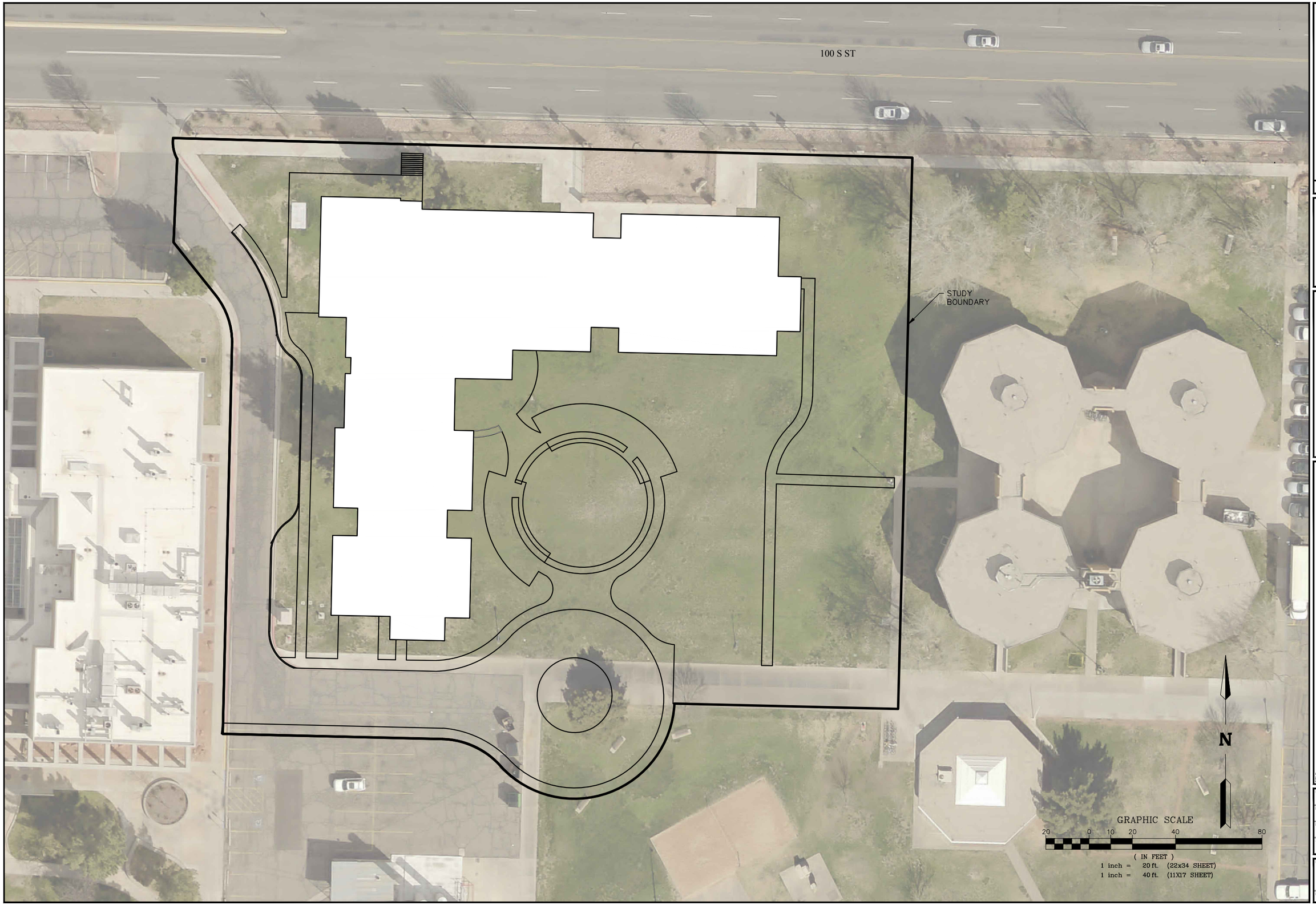

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TITLE
PROPOSED SITE PLAN

PROJECT
DSU STUDENT HOUSING
ST. GEORGE, UTAH

PROJECT # 1111-02
NAME JTM
DATE MAY 28, 2015
SCALE AS NOTED

SHEET
EXH 2
2 OF 7

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TITLE: FEMA FLOODPLAIN EXHIBIT

PROJECT: DSU STUDENT HOUSING
ST. GEORGE, UTAH

PROJECT # 1111-02
NAME JTM
DATE MAY 28, 2015
SCALE AS NOTED
SHEET EXH 3
3 OF 7
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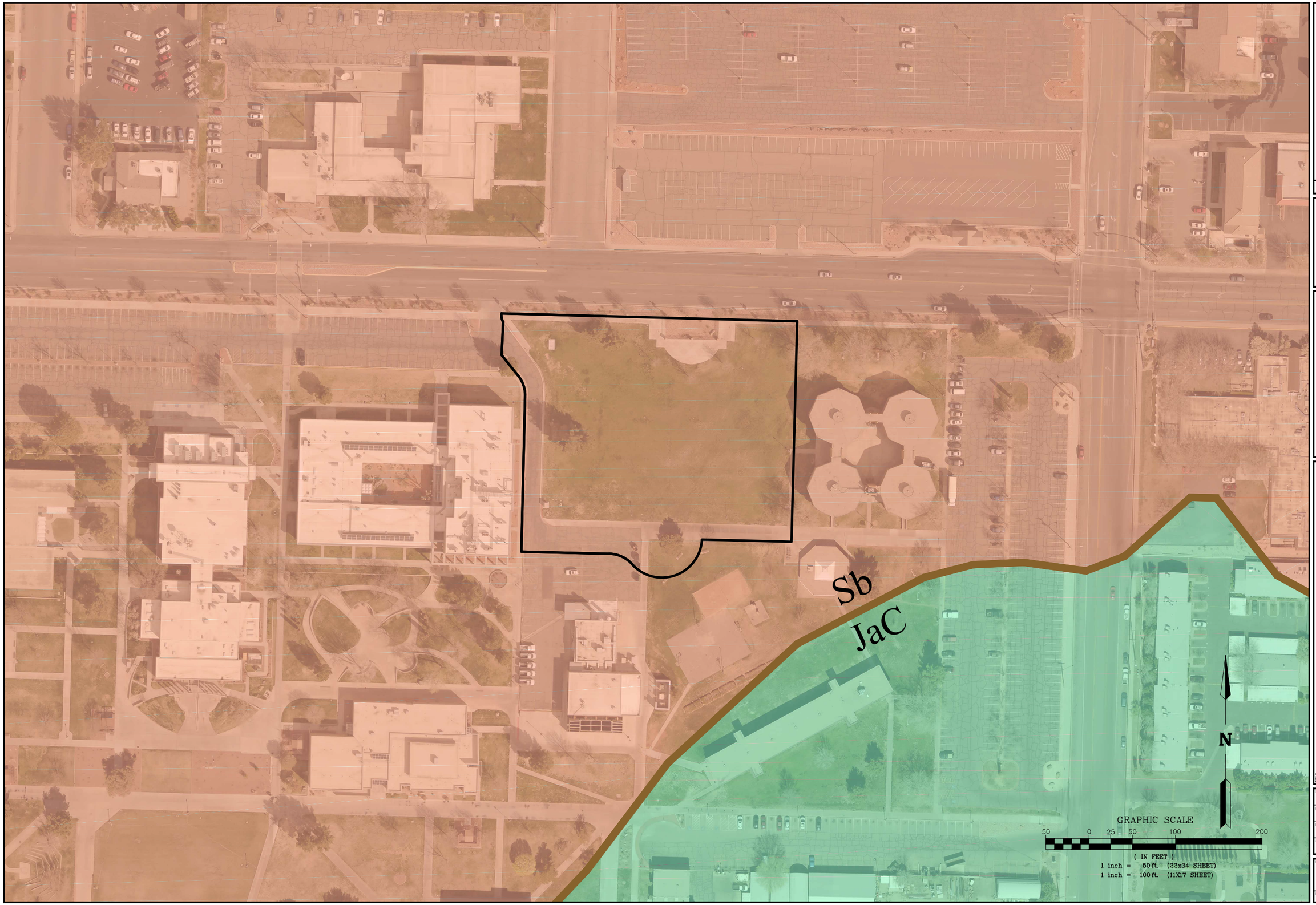

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TITLE
SOILS EXHIBIT

PROJECT
DSU STUDENT HOUSING
ST. GEORGE, UTAH

PROJECT #	1111-02
NAME	JTM
DATE	MAY 28, 2015
SCALE	AS NOTED
SHEET	EXH 4
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TITLE: EXISTING BASINS EXHIBIT

PROJECT: DSU STUDENT HOUSING
ST. GEORGE, UTAH

PROJECT #	1111-02
NAME	JTM
DATE	MAY 28, 2015
SCALE	AS NOTED
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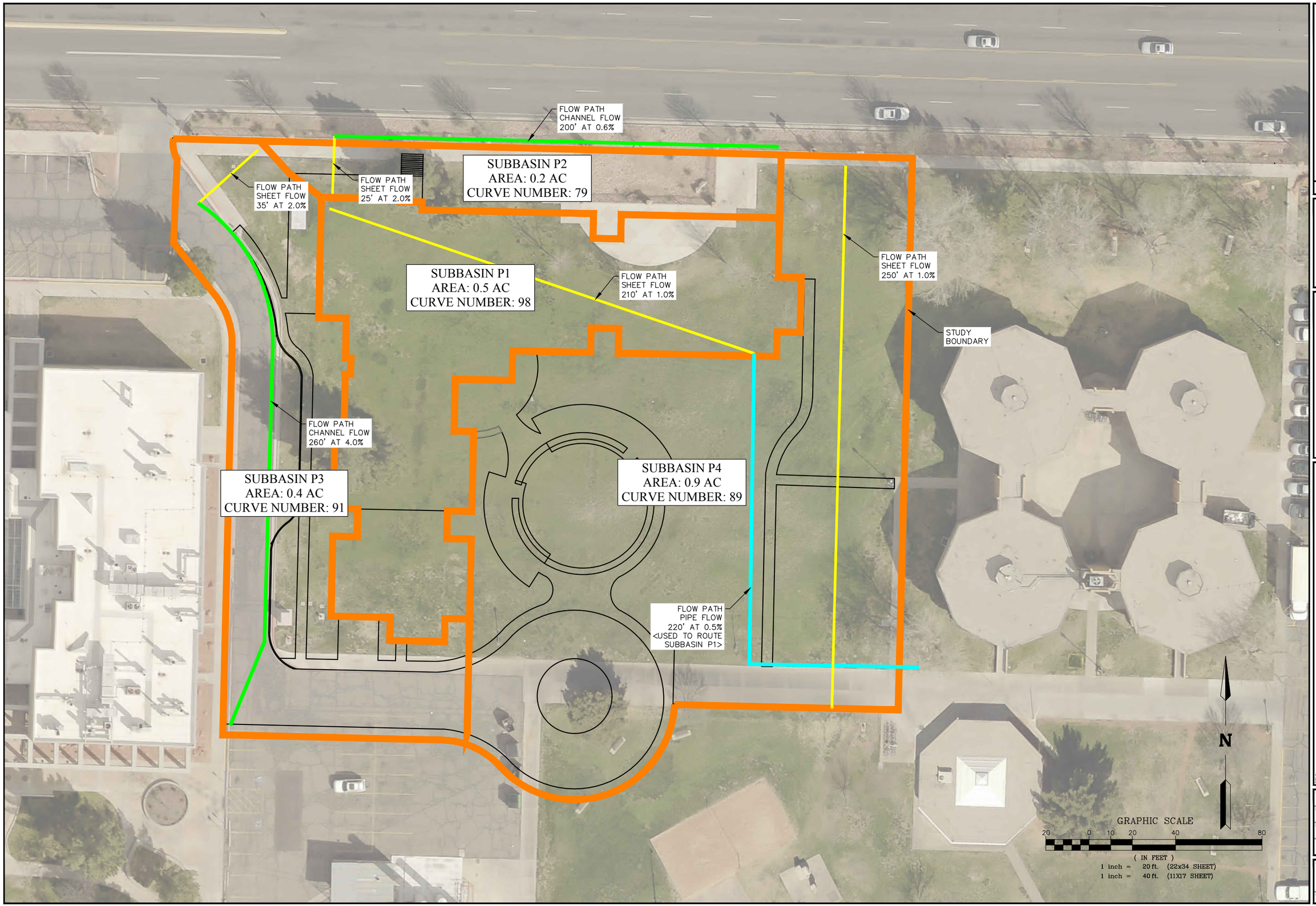

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TITLE
PROPOSED BASINS EXHIBIT

PROJECT
DSU STUDENT HOUSING
ST. GEORGE, UTAH

PROJECT #	1111-02
NAME	JTM
DATE	MAY 28, 2015
SCALE	AS NOTED
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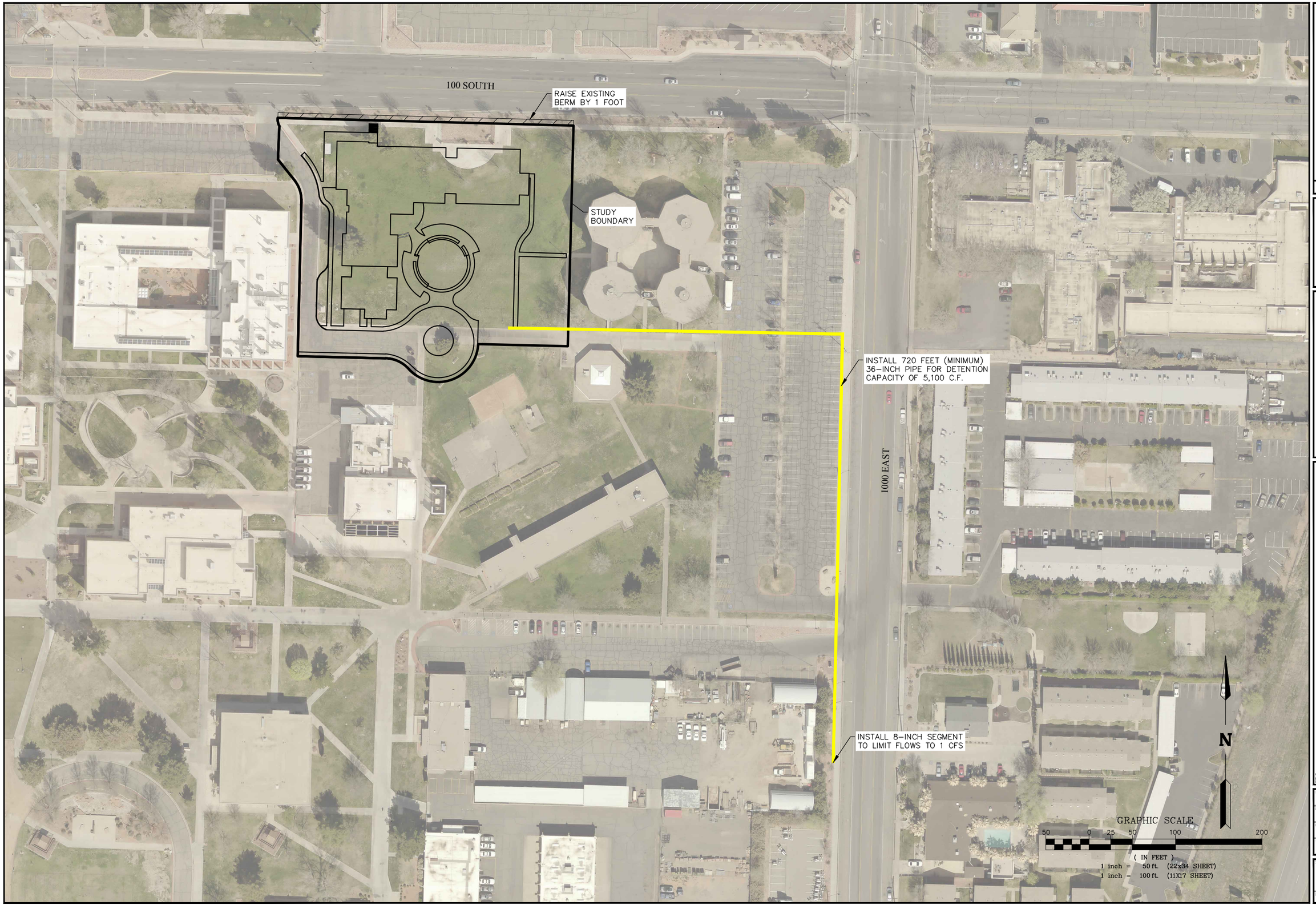

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TITLE: RECOMMENDATIONS EXHIBIT

PROJECT: DSU STUDENT HOUSING
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PROJECT # 1111-02
NAME JTM
DATE MAY 28, 2015
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Appendix B. Tables

TABLE IA
SCS CURVE NUMBERS

COVER DESCRIPTION		HYDROLOGIC SOIL GROUP			
COVER TYPE AND HYDROLOGIC CONDITION	% IMPERVIOUS	A	B	C	D
OPEN SPACE (lawns, parks, golf courses, etc.):					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
IMPERVIOUS AREAS:					
Paved parking lots, roofs, driveways, etc.		98	98	98	98
Streets and Roads:					
Paved; curbs & storm sewers		98	98	98	98
Paved; open ditches		83	89	92	93
Gravel		76	85	89	91
Dirt		72	82	87	89
WESTERN DESERT URBAN AREAS:					
Natural desert landscaping		63	77	85	88
Artificial desert landscaping		96	96	96	96
URBAN DISTRICTS:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
RESIDENTIAL DISTRICTS:					
1/8 acre or less	65	77	85	90	92
1/4 acre or less	38	61	75	83	87
1/3 acre or less	30	57	72	81	86
1/2 acre or less	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
OTHER AGRICULTURAL LANDS – Pasture, grasslands, or range					
Poor Condition		68	79	86	89
Fair Condition		49	69	79	84
Good Condition		39	61	74	80
NEWLY GRADED AREAS (no vegetation)		77	86	91	94
DESERT SHRUB:					
Poor condition (ground cover < 30%)		63	77	85	88
Fair condition (ground cover 30% to 70%)		55	72	81	86
Good condition (ground cover > 70%)		49	68	79	84

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TABLE IB
SCS Composite Curve Numbers

Basin	Hydrologic Group C		Combined Curve Number
	Open Space Good	Impervious	
	74	98	
E1	70%	30%	81
E2	87%	13%	77
P1	0%	100%	98
P2	78%	22%	79
P3	29%	71%	91
P4	39%	61%	89

TABLE II
Time of Concentration Calculations

Sub-Basin Data				Flow Path	Flows			Sheet Flow Time (t_i)			Channel Flow Time (t_t)										Pipe Flow Time (t_p)							Final (t_c)	Lag Time (t_l)
	k	Area	CN		Q_i	Q_f	Q_{ave}	Length	Slope	t_i	Length	Slope	Bank Slope L	Bank Slope R	Width	n	Y_n	Area	Velocity	t_t	Length	Slope	Diameter	n	Hydraulic Radius	Velocity	t_p	t_c	t_l
		ac			cfs	cfs	cfs	ft	%	min	ft	%	H:V	H:V	ft		ft	ft^2	fps	min	ft	%	in		ft	fps	min	min	min
E1	0.682	0.8	81	Sheet	0.0	1.0*	0.5	320	3.8%	40.05																		40.05	24.03
																											Total =	40.05	24.03
E2	0.628	1.2	77	Sheet	0.0	1.0*	0.5	295	4.1%	42.32																		42.32	25.39
																											Total =	42.32	25.39
P1	0.904	0.5	98	Sheet	0.0	2.0*	1.0	210	1.0%	23.78																		23.78	14.27
																											Total =	23.78	14.27
P2	0.653	0.2	79	Sheet	0.0	0.1	0.0	25	2.0%	14.83																		14.83	8.90
				Gutter	0.1	0.5*	0.3				200	0.6%	25	0	25	0.012	0.02	0.45	0.61	5.45								5.45	3.27
																											Total =	20.28	12.17
P3	0.812	0.4	91	Sheet	0.0	0.1	0.1	35	2.0%	11.31																		11.31	6.79
				Gutter	0.1	1.0*	0.6				260	4.7%	25	0	25	0.012	0.02	0.38	1.48	2.93								2.93	1.76
																											Total =	14.24	8.54
P4	0.656	0.9	79	Sheet	0.0	1.0*	0.5	250	1.0%	58.59																		58.59	35.15
																											Total =	58.59	35.15
T1	0.811	83.5	91	Sheet	0.0	0.0	0.0	100	2.0%	19.15																		19.15	11.49
				Gutter	0.0	1.0*	0.5				2,100	7.5%	25	0	25	0.012	0.01	0.30	1.73	20.21								20.21	12.12
																											Total =	39.36	23.62

$k = 0.0132 (CN) - 0.39$

$t_i = 1.8 (1.1 - k) L^{(1/2)} / S^{(1/3)}$

$Y_n = (1.4861 / n) A R^{2/3} S^{1/2}$

$t_t = V / L$

$t_p = (1.49 / n) R^{0.67} S^{0.50}$

$t_c = t_i + t_t + t_p$

$t_l = 0.6 \times t_c$

* Flow calibrated using HEC-1 Software.

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Appendix C. Calculations

Detention Calcs
DSU New Housing

Flow Limit 1 cfs

Time	Pre-Dev Flow	Post-Dev Flow	Detention	Detention
HRMN	cfs	cfs	cfs	cf
35	0	0	0	0
40	0	4	3	900
45	0	2	1	300
50	0	3	2	600
55	1	3	2	600
100	1	3	2	600
105	1	3	2	600
110	1	2	1	300
115	1	2	1	300
120	1	2	1	300
125	1	2	1	300
130	1	2	1	300
135	1	1	0	0
140	1	1	0	0
145	1	1	0	0
150	1	1	0	0
155	0	1	0	0
200	0	1	0	0
205	0	1	0	0
210	0	0	0	0
			Total	5100

Worksheet for Circular Pipe - 1

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.00700	ft/ft
Normal Depth	0.67	ft
Diameter	8.00	in
Discharge	1.01	ft^3/s

Results

Discharge	1.01	ft^3/s
Normal Depth	0.67	ft
Flow Area	0.35	ft^2
Wetted Perimeter	2.10	ft
Hydraulic Radius	0.17	ft
Top Width	0.00	ft
Critical Depth	0.48	ft
Percent Full	100.0	%
Critical Slope	0.00943	ft/ft
Velocity	2.90	ft/s
Velocity Head	0.13	ft
Specific Energy	0.80	ft
Froude Number	0.00	
Maximum Discharge	1.09	ft^3/s
Discharge Full	1.01	ft^3/s
Slope Full	0.00700	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.48	ft
Channel Slope	0.00700	ft/ft
Critical Slope	0.00943	ft/ft

Worksheet for Irregular Section - 1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	136.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	7.99
0+11	7.51
0+11	7.00
0+13	7.16
0+28	7.70
0+53	7.16
0+55	7.00
0+55	7.50
0+63	7.66
0+66	8.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 7.99)	(0+11, 7.00)	0.040
(0+11, 7.00)	(0+13, 7.16)	0.013
(0+13, 7.16)	(0+53, 7.16)	0.013
(0+53, 7.16)	(0+55, 7.00)	0.016
(0+55, 7.00)	(0+55, 7.50)	0.013
(0+55, 7.50)	(0+63, 7.66)	0.013
(0+63, 7.66)	(0+66, 8.00)	0.040

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	1.07	ft
Elevation Range	7.00 to 8.00 ft	
Flow Area	37.75	ft^2
Wetted Perimeter	67.04	ft

Worksheet for Irregular Section - 1

Results

Hydraulic Radius		0.56	ft
Top Width		66.00	ft
Normal Depth		1.07	ft
Critical Depth		1.01	ft
Critical Slope		0.00882	ft/ft
Velocity		3.60	ft/s
Velocity Head		0.20	ft
Specific Energy		1.27	ft
Froude Number		0.84	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.07	ft
Critical Depth	1.01	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00882	ft/ft

Appendix D. HEC-1 Output

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1*****************************************                                                     ****************************************
 *                                       *                                                     *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                                     *    U.S. ARMY CORPS OF ENGINEERS     *
 *              JUN   1998               *                                                     *    HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.1                *                                                     *         609 SECOND STREET           *
 *                                       *                                                     *      DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   28MAY15  TIME  13:51:15   *                                                     *          (916) 756-1104             *
 *                                       *                                                     *                                      *
 *****************************************                                                     ****************************************




                                        X     X  XXXXXXX   XXXXX          X
                                        X     X  X        X     X        XX
                                        X     X  X        X               X
                                        XXXXXXX  XXXX     X       XXXXX   X
                                        X     X  X        X               X
                                        X     X  X        X     X         X
                                        X     X  XXXXXXX   XXXXX         XXX




            THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

            THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
            THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
            NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
            DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL   LOSS RATE:GREEN AND AMPT INFILTRATION
            KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


1                                                 HEC-1 INPUT                                                PAGE  1

           LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

             1            ID   HYDROLOGY STUDY for DSU NEW HOUSING PROJECT
             2            ID   Located in St George, Utah
             3            ID
             4            ID   MAY 2015
             5            ID
             6            ID   PREPARED BY ALPHA ENGINEERING
             7            ID   43 SOUTH 100 EAST
             8            ID   ST. GEORGE, UTAH  84770
             9            ID   TEL: (435) 628-6500
            10            ID   FAX: (435) 628-6553
            11            ID
            12            ID   100-YEAR & 10-YEAR, 3-HOUR STORM EVENT
            13            ID
                          *Diagram
            14            JR    PREC     1.0   0.619
            15            IT       5       0       0      60
            16            IO       0
            17            IN       5
                          *

            18            KK   E1
            19            KM   E1
            20            BA   .0013
            21            PB    2.26
            22            PC       0    .004    .008    .013    .017    .021    .025    .281    .483    .625
            23            PC    .714    .768    .810    .840    .864    .882    .898    .912    .924    .928
            24            PC    .932    .937    .941    .945    .949    .953    .958    .962    .966    .970
            25            PC    .975    .979    .983    .987    .992    .996    1.00
            26            LS       0      81
            27            UD    0.40
                          *

            28            KK   E2
            29            KM   E2
            30            BA   .0019
            31            LS       0      77
            32            UD    0.42
                          *

            33            KK   C1
            34            KM   Combine E1 & E2
            35            HC       2
                          *

            36            KK   P1
            37            KM   P1
            38            BA   .0008
            39            LS       0      98
            40            UD    0.24
                          *
1                                                 HEC-1 INPUT                                                PAGE  2

           LINE           ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


            41            KK   R1
            42            KM   Route P1 in Pipe to basin boundary
            43            RD     220    .005    .013            CIRC     .67
                          *

            44            KK   P4
            45            KM   P4
            46            BA   .0014
            47            LS       0      89
            48            UD    0.59
                          *

            49            KK   C2
```

```
50          KM   Combine R1 & P4
51          HC       2
            *

52          KK   P3
53          KM   P3
54          BA   .0006
55          LS       0      91
56          UD    0.14
            *

57          KK   C3
58          KM   Combine P3 & C2
59          HC       2
            *

60          KK   P2
61          KM   P2
62          BA   .0003
63          LS       0      79
64          UD    0.17
            *

65          KK   C4
66          KM   Combine P2 & C3
67          HC       2
            *

68          KK   T1
69          KM   T1
70          BA   .1305
71          LS       0      91
72          UD    0.39
            *
73          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    18       E1
                 .
                 .
    28           .       E2
                 .           .
                 .           .
    33       C1   ............
                 .
                 .
    36           .       P1
                 .           V
                 .           V
    41           .       R1
                 .           .
                 .           .
    44           .           .       P4
                 .           .           .
                 .           .           .
    49           .       C2   ............
                 .           .
                 .           .
    52           .           .       P3
                 .           .           .
                 .           .           .
    57           .       C3   ............
                 .           .
                 .           .
    60           .           .       P2
                 .           .           .
                 .           .           .
    65           .       C4   ............
                 .           .
                 .           .
    68           .           .       T1

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                                    ****************************************
 *                                      *                                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *              JUN   1998              *                                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                                    *          609 SECOND STREET           *
 *                                      *                                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   28MAY15  TIME  13:51:15  *                                    *           (916) 756-1104             *
 *                                      *                                    *                                      *
 ****************************************                                    ****************************************
```

HYDROLOGY STUDY for DSU NEW HOUSING PROJECT
Located in St George, Utah

MAY 2015

PREPARED BY ALPHA ENGINEERING
43 SOUTH 100 EAST
ST. GEORGE, UTAH 84770
TEL: (435) 628-6500
FAX: (435) 628-6553

100-YEAR & 10-YEAR, 3-HOUR STORM EVENT

```
 16 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           0  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           5  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ          60  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME        0455  ENDING TIME
                     ICENT          19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE    4.92 HOURS

         ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   1.00       .62


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 18 KK     *     E1     *
           *            *
           **************
                          E1

 17 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN           5  TIME INTERVAL IN MINUTES
                     JXDATE      1    0  STARTING DATE
                     JXTIME           0  STARTING TIME

             SUBBASIN RUNOFF DATA

 20 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .00  SUBBASIN AREA

                PRECIPITATION DATA

 21 PB                STORM        2.26  BASIN TOTAL PRECIPITATION

 22 PI            INCREMENTAL PRECIPITATION PATTERN
                     .00       .00       .00       .00       .00       .00       .26       .20       .14       .09
                     .05       .04       .03       .02       .02       .02       .01       .01       .00       .00
                     .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                     .00       .00       .00       .00       .00       .00

 26 LS          SCS LOSS RATE
                      STRTL         .47  INITIAL ABSTRACTION
                     CRVNBR       81.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

 27 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .40  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            26 END-OF-PERIOD ORDINATES
                0.        0.        1.        1.        1.        1.        1.        1.        1.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.
*************************************************************************************************************************

                                            HYDROGRAPH AT STATION    E1
*************************************************************************************************************************
                                                                 *
      DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
       1     0000    1     .00     .00     .00         0.       *        1     0230   31     .01     .00     .01         0.
       1     0005    2     .01     .01     .00         0.       *        1     0235   32     .01     .00     .01         0.
       1     0010    3     .01     .01     .00         0.       *        1     0240   33     .01     .00     .01         0.
       1     0015    4     .01     .01     .00         0.       *        1     0245   34     .01     .00     .01         0.
       1     0020    5     .01     .01     .00         0.       *        1     0250   35     .01     .00     .01         0.
       1     0025    6     .01     .01     .00         0.       *        1     0255   36     .01     .00     .01         0.
       1     0030    7     .01     .01     .00         0.       *        1     0300   37     .01     .00     .01         0.
       1     0035    8     .58     .57     .01         0.       *        1     0305   38     .00     .00     .00         0.
       1     0040    9     .46     .34     .12         0.       *        1     0310   39     .00     .00     .00         0.
       1     0045   10     .32     .18     .14         0.       *        1     0315   40     .00     .00     .00         0.
       1     0050   11     .20     .10     .10         0.       *        1     0320   41     .00     .00     .00         0.
       1     0055   12     .12     .05     .07         0.       *        1     0325   42     .00     .00     .00         0.
       1     0100   13     .09     .04     .06         0.       *        1     0330   43     .00     .00     .00         0.
       1     0105   14     .07     .03     .04         1.       *        1     0335   44     .00     .00     .00         0.
       1     0110   15     .05     .02     .03         1.       *        1     0340   45     .00     .00     .00         0.
       1     0115   16     .04     .02     .03         1.       *        1     0345   46     .00     .00     .00         0.
       1     0120   17     .04     .01     .02         1.       *        1     0350   47     .00     .00     .00         0.
```

1	0125	18	.03	.01	.02	1.	*	1	0355	48	.00	.00	.00	0.
1	0130	19	.03	.01	.02	0.	*	1	0400	49	.00	.00	.00	0.
1	0135	20	.01	.00	.01	0.	*	1	0405	50	.00	.00	.00	0.
1	0140	21	.01	.00	.01	0.	*	1	0410	51	.00	.00	.00	0.
1	0145	22	.01	.00	.01	0.	*	1	0415	52	.00	.00	.00	0.
1	0150	23	.01	.00	.01	0.	*	1	0420	53	.00	.00	.00	0.
1	0155	24	.01	.00	.01	0.	*	1	0425	54	.00	.00	.00	0.
1	0200	25	.01	.00	.01	0.	*	1	0430	55	.00	.00	.00	0.
1	0205	26	.01	.00	.01	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.01	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.01	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.01	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.01	0.	*	1	0455	60	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.48, TOTAL EXCESS = .78

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.25	(CFS) 0.	0.	0.	0.
		(INCHES) .775	.775	.775	.775
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

****

HYDROGRAPH AT STATION E1
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.57	.01	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.34	.12	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.18	.14	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.10	.10	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.05	.07	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.04	.06	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.03	.04	1.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.02	.03	1.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.02	.03	1.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.01	.02	1.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.02	1.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.01	.02	0.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	*	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.48, TOTAL EXCESS = .78

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.25	(CFS) 0.	0.	0.	0.
		(INCHES) .775	.775	.775	.775
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

****

HYDROGRAPH AT STATION E1
PLAN 1, RATIO = .62

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.00	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.00	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.00	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.00	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.00	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.00	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.00	0.
1		0035	8	.36	.36	.00	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.28	.27	.02	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.20	.16	.04	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.12	.09	.04	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.08	.05	.03	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.06	.04	.02	0.	*	1		0330	43	.00	.00	.00	0.

1	0105	14	.04	.03	.02	0.	*	1	0335	44	.00	.00	.00	0.
1	0110	15	.03	.02	.01	0.	*	1	0340	45	.00	.00	.00	0.
1	0115	16	.03	.01	.01	0.	*	1	0345	46	.00	.00	.00	0.
1	0120	17	.02	.01	.01	0.	*	1	0350	47	.00	.00	.00	0.
1	0125	18	.02	.01	.01	0.	*	1	0355	48	.00	.00	.00	0.
1	0130	19	.02	.01	.01	0.	*	1	0400	49	.00	.00	.00	0.
1	0135	20	.01	.00	.00	0.	*	1	0405	50	.00	.00	.00	0.
1	0140	21	.01	.00	.00	0.	*	1	0410	51	.00	.00	.00	0.
1	0145	22	.01	.00	.00	0.	*	1	0415	52	.00	.00	.00	0.
1	0150	23	.01	.00	.00	0.	*	1	0420	53	.00	.00	.00	0.
1	0155	24	.01	.00	.00	0.	*	1	0425	54	.00	.00	.00	0.
1	0200	25	.01	.00	.00	0.	*	1	0430	55	.00	.00	.00	0.
1	0205	26	.01	.00	.00	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.00	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.00	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.00	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.00	0.	*	1	0455	60	.00	.00	.00	0.
							*							

****

TOTAL RAINFALL = 1.40, TOTAL LOSS = 1.13, TOTAL EXCESS = .26

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ (CFS)	(HR)	(CFS)				
+ 0.	1.25		0.	0.	0.	0.
		(INCHES)	.264	.264	.264	.264
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

*** ***

```
            **************
            *            *
  28 KK     *     E2     *
            *            *
            **************
                           E2
```

SUBBASIN RUNOFF DATA

30 BA SUBBASIN CHARACTERISTICS
TAREA .00 SUBBASIN AREA

PRECIPITATION DATA

21 PB STORM 2.26 BASIN TOTAL PRECIPITATION

22 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.26	.20	.14	.09
.05	.04	.03	.02	.02	.02	.01	.01	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00				

31 LS SCS LOSS RATE
STRTL .60 INITIAL ABSTRACTION
CRVNBR 77.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

32 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .42 LAG

***

UNIT HYDROGRAPH
27 END-OF-PERIOD ORDINATES

0.	1.	1.	2.	2.	2.	2.	1.	1.	1.
1.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.			

****

HYDROGRAPH AT STATION E2

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.58	.00	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.39	.07	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.22	.10	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.12	.08	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.07	.06	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.05	.05	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.03	.03	1.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.03	.03	1.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.02	.02	1.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.02	.02	1.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.02	1.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.01	.01	1.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	1.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	*	1		0415	52	.00	.00	.00	0.

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0150	23	.01	.00	.01	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.67, TOTAL EXCESS = .59

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.25	(CFS)	0.	0.	0.	0.
		(INCHES)	.594	.594	.594	.594
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

HYDROGRAPH AT STATION E2
PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.58	.00	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.39	.07	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.22	.10	0.	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.12	.08	0.	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.07	.06	0.	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.05	.05	0.	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.03	.03	1.	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.03	.03	1.	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.02	.02	1.	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.02	.02	1.	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.02	1.	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.01	.01	1.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	1.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.67, TOTAL EXCESS = .59

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.25	(CFS)	0.	0.	0.	0.
		(INCHES)	.594	.594	.594	.594
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

HYDROGRAPH AT STATION E2
PLAN 1, RATIO = .62

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.00	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.00	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.00	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.00	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.00	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.00	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.00	0.
1		0035	8	.36	.36	.00	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.28	.28	.00	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.20	.18	.02	0.	1		0315	40	.00	.00	.00	0.
1		0050	11	.12	.10	.02	0.	1		0320	41	.00	.00	.00	0.
1		0055	12	.08	.06	.02	0.	1		0325	42	.00	.00	.00	0.
1		0100	13	.06	.04	.02	0.	1		0330	43	.00	.00	.00	0.
1		0105	14	.04	.03	.01	0.	1		0335	44	.00	.00	.00	0.
1		0110	15	.03	.02	.01	0.	1		0340	45	.00	.00	.00	0.
1		0115	16	.03	.02	.01	0.	1		0345	46	.00	.00	.00	0.
1		0120	17	.02	.02	.01	0.	1		0350	47	.00	.00	.00	0.
1		0125	18	.02	.01	.01	0.	1		0355	48	.00	.00	.00	0.

1	0130	19	.02	.01	.01	0.	*	1	0400	49	.00	.00	.00	0.
1	0135	20	.01	.00	.00	0.	*	1	0405	50	.00	.00	.00	0.
1	0140	21	.01	.00	.00	0.	*	1	0410	51	.00	.00	.00	0.
1	0145	22	.01	.00	.00	0.	*	1	0415	52	.00	.00	.00	0.
1	0150	23	.01	.00	.00	0.	*	1	0420	53	.00	.00	.00	0.
1	0155	24	.01	.00	.00	0.	*	1	0425	54	.00	.00	.00	0.
1	0200	25	.01	.00	.00	0.	*	1	0430	55	.00	.00	.00	0.
1	0205	26	.01	.00	.00	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.00	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.00	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.00	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.00	0.	*	1	0455	60	.00	.00	.00	0.
							*							

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TOTAL RAINFALL = 1.40, TOTAL LOSS = 1.23, TOTAL EXCESS = .17

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	0.	1.33		0.	0.	0.	0.
			(INCHES)	.170	.170	.170	.170
			(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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              **************
              *            *
   33 KK      *     C1     *
              *            *
              **************
                      Combine E1 & E2

   35 HC          HYDROGRAPH COMBINATION
                       ICOMP          2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                  ***
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HYDROGRAPH AT STATION C1
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	1.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	1.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	1.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	1.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	1.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	1.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	1.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	1.	1		0305	38	0.	1		0420	53	0.
1		0040	9	0.	1		0155	24	0.	1		0310	39	0.	1		0425	54	0.
1		0045	10	0.	1		0200	25	0.	1		0315	40	0.	1		0430	55	0.
1		0050	11	0.	1		0205	26	0.	1		0320	41	0.	1		0435	56	0.
1		0055	12	1.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.
1		0100	13	1.	1		0215	28	0.	1		0330	43	0.	1		0445	58	0.
1		0105	14	1.	1		0220	29	0.	1		0335	44	0.	1		0450	59	0.
1		0110	15	1.	1		0225	30	0.	1		0340	45	0.	1		0455	60	0.

****

	PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+	(CFS)	(HR)					
			(CFS)				
+	1.	1.25		0.	0.	0.	0.
			(INCHES)	.668	.668	.668	.668
			(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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HYDROGRAPH AT STATION C1
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .62

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	0.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	0.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	0.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	0.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	0.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	0.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	0.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	0.	1		0305	38	0.	1		0420	53	0.
1		0040	9	0.	1		0155	24	0.	1		0310	39	0.	1		0425	54	0.
1		0045	10	0.	1		0200	25	0.	1		0315	40	0.	1		0430	55	0.
1		0050	11	0.	1		0205	26	0.	1		0320	41	0.	1		0435	56	0.
1		0055	12	0.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.

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    1     0100   13        0.   *    1     0215   28        0.   *    1     0330   43        0.   *    1     0445   58        0.
    1     0105   14        0.   *    1     0220   29        0.   *    1     0335   44        0.   *    1     0450   59        0.
    1     0110   15        0.   *    1     0225   30        0.   *    1     0340   45        0.   *    1     0455   60        0.
                              *                                   *                                   *
*************************************************************************************************************************************

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      4.92-HR
+   (CFS)      (HR)
                         (CFS)
+       0.      1.33                0.          0.          0.          0.
                       (INCHES)    .208        .208        .208        .208
                        (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =     .00 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  36 KK     *     P1     *
            *            *
            **************
                           P1

              SUBBASIN RUNOFF DATA

  38 BA          SUBBASIN CHARACTERISTICS
                       TAREA         .00  SUBBASIN AREA

                 PRECIPITATION DATA

  21 PB                STORM        2.26  BASIN TOTAL PRECIPITATION

  22 PI            INCREMENTAL PRECIPITATION PATTERN
                       .00       .00       .00       .00       .00       .00       .26       .20       .14       .09
                       .05       .04       .03       .02       .02       .02       .01       .01       .00       .00
                       .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                       .00       .00       .00       .00       .00       .00

  39 LS          SCS LOSS RATE
                       STRTL         .04  INITIAL ABSTRACTION
                      CRVNBR       98.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  40 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .24  LAG

                                                                  ***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

                                                        UNIT HYDROGRAPH
                                                   16 END-OF-PERIOD ORDINATES
                 0.        1.        1.        1.        1.        1.        0.        0.        0.        0.
                 0.        0.        0.        0.        0.        0.
*************************************************************************************************************************************

                                                   HYDROGRAPH AT STATION    P1
*************************************************************************************************************************************
                                                                 *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q      *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
        1     0000    1     .00     .00     .00         0.      *        1     0230   31     .01     .00     .01         0.
        1     0005    2     .01     .01     .00         0.      *        1     0235   32     .01     .00     .01         0.
        1     0010    3     .01     .01     .00         0.      *        1     0240   33     .01     .00     .01         0.
        1     0015    4     .01     .01     .00         0.      *        1     0245   34     .01     .00     .01         0.
        1     0020    5     .01     .01     .00         0.      *        1     0250   35     .01     .00     .01         0.
        1     0025    6     .01     .01     .00         0.      *        1     0255   36     .01     .00     .01         0.
        1     0030    7     .01     .01     .00         0.      *        1     0300   37     .01     .00     .01         0.
        1     0035    8     .58     .14     .44         0.      *        1     0305   38     .00     .00     .00         0.
        1     0040    9     .46     .02     .44         1.      *        1     0310   39     .00     .00     .00         0.
        1     0045   10     .32     .01     .31         1.      *        1     0315   40     .00     .00     .00         0.
        1     0050   11     .20     .00     .20         1.      *        1     0320   41     .00     .00     .00         0.
        1     0055   12     .12     .00     .12         2.      *        1     0325   42     .00     .00     .00         0.
        1     0100   13     .09     .00     .09         1.      *        1     0330   43     .00     .00     .00         0.
        1     0105   14     .07     .00     .07         1.      *        1     0335   44     .00     .00     .00         0.
        1     0110   15     .05     .00     .05         1.      *        1     0340   45     .00     .00     .00         0.
        1     0115   16     .04     .00     .04         1.      *        1     0345   46     .00     .00     .00         0.
        1     0120   17     .04     .00     .04         1.      *        1     0350   47     .00     .00     .00         0.
        1     0125   18     .03     .00     .03         0.      *        1     0355   48     .00     .00     .00         0.
        1     0130   19     .03     .00     .03         0.      *        1     0400   49     .00     .00     .00         0.
        1     0135   20     .01     .00     .01         0.      *        1     0405   50     .00     .00     .00         0.
        1     0140   21     .01     .00     .01         0.      *        1     0410   51     .00     .00     .00         0.
        1     0145   22     .01     .00     .01         0.      *        1     0415   52     .00     .00     .00         0.
        1     0150   23     .01     .00     .01         0.      *        1     0420   53     .00     .00     .00         0.
        1     0155   24     .01     .00     .01         0.      *        1     0425   54     .00     .00     .00         0.
        1     0200   25     .01     .00     .01         0.      *        1     0430   55     .00     .00     .00         0.
        1     0205   26     .01     .00     .01         0.      *        1     0435   56     .00     .00     .00         0.
        1     0210   27     .01     .00     .01         0.      *        1     0440   57     .00     .00     .00         0.
        1     0215   28     .01     .00     .01         0.      *        1     0445   58     .00     .00     .00         0.
        1     0220   29     .01     .00     .01         0.      *        1     0450   59     .00     .00     .00         0.
        1     0225   30     .01     .00     .01         0.      *        1     0455   60     .00     .00     .00         0.
                                                                 *
*************************************************************************************************************************************

    TOTAL RAINFALL =    2.26, TOTAL LOSS =     .23, TOTAL EXCESS =    2.03

 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      4.92-HR
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+   (CFS)       (HR)
                          (CFS)
+       2.       .92                0.          0.          0.          0.
                        (INCHES)   2.032       2.032       2.032       2.032
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =     .00 SQ MI
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WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

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HYDROGRAPH AT STATION P1
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.14	.44	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.02	.44	1.	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.01	.31	1.	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.00	.20	1.	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.00	.12	2.	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.00	.09	1.	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.00	.07	1.	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.00	.05	1.	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.00	.04	1.	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.00	.04	1.	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.00	.03	0.	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.00	.03	0.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	1		0455	60	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = .23, TOTAL EXCESS = 2.03

```
 PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                   6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+       2.       .92                0.          0.          0.          0.
                        (INCHES)   2.032       2.032       2.032       2.032
                         (AC-FT)     0.          0.          0.          0.

                        CUMULATIVE AREA =     .00 SQ MI
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WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

****

HYDROGRAPH AT STATION P1
PLAN 1, RATIO = .62

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	0.
1		0035	8	.36	.14	.22	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.28	.03	.26	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.20	.01	.19	1.	1		0315	40	.00	.00	.00	0.
1		0050	11	.12	.00	.12	1.	1		0320	41	.00	.00	.00	0.
1		0055	12	.08	.00	.07	1.	1		0325	42	.00	.00	.00	0.
1		0100	13	.06	.00	.06	1.	1		0330	43	.00	.00	.00	0.
1		0105	14	.04	.00	.04	1.	1		0335	44	.00	.00	.00	0.
1		0110	15	.03	.00	.03	1.	1		0340	45	.00	.00	.00	0.
1		0115	16	.03	.00	.02	0.	1		0345	46	.00	.00	.00	0.
1		0120	17	.02	.00	.02	0.	1		0350	47	.00	.00	.00	0.
1		0125	18	.02	.00	.02	0.	1		0355	48	.00	.00	.00	0.
1		0130	19	.02	.00	.02	0.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	1		0450	59	.00	.00	.00	0.

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        1     0225   30     .01     .00     .01         0.       *        1     0455   60     .00     .00     .00         0.
                                                                 *
*****************************************************************************************************************************

    TOTAL RAINFALL =    1.40, TOTAL LOSS =     .22, TOTAL EXCESS =    1.18

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+       1.       .92                  0.          0.          0.          0.
                        (INCHES)    1.181       1.181       1.181       1.181
                         (AC-FT)      0.          0.          0.          0.

                         CUMULATIVE AREA =     .00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
   41 KK    *     R1     *
            *            *
            **************
                           Route P1 in Pipe to basin boundary

               HYDROGRAPH ROUTING DATA

   43 RD          MUSKINGUM-CUNGE CHANNEL ROUTING
                             L        220.  CHANNEL LENGTH
                             S       .0050  SLOPE
                             N        .013  CHANNEL ROUGHNESS COEFFICIENT
                            CA         .00  CONTRIBUTING AREA
                         SHAPE        CIRC  CHANNEL SHAPE
                            WD         .67  BOTTOM WIDTH OR DIAMETER
                             Z         .00  SIDE SLOPE

                                                                ***
                                   COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                          COMPUTATION TIME STEP
                       ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                      PEAK                CELERITY
                                                         (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                         MAIN       4.09      1.25        .99    110.00      1.60     55.54      2.03      3.70

                                                 INTERPOLATED TO SPECIFIED COMPUTATION INTERVAL

                         MAIN       4.09      1.25       5.00                 1.59     55.00      2.03

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8671E-01 EXCESS= .0000E+00 OUTFLOW= .8668E-01 BASIN STORAGE= .4225E-04 PERCENT ERROR=    .0


*****************************************************************************************************************************

                                                 HYDROGRAPH AT STATION    R1
                                                     PLAN 1,   RATIO =  1.00
*****************************************************************************************************************************
                                *                                 *                                 *
   DA MON HRMN  ORD      FLOW   *   DA MON HRMN  ORD      FLOW   *   DA MON HRMN  ORD      FLOW   *   DA MON HRMN  ORD      FLOW
                                *                                 *                                 *
    1     0000    1        0.   *    1     0115   16        1.   *    1     0230   31        0.   *    1     0345   46        0.
    1     0005    2        0.   *    1     0120   17        1.   *    1     0235   32        0.   *    1     0350   47        0.
    1     0010    3        0.   *    1     0125   18        0.   *    1     0240   33        0.   *    1     0355   48        0.
    1     0015    4        0.   *    1     0130   19        0.   *    1     0245   34        0.   *    1     0400   49        0.
    1     0020    5        0.   *    1     0135   20        0.   *    1     0250   35        0.   *    1     0405   50        0.
    1     0025    6        0.   *    1     0140   21        0.   *    1     0255   36        0.   *    1     0410   51        0.
    1     0030    7        0.   *    1     0145   22        0.   *    1     0300   37        0.   *    1     0415   52        0.
    1     0035    8        0.   *    1     0150   23        0.   *    1     0305   38        0.   *    1     0420   53        0.
    1     0040    9        0.   *    1     0155   24        0.   *    1     0310   39        0.   *    1     0425   54        0.
    1     0045   10        1.   *    1     0200   25        0.   *    1     0315   40        0.   *    1     0430   55        0.
    1     0050   11        1.   *    1     0205   26        0.   *    1     0320   41        0.   *    1     0435   56        0.
    1     0055   12        2.   *    1     0210   27        0.   *    1     0325   42        0.   *    1     0440   57        0.
    1     0100   13        1.   *    1     0215   28        0.   *    1     0330   43        0.   *    1     0445   58        0.
    1     0105   14        1.   *    1     0220   29        0.   *    1     0335   44        0.   *    1     0450   59        0.
    1     0110   15        1.   *    1     0225   30        0.   *    1     0340   45        0.   *    1     0455   60        0.
                                *                                 *                                 *
*****************************************************************************************************************************

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+       2.       .92                  0.          0.          0.          0.
                        (INCHES)    2.034       2.034       2.034       2.034
                         (AC-FT)      0.          0.          0.          0.

                         CUMULATIVE AREA =     .00 SQ MI

                                   COMPUTED MUSKINGUM-CUNGE PARAMETERS
                                          COMPUTATION TIME STEP
                       ELEMENT    ALPHA       M         DT        DX       PEAK    TIME TO     VOLUME    MAXIMUM
                                                                                      PEAK                CELERITY
                                                         (MIN)      (FT)     (CFS)     (MIN)       (IN)      (FPS)

                         MAIN       4.09      1.25       1.11    110.00       .92     56.55      1.18      3.31
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                    MAIN       4.09      1.25       5.00                 .90     55.00      1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5038E-01 EXCESS= .0000E+00 OUTFLOW= .5037E-01 BASIN STORAGE= .4344E-04 PERCENT ERROR=   -.1

*****************************************************************************************************************************

                                                HYDROGRAPH AT STATION    R1
                                                    PLAN 1,   RATIO =   .62
*****************************************************************************************************************************
                                   *                                   *                                   *
   DA MON HRMN  ORD      FLOW      *   DA MON HRMN  ORD      FLOW      *   DA MON HRMN  ORD      FLOW      *   DA MON HRMN  ORD      FLOW
                                   *                                   *                                   *
    1     0000    1        0.      *    1     0115   16        0.      *    1     0230   31        0.      *    1     0345   46        0.
    1     0005    2        0.      *    1     0120   17        0.      *    1     0235   32        0.      *    1     0350   47        0.
    1     0010    3        0.      *    1     0125   18        0.      *    1     0240   33        0.      *    1     0355   48        0.
    1     0015    4        0.      *    1     0130   19        0.      *    1     0245   34        0.      *    1     0400   49        0.
    1     0020    5        0.      *    1     0135   20        0.      *    1     0250   35        0.      *    1     0405   50        0.
    1     0025    6        0.      *    1     0140   21        0.      *    1     0255   36        0.      *    1     0410   51        0.
    1     0030    7        0.      *    1     0145   22        0.      *    1     0300   37        0.      *    1     0415   52        0.
    1     0035    8        0.      *    1     0150   23        0.      *    1     0305   38        0.      *    1     0420   53        0.
    1     0040    9        0.      *    1     0155   24        0.      *    1     0310   39        0.      *    1     0425   54        0.
    1     0045   10        1.      *    1     0200   25        0.      *    1     0315   40        0.      *    1     0430   55        0.
    1     0050   11        1.      *    1     0205   26        0.      *    1     0320   41        0.      *    1     0435   56        0.
    1     0055   12        1.      *    1     0210   27        0.      *    1     0325   42        0.      *    1     0440   57        0.
    1     0100   13        1.      *    1     0215   28        0.      *    1     0330   43        0.      *    1     0445   58        0.
    1     0105   14        1.      *    1     0220   29        0.      *    1     0335   44        0.      *    1     0450   59        0.
    1     0110   15        1.      *    1     0225   30        0.      *    1     0340   45        0.      *    1     0455   60        0.
                                   *                                   *                                   *
*****************************************************************************************************************************

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+       1.       .92                 0.          0.          0.          0.
                        (INCHES)    1.182       1.182       1.182       1.182
                         (AC-FT)     0.          0.          0.          0.

                         CUMULATIVE AREA =     .00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
   44 KK    *     P4     *
            *            *
            **************
                           P4

              SUBBASIN RUNOFF DATA

   46 BA        SUBBASIN CHARACTERISTICS
                      TAREA         .00  SUBBASIN AREA

                PRECIPITATION DATA

   21 PB              STORM        2.26  BASIN TOTAL PRECIPITATION

   22 PI          INCREMENTAL PRECIPITATION PATTERN
                      .00       .00       .00       .00       .00       .00       .26       .20       .14       .09
                      .05       .04       .03       .02       .02       .02       .01       .01       .00       .00
                      .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                      .00       .00       .00       .00       .00       .00

   47 LS        SCS LOSS RATE
                      STRTL         .25  INITIAL ABSTRACTION
                     CRVNBR       89.00  CURVE NUMBER
                      RTIMP         .00  PERCENT IMPERVIOUS AREA

   48 UD        SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .59  LAG

                                                    ***

                                                UNIT HYDROGRAPH
                                            37 END-OF-PERIOD ORDINATES
                0.        0.        0.        1.        1.        1.        1.        1.        1.        1.
                1.        1.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.        0.        0.        0.
                0.        0.        0.        0.        0.        0.        0.
*****************************************************************************************************************************

                                                HYDROGRAPH AT STATION    P4
*****************************************************************************************************************************
                                                   *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                   *
        1     0000    1     .00     .00     .00         0.       *        1     0230   31     .01     .00     .01         0.
        1     0005    2     .01     .01     .00         0.       *        1     0235   32     .01     .00     .01         0.
        1     0010    3     .01     .01     .00         0.       *        1     0240   33     .01     .00     .01         0.
        1     0015    4     .01     .01     .00         0.       *        1     0245   34     .01     .00     .01         0.
        1     0020    5     .01     .01     .00         0.       *        1     0250   35     .01     .00     .01         0.
        1     0025    6     .01     .01     .00         0.       *        1     0255   36     .01     .00     .01         0.
```

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.49	.09	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.21	.25	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.10	.22	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.05	.15	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.03	.10	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.02	.08	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.01	.06	1.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.01	.04	1.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.01	.03	1.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.01	.03	1.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.03	1.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.00	.02	1.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	1.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	1.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	1.	*	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	1.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	1.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.01, TOTAL EXCESS = 1.25

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.42	(CFS) 0.	0.	0.	0.
		(INCHES) 1.246	1.246	1.246	1.246
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

HYDROGRAPH AT STATION P4
PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.49	.09	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.21	.25	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.10	.22	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.05	.15	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.03	.10	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.02	.08	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.01	.06	1.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.01	.04	1.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.01	.03	1.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.01	.03	1.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.03	1.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.00	.02	1.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	1.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	1.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	1.	*	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	1.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	1.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.01, TOTAL EXCESS = 1.25

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	1.42	(CFS) 0.	0.	0.	0.
		(INCHES) 1.246	1.246	1.246	1.246
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

HYDROGRAPH AT STATION P4
PLAN 1, RATIO = .62

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.00	0.

1	0010	3	.01	.01	.00	0.	*	1	0240	33	.01	.00	.00	0.
1	0015	4	.01	.01	.00	0.	*	1	0245	34	.01	.00	.00	0.
1	0020	5	.01	.01	.00	0.	*	1	0250	35	.01	.00	.01	0.
1	0025	6	.01	.01	.00	0.	*	1	0255	36	.01	.00	.00	0.
1	0030	7	.01	.01	.00	0.	*	1	0300	37	.01	.00	.00	0.
1	0035	8	.36	.34	.02	0.	*	1	0305	38	.00	.00	.00	0.
1	0040	9	.28	.19	.09	0.	*	1	0310	39	.00	.00	.00	0.
1	0045	10	.20	.10	.10	0.	*	1	0315	40	.00	.00	.00	0.
1	0050	11	.12	.05	.07	0.	*	1	0320	41	.00	.00	.00	0.
1	0055	12	.08	.03	.05	0.	*	1	0325	42	.00	.00	.00	0.
1	0100	13	.06	.02	.04	0.	*	1	0330	43	.00	.00	.00	0.
1	0105	14	.04	.01	.03	0.	*	1	0335	44	.00	.00	.00	0.
1	0110	15	.03	.01	.02	0.	*	1	0340	45	.00	.00	.00	0.
1	0115	16	.03	.01	.02	0.	*	1	0345	46	.00	.00	.00	0.
1	0120	17	.02	.01	.02	0.	*	1	0350	47	.00	.00	.00	0.
1	0125	18	.02	.01	.01	0.	*	1	0355	48	.00	.00	.00	0.
1	0130	19	.02	.00	.01	0.	*	1	0400	49	.00	.00	.00	0.
1	0135	20	.01	.00	.00	0.	*	1	0405	50	.00	.00	.00	0.
1	0140	21	.01	.00	.00	0.	*	1	0410	51	.00	.00	.00	0.
1	0145	22	.01	.00	.00	0.	*	1	0415	52	.00	.00	.00	0.
1	0150	23	.01	.00	.00	0.	*	1	0420	53	.00	.00	.00	0.
1	0155	24	.01	.00	.00	0.	*	1	0425	54	.00	.00	.00	0.
1	0200	25	.01	.00	.00	0.	*	1	0430	55	.00	.00	.00	0.
1	0205	26	.01	.00	.00	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.01	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.00	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.00	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.00	0.	*	1	0455	60	.00	.00	.00	0.
							*							

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TOTAL RAINFALL = 1.40, TOTAL LOSS = .84, TOTAL EXCESS = .56

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+		(CFS)			
+ 0.	1.42	0.	0.	0.	0.
		(INCHES) .555	.555	.555	.555
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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              **************
              *            *
   49 KK      *     C2     *
              *            *
              **************
                             Combine R1 & P4

   51 HC          HYDROGRAPH COMBINATION
                        ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
                                                                   ***
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HYDROGRAPH AT STATION C2
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = 1.00

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DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	2.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	2.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	1.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	1.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	1.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	1.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	1.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	1.	1		0305	38	0.	1		0420	53	0.
1		0040	9	0.	1		0155	24	1.	1		0310	39	0.	1		0425	54	0.
1		0045	10	1.	1		0200	25	1.	1		0315	40	0.	1		0430	55	0.
1		0050	11	2.	1		0205	26	0.	1		0320	41	0.	1		0435	56	0.
1		0055	12	2.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.
1		0100	13	2.	1		0215	28	0.	1		0330	43	0.	1		0445	58	0.
1		0105	14	2.	1		0220	29	0.	1		0335	44	0.	1		0450	59	0.
1		0110	15	2.	1		0225	30	0.	1		0340	45	0.	1		0455	60	0.

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PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+		(CFS)			
+ 2.	1.00	0.	0.	0.	0.
		(INCHES) 1.533	1.533	1.533	1.533
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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HYDROGRAPH AT STATION C2
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .62

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	1.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	1.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	1.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	1.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	1.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	1.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	0.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	0.	1		0305	38	0.	1		0420	53	0.
1		0040	9	0.	1		0155	24	0.	1		0310	39	0.	1		0425	54	0.
1		0045	10	1.	1		0200	25	0.	1		0315	40	0.	1		0430	55	0.
1		0050	11	1.	1		0205	26	0.	1		0320	41	0.	1		0435	56	0.
1		0055	12	1.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.
1		0100	13	1.	1		0215	28	0.	1		0330	43	0.	1		0445	58	0.
1		0105	14	1.	1		0220	29	0.	1		0335	44	0.	1		0450	59	0.
1		0110	15	1.	1		0225	30	0.	1		0340	45	0.	1		0455	60	0.

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+		(CFS)			
+ 1.	1.00	0.	0.	0.	0.
		(INCHES) .783	.783	.783	.783
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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             **************
             *            *
  52 KK      *     P3     *
             *            *
             **************
                            P3
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SUBBASIN RUNOFF DATA

54 BA SUBBASIN CHARACTERISTICS
TAREA .00 SUBBASIN AREA

PRECIPITATION DATA

21 PB STORM 2.26 BASIN TOTAL PRECIPITATION

22 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.26	.20	.14	.09
.05	.04	.03	.02	.02	.02	.01	.01	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00				

55 LS SCS LOSS RATE
STRTL .20 INITIAL ABSTRACTION
CRVNBR 91.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

56 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .14 LAG

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WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
10 END-OF-PERIOD ORDINATES

1.	2.	1.	1.	0.	0.	0.	0.	0.	0.

HYDROGRAPH AT STATION P3

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.44	.13	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.17	.29	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.08	.25	1.	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.04	.16	1.	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.02	.10	1.	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.01	.08	1.	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.01	.06	1.	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.01	.05	0.	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.01	.04	0.	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.00	.03	0.	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.00	.03	0.	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.00	.02	0.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	1		0415	52	.00	.00	.00	0.

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0150	23	.01	.00	.01	0.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.

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TOTAL RAINFALL = 2.26, TOTAL LOSS = .87, TOTAL EXCESS = 1.39

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	.83	(CFS)	0.	0.	0.	0.
		(INCHES)	1.394	1.394	1.394	1.394
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

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HYDROGRAPH AT STATION P3
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.44	.13	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.17	.29	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.08	.25	1.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.04	.16	1.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.02	.10	1.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.01	.08	1.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.01	.06	1.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.01	.05	0.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.01	.04	0.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.00	.03	0.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.00	.03	0.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.00	.02	0.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	*	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = .87, TOTAL EXCESS = 1.39

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 1.	.83	(CFS)	0.	0.	0.	0.
		(INCHES)	1.394	1.394	1.394	1.394
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

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HYDROGRAPH AT STATION P3
PLAN 1, RATIO = .62

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.00	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.00	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.00	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.00	0.
1		0035	8	.36	.33	.03	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.28	.16	.12	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.20	.08	.12	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.12	.04	.08	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.08	.02	.05	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.06	.02	.04	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.04	.01	.03	0.	*	1		0335	44	.00	.00	.00	0.

1	0110	15	.03	.01	.03	0.	*	1	0340	45	.00	.00	.00	0.
1	0115	16	.03	.01	.02	0.	*	1	0345	46	.00	.00	.00	0.
1	0120	17	.02	.01	.02	0.	*	1	0350	47	.00	.00	.00	0.
1	0125	18	.02	.00	.02	0.	*	1	0355	48	.00	.00	.00	0.
1	0130	19	.02	.00	.01	0.	*	1	0400	49	.00	.00	.00	0.
1	0135	20	.01	.00	.00	0.	*	1	0405	50	.00	.00	.00	0.
1	0140	21	.01	.00	.00	0.	*	1	0410	51	.00	.00	.00	0.
1	0145	22	.01	.00	.01	0.	*	1	0415	52	.00	.00	.00	0.
1	0150	23	.01	.00	.00	0.	*	1	0420	53	.00	.00	.00	0.
1	0155	24	.01	.00	.00	0.	*	1	0425	54	.00	.00	.00	0.
1	0200	25	.01	.00	.00	0.	*	1	0430	55	.00	.00	.00	0.
1	0205	26	.01	.00	.00	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.01	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.00	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.00	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.00	0.	*	1	0455	60	.00	.00	.00	0.

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*******************************************************************************************************************************

    TOTAL RAINFALL =    1.40, TOTAL LOSS =     .74, TOTAL EXCESS =     .66

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                              (CFS)
+       0.       .83                    0.          0.          0.          0.
                           (INCHES)    .659        .659        .659        .659
                            (AC-FT)     0.          0.          0.          0.

                            CUMULATIVE AREA =     .00 SQ MI



*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
  57 KK     *     C3     *
            *            *
            **************
                       Combine P3 & C2

  59 HC          HYDROGRAPH COMBINATION
                      ICOMP            2  NUMBER OF HYDROGRAPHS TO COMBINE

                                                               ***

*******************************************************************************************************************************

                                                   HYDROGRAPH AT STATION    C3
                                                        SUM OF  2 HYDROGRAPHS
                                                       PLAN 1,   RATIO =  1.00

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

DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW
1	0000	1	0.	*	1	0115	16	2.	*	1	0230	31	0.	*	1	0345	46	0.
1	0005	2	0.	*	1	0120	17	2.	*	1	0235	32	0.	*	1	0350	47	0.
1	0010	3	0.	*	1	0125	18	2.	*	1	0240	33	0.	*	1	0355	48	0.
1	0015	4	0.	*	1	0130	19	1.	*	1	0245	34	0.	*	1	0400	49	0.
1	0020	5	0.	*	1	0135	20	1.	*	1	0250	35	0.	*	1	0405	50	0.
1	0025	6	0.	*	1	0140	21	1.	*	1	0255	36	0.	*	1	0410	51	0.
1	0030	7	0.	*	1	0145	22	1.	*	1	0300	37	0.	*	1	0415	52	0.
1	0035	8	0.	*	1	0150	23	1.	*	1	0305	38	0.	*	1	0420	53	0.
1	0040	9	1.	*	1	0155	24	1.	*	1	0310	39	0.	*	1	0425	54	0.
1	0045	10	2.	*	1	0200	25	1.	*	1	0315	40	0.	*	1	0430	55	0.
1	0050	11	3.	*	1	0205	26	1.	*	1	0320	41	0.	*	1	0435	56	0.
1	0055	12	3.	*	1	0210	27	0.	*	1	0325	42	0.	*	1	0440	57	0.
1	0100	13	3.	*	1	0215	28	0.	*	1	0330	43	0.	*	1	0445	58	0.
1	0105	14	2.	*	1	0220	29	0.	*	1	0335	44	0.	*	1	0450	59	0.
1	0110	15	2.	*	1	0225	30	0.	*	1	0340	45	0.	*	1	0455	60	0.

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*******************************************************************************************************************************

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                              (CFS)
+       3.       .92                    1.          1.          1.          1.
                           (INCHES)   1.503       1.503       1.503       1.503
                            (AC-FT)     0.          0.          0.          0.

                            CUMULATIVE AREA =     .00 SQ MI

*******************************************************************************************************************************

                                                   HYDROGRAPH AT STATION    C3
                                                        SUM OF  2 HYDROGRAPHS
                                                       PLAN 1,   RATIO =   .62

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

DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW	*	DA MON	HRMN	ORD	FLOW
1	0000	1	0.	*	1	0115	16	1.	*	1	0230	31	0.	*	1	0345	46	0.
1	0005	2	0.	*	1	0120	17	1.	*	1	0235	32	0.	*	1	0350	47	0.
1	0010	3	0.	*	1	0125	18	1.	*	1	0240	33	0.	*	1	0355	48	0.
1	0015	4	0.	*	1	0130	19	1.	*	1	0245	34	0.	*	1	0400	49	0.
1	0020	5	0.	*	1	0135	20	1.	*	1	0250	35	0.	*	1	0405	50	0.
1	0025	6	0.	*	1	0140	21	1.	*	1	0255	36	0.	*	1	0410	51	0.
1	0030	7	0.	*	1	0145	22	0.	*	1	0300	37	0.	*	1	0415	52	0.
1	0035	8	0.	*	1	0150	23	0.	*	1	0305	38	0.	*	1	0420	53	0.

1	0040	9	0.	*	1	0155	24	0.	*	1	0310	39	0.	*	1	0425	54	0.
1	0045	10	1.	*	1	0200	25	0.	*	1	0315	40	0.	*	1	0430	55	0.
1	0050	11	1.	*	1	0205	26	0.	*	1	0320	41	0.	*	1	0435	56	0.
1	0055	12	1.	*	1	0210	27	0.	*	1	0325	42	0.	*	1	0440	57	0.
1	0100	13	1.	*	1	0215	28	0.	*	1	0330	43	0.	*	1	0445	58	0.
1	0105	14	1.	*	1	0220	29	0.	*	1	0335	44	0.	*	1	0450	59	0.
1	0110	15	1.	*	1	0225	30	0.	*	1	0340	45	0.	*	1	0455	60	0.
				*					*					*				

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1.	.92		0.	0.	0.	0.
		(INCHES)	.756	.756	.756	.756
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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            **************
            *            *
  60 KK     *     P2     *
            *            *
            **************
                          P2
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SUBBASIN RUNOFF DATA

62 BA SUBBASIN CHARACTERISTICS
TAREA .00 SUBBASIN AREA

PRECIPITATION DATA

21 PB STORM 2.26 BASIN TOTAL PRECIPITATION

22 PI INCREMENTAL PRECIPITATION PATTERN

.00	.00	.00	.00	.00	.00	.26	.20	.14	.09
.05	.04	.03	.02	.02	.02	.01	.01	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00				

63 LS SCS LOSS RATE
STRTL .53 INITIAL ABSTRACTION
CRVNBR 79.00 CURVE NUMBER
RTIMP .00 PERCENT IMPERVIOUS AREA

64 UD SCS DIMENSIONLESS UNITGRAPH
TLAG .17 LAG

***

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

UNIT HYDROGRAPH
12 END-OF-PERIOD ORDINATES

0.	1.	1.	0.	0.	0.	0.	0.	0.	0.
0.	0.								

****

HYDROGRAPH AT STATION P2

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
								*								
1		0000	1	.00	.00	.00	0.	*	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	*	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	*	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	*	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	*	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	*	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	*	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.57	.00	0.	*	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.36	.09	0.	*	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.20	.12	0.	*	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.11	.09	0.	*	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.06	.06	0.	*	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.04	.05	0.	*	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.03	.04	0.	*	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.02	.03	0.	*	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.02	.02	0.	*	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.01	.02	0.	*	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.02	0.	*	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.01	.02	0.	*	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	*	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	*	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	*	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	*	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	*	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	*	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	*	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	*	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	*	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	*	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	*	1		0455	60	.00	.00	.00	0.
								*								

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.58, TOTAL EXCESS = .68

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 0.	.92	(CFS) 0.	0.	0.	0.
		(INCHES) .681	.681	.681	.681
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

****

HYDROGRAPH AT STATION P2
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	0.
1		0035	8	.58	.57	.00	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.46	.36	.09	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.32	.20	.12	0.	1		0315	40	.00	.00	.00	0.
1		0050	11	.20	.11	.09	0.	1		0320	41	.00	.00	.00	0.
1		0055	12	.12	.06	.06	0.	1		0325	42	.00	.00	.00	0.
1		0100	13	.09	.04	.05	0.	1		0330	43	.00	.00	.00	0.
1		0105	14	.07	.03	.04	0.	1		0335	44	.00	.00	.00	0.
1		0110	15	.05	.02	.03	0.	1		0340	45	.00	.00	.00	0.
1		0115	16	.04	.02	.02	0.	1		0345	46	.00	.00	.00	0.
1		0120	17	.04	.01	.02	0.	1		0350	47	.00	.00	.00	0.
1		0125	18	.03	.01	.02	0.	1		0355	48	.00	.00	.00	0.
1		0130	19	.03	.01	.02	0.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.01	0.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	0.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	0.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	0.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	0.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	0.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	0.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	0.	1		0455	60	.00	.00	.00	0.

****

TOTAL RAINFALL = 2.26, TOTAL LOSS = 1.58, TOTAL EXCESS = .68

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 0.	.92	(CFS) 0.	0.	0.	0.
		(INCHES) .681	.681	.681	.681
		(AC-FT) 0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

WARNING *** TIME INTERVAL IS GREATER THAN .29*LAG

****

HYDROGRAPH AT STATION P2
PLAN 1, RATIO = .62

****

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.00	0.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.00	0.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.00	0.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.00	0.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.00	0.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.00	0.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.00	0.
1		0035	8	.36	.36	.00	0.	1		0305	38	.00	.00	.00	0.
1		0040	9	.28	.28	.01	0.	1		0310	39	.00	.00	.00	0.
1		0045	10	.20	.17	.03	0.	1		0315	40	.00	.00	.00	0.
1		0050	11	.12	.09	.03	0.	1		0320	41	.00	.00	.00	0.
1		0055	12	.08	.05	.02	0.	1		0325	42	.00	.00	.00	0.
1		0100	13	.06	.04	.02	0.	1		0330	43	.00	.00	.00	0.
1		0105	14	.04	.03	.01	0.	1		0335	44	.00	.00	.00	0.
1		0110	15	.03	.02	.01	0.	1		0340	45	.00	.00	.00	0.
1		0115	16	.03	.02	.01	0.	1		0345	46	.00	.00	.00	0.
1		0120	17	.02	.01	.01	0.	1		0350	47	.00	.00	.00	0.
1		0125	18	.02	.01	.01	0.	1		0355	48	.00	.00	.00	0.
1		0130	19	.02	.01	.01	0.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.00	0.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.00	0.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.00	0.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.00	0.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.00	0.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.00	0.	1		0430	55	.00	.00	.00	0.

1	0205	26	.01	.00	.00	0.	*	1	0435	56	.00	.00	.00	0.
1	0210	27	.01	.00	.00	0.	*	1	0440	57	.00	.00	.00	0.
1	0215	28	.01	.00	.00	0.	*	1	0445	58	.00	.00	.00	0.
1	0220	29	.01	.00	.00	0.	*	1	0450	59	.00	.00	.00	0.
1	0225	30	.01	.00	.00	0.	*	1	0455	60	.00	.00	.00	0.
							*							

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TOTAL RAINFALL = 1.40, TOTAL LOSS = 1.19, TOTAL EXCESS = .21

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW	6-HR	24-HR	72-HR	4.92-HR
+ 0.	1.00	(CFS)	0.	0.	0.	0.
		(INCHES)	.213	.213	.213	.213
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

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             **************
             *            *
  65 KK      *     C4     *
             *            *
             **************
                            Combine P2 & C3

  67 HC          HYDROGRAPH COMBINATION
                       ICOMP           2  NUMBER OF HYDROGRAPHS TO COMBINE
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HYDROGRAPH AT STATION C4
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	2.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	2.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	2.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	2.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	1.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	1.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	1.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	1.	1		0305	38	0.	1		0420	53	0.
1		0040	9	1.	1		0155	24	1.	1		0310	39	0.	1		0425	54	0.
1		0045	10	2.	1		0200	25	1.	1		0315	40	0.	1		0430	55	0.
1		0050	11	3.	1		0205	26	1.	1		0320	41	0.	1		0435	56	0.
1		0055	12	3.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.
1		0100	13	3.	1		0215	28	0.	1		0330	43	0.	1		0445	58	0.
1		0105	14	3.	1		0220	29	0.	1		0335	44	0.	1		0450	59	0.
1		0110	15	2.	1		0225	30	0.	1		0340	45	0.	1		0455	60	0.

****

PEAK FLOW (CFS)	TIME (HR)	MAXIMUM AVERAGE FLOW	6-HR	24-HR	72-HR	4.92-HR
+ 3.	.92	(CFS)	1.	1.	1.	1.
		(INCHES)	1.424	1.424	1.424	1.424
		(AC-FT)	0.	0.	0.	0.

CUMULATIVE AREA = .00 SQ MI

****

HYDROGRAPH AT STATION C4
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .62

****

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0115	16	1.	1		0230	31	0.	1		0345	46	0.
1		0005	2	0.	1		0120	17	1.	1		0235	32	0.	1		0350	47	0.
1		0010	3	0.	1		0125	18	1.	1		0240	33	0.	1		0355	48	0.
1		0015	4	0.	1		0130	19	1.	1		0245	34	0.	1		0400	49	0.
1		0020	5	0.	1		0135	20	1.	1		0250	35	0.	1		0405	50	0.
1		0025	6	0.	1		0140	21	1.	1		0255	36	0.	1		0410	51	0.
1		0030	7	0.	1		0145	22	0.	1		0300	37	0.	1		0415	52	0.
1		0035	8	0.	1		0150	23	0.	1		0305	38	0.	1		0420	53	0.
1		0040	9	0.	1		0155	24	0.	1		0310	39	0.	1		0425	54	0.
1		0045	10	1.	1		0200	25	0.	1		0315	40	0.	1		0430	55	0.
1		0050	11	1.	1		0205	26	0.	1		0320	41	0.	1		0435	56	0.
1		0055	12	1.	1		0210	27	0.	1		0325	42	0.	1		0440	57	0.
1		0100	13	1.	1		0215	28	0.	1		0330	43	0.	1		0445	58	0.
1		0105	14	1.	1		0220	29	0.	1		0335	44	0.	1		0450	59	0.
1		0110	15	1.	1		0225	30	0.	1		0340	45	0.	1		0455	60	0.

****

PEAK FLOW TIME MAXIMUM AVERAGE FLOW

```
                                        6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+       1.       .92                     0.          0.          0.          0.
                       (INCHES)      .704        .704        .704        .704
                        (AC-FT)        0.          0.          0.          0.

                        CUMULATIVE AREA =     .00 SQ MI


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


            **************
            *            *
   68 KK    *     T1     *
            *            *
            **************
                           T1

              SUBBASIN RUNOFF DATA

   70 BA          SUBBASIN CHARACTERISTICS
                        TAREA         .13  SUBBASIN AREA

                  PRECIPITATION DATA

   21 PB                STORM        2.26  BASIN TOTAL PRECIPITATION

   22 PI            INCREMENTAL PRECIPITATION PATTERN
                        .00       .00       .00       .00       .00       .00       .26       .20       .14       .09
                        .05       .04       .03       .02       .02       .02       .01       .01       .00       .00
                        .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                        .00       .00       .00       .00       .00       .00

   71 LS          SCS LOSS RATE
                        STRTL         .20  INITIAL ABSTRACTION
                       CRVNBR       91.00  CURVE NUMBER
                        RTIMP         .00  PERCENT IMPERVIOUS AREA

   72 UD          SCS DIMENSIONLESS UNITGRAPH
                         TLAG         .39  LAG

                                                                  ***

                                                          UNIT HYDROGRAPH
                                                     25 END-OF-PERIOD ORDINATES
                 14.       43.       91.      131.      146.      140.      120.       92.       63.       46.
                 34.       25.       18.       13.       10.        7.        5.        4.        3.        2.
                  2.        1.        1.        1.        0.
*****************************************************************************************************************************

                                                   HYDROGRAPH AT STATION    T1

*****************************************************************************************************************************
                                                                 *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
        1     0000    1     .00     .00     .00         0.       *        1     0230   31     .01     .00     .01        11.
        1     0005    2     .01     .01     .00         0.       *        1     0235   32     .01     .00     .01        10.
        1     0010    3     .01     .01     .00         0.       *        1     0240   33     .01     .00     .01        10.
        1     0015    4     .01     .01     .00         0.       *        1     0245   34     .01     .00     .01         9.
        1     0020    5     .01     .01     .00         0.       *        1     0250   35     .01     .00     .01         9.
        1     0025    6     .01     .01     .00         0.       *        1     0255   36     .01     .00     .01         9.
        1     0030    7     .01     .01     .00         0.       *        1     0300   37     .01     .00     .01         9.
        1     0035    8     .58     .44     .13         2.       *        1     0305   38     .00     .00     .00         9.
        1     0040    9     .46     .17     .29        10.       *        1     0310   39     .00     .00     .00         8.
        1     0045   10     .32     .08     .25        28.       *        1     0315   40     .00     .00     .00         7.
        1     0050   11     .20     .04     .16        57.       *        1     0320   41     .00     .00     .00         6.
        1     0055   12     .12     .02     .10        88.       *        1     0325   42     .00     .00     .00         5.
        1     0100   13     .09     .01     .08       114.       *        1     0330   43     .00     .00     .00         4.
        1     0105   14     .07     .01     .06       127.       *        1     0335   44     .00     .00     .00         3.
        1     0110   15     .05     .01     .05       129.       *        1     0340   45     .00     .00     .00         2.
        1     0115   16     .04     .01     .04       121.       *        1     0345   46     .00     .00     .00         1.
        1     0120   17     .04     .00     .03       107.       *        1     0350   47     .00     .00     .00         1.
        1     0125   18     .03     .00     .03        92.       *        1     0355   48     .00     .00     .00         1.
        1     0130   19     .03     .00     .02        78.       *        1     0400   49     .00     .00     .00         1.
        1     0135   20     .01     .00     .01        66.       *        1     0405   50     .00     .00     .00         0.
        1     0140   21     .01     .00     .01        56.       *        1     0410   51     .00     .00     .00         0.
        1     0145   22     .01     .00     .01        46.       *        1     0415   52     .00     .00     .00         0.
        1     0150   23     .01     .00     .01        38.       *        1     0420   53     .00     .00     .00         0.
        1     0155   24     .01     .00     .01        31.       *        1     0425   54     .00     .00     .00         0.
        1     0200   25     .01     .00     .01        25.       *        1     0430   55     .00     .00     .00         0.
        1     0205   26     .01     .00     .01        21.       *        1     0435   56     .00     .00     .00         0.
        1     0210   27     .01     .00     .01        17.       *        1     0440   57     .00     .00     .00         0.
        1     0215   28     .01     .00     .01        15.       *        1     0445   58     .00     .00     .00         0.
        1     0220   29     .01     .00     .01        13.       *        1     0450   59     .00     .00     .00         0.
        1     0225   30     .01     .00     .01        12.       *        1     0455   60     .00     .00     .00         0.
                                                                 *
*****************************************************************************************************************************

    TOTAL RAINFALL =    2.26, TOTAL LOSS =     .87, TOTAL EXCESS =    1.39

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR       24-HR       72-HR      4.92-HR
+   (CFS)       (HR)
                          (CFS)
+     129.      1.17                     24.         24.         24.         24.
                       (INCHES)     1.394       1.394       1.394       1.394
                        (AC-FT)       10.         10.         10.         10.

                        CUMULATIVE AREA =     .13 SQ MI
```

HYDROGRAPH AT STATION T1
PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	11.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.01	10.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.01	10.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.01	9.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	9.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.01	9.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.01	9.
1		0035	8	.58	.44	.13	2.	1		0305	38	.00	.00	.00	9.
1		0040	9	.46	.17	.29	10.	1		0310	39	.00	.00	.00	8.
1		0045	10	.32	.08	.25	28.	1		0315	40	.00	.00	.00	7.
1		0050	11	.20	.04	.16	57.	1		0320	41	.00	.00	.00	6.
1		0055	12	.12	.02	.10	88.	1		0325	42	.00	.00	.00	5.
1		0100	13	.09	.01	.08	114.	1		0330	43	.00	.00	.00	4.
1		0105	14	.07	.01	.06	127.	1		0335	44	.00	.00	.00	3.
1		0110	15	.05	.01	.05	129.	1		0340	45	.00	.00	.00	2.
1		0115	16	.04	.01	.04	121.	1		0345	46	.00	.00	.00	1.
1		0120	17	.04	.00	.03	107.	1		0350	47	.00	.00	.00	1.
1		0125	18	.03	.00	.03	92.	1		0355	48	.00	.00	.00	1.
1		0130	19	.03	.00	.02	78.	1		0400	49	.00	.00	.00	1.
1		0135	20	.01	.00	.01	66.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.01	56.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	46.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.01	38.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.01	31.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.01	25.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.01	21.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	17.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.01	15.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.01	13.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.01	12.	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 2.26, TOTAL LOSS = .87, TOTAL EXCESS = 1.39

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 129.	1.17	(CFS)	24.	24.	24.	24.
		(INCHES)	1.394	1.394	1.394	1.394
		(AC-FT)	10.	10.	10.	10.

CUMULATIVE AREA = .13 SQ MI

HYDROGRAPH AT STATION T1
PLAN 1, RATIO = .62

DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1		0000	1	.00	.00	.00	0.	1		0230	31	.01	.00	.01	6.
1		0005	2	.01	.01	.00	0.	1		0235	32	.01	.00	.00	6.
1		0010	3	.01	.01	.00	0.	1		0240	33	.01	.00	.00	5.
1		0015	4	.01	.01	.00	0.	1		0245	34	.01	.00	.00	5.
1		0020	5	.01	.01	.00	0.	1		0250	35	.01	.00	.01	5.
1		0025	6	.01	.01	.00	0.	1		0255	36	.01	.00	.00	5.
1		0030	7	.01	.01	.00	0.	1		0300	37	.01	.00	.00	5.
1		0035	8	.36	.33	.03	0.	1		0305	38	.00	.00	.00	5.
1		0040	9	.28	.16	.12	3.	1		0310	39	.00	.00	.00	5.
1		0045	10	.20	.08	.12	10.	1		0315	40	.00	.00	.00	4.
1		0050	11	.12	.04	.08	22.	1		0320	41	.00	.00	.00	3.
1		0055	12	.08	.02	.05	36.	1		0325	42	.00	.00	.00	3.
1		0100	13	.06	.02	.04	49.	1		0330	43	.00	.00	.00	2.
1		0105	14	.04	.01	.03	57.	1		0335	44	.00	.00	.00	2.
1		0110	15	.03	.01	.03	59.	1		0340	45	.00	.00	.00	1.
1		0115	16	.03	.01	.02	57.	1		0345	46	.00	.00	.00	1.
1		0120	17	.02	.01	.02	51.	1		0350	47	.00	.00	.00	1.
1		0125	18	.02	.00	.02	45.	1		0355	48	.00	.00	.00	0.
1		0130	19	.02	.00	.01	39.	1		0400	49	.00	.00	.00	0.
1		0135	20	.01	.00	.00	33.	1		0405	50	.00	.00	.00	0.
1		0140	21	.01	.00	.00	28.	1		0410	51	.00	.00	.00	0.
1		0145	22	.01	.00	.01	24.	1		0415	52	.00	.00	.00	0.
1		0150	23	.01	.00	.00	19.	1		0420	53	.00	.00	.00	0.
1		0155	24	.01	.00	.00	16.	1		0425	54	.00	.00	.00	0.
1		0200	25	.01	.00	.00	13.	1		0430	55	.00	.00	.00	0.
1		0205	26	.01	.00	.00	11.	1		0435	56	.00	.00	.00	0.
1		0210	27	.01	.00	.01	9.	1		0440	57	.00	.00	.00	0.
1		0215	28	.01	.00	.00	8.	1		0445	58	.00	.00	.00	0.
1		0220	29	.01	.00	.00	7.	1		0450	59	.00	.00	.00	0.
1		0225	30	.01	.00	.00	6.	1		0455	60	.00	.00	.00	0.

TOTAL RAINFALL = 1.40, TOTAL LOSS = .74, TOTAL EXCESS = .66

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	4.92-HR
+ 59.	1.17	(CFS)	11.	11.	11.	11.
		(INCHES)	.659	.659	.659	.659

```
                    (AC-FT)        5.          5.          5.          5.

                    CUMULATIVE AREA =     .13 SQ MI

1

              PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                                FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                          TIME TO PEAK IN HOURS


                                                                  RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2
                                                        1.00      .62

 HYDROGRAPH AT
+                 E1          .00     1   FLOW           1.       0.
                                           TIME         1.25     1.25

 HYDROGRAPH AT
+                 E2          .00     1   FLOW           1.       0.
                                           TIME         1.25     1.33

  2 COMBINED AT
+                 C1          .00     1   FLOW           1.       0.
                                           TIME         1.25     1.33

 HYDROGRAPH AT
+                 P1          .00     1   FLOW           2.       1.
                                           TIME          .92      .92

 ROUTED TO
+                 R1          .00     1   FLOW           2.       1.
                                           TIME          .92      .92

 HYDROGRAPH AT
+                 P4          .00     1   FLOW           1.       0.
                                           TIME         1.42     1.42

  2 COMBINED AT
+                 C2          .00     1   FLOW           2.       1.
                                           TIME         1.00     1.00

 HYDROGRAPH AT
+                 P3          .00     1   FLOW           1.       0.
                                           TIME          .83      .83

  2 COMBINED AT
+                 C3          .00     1   FLOW           3.       1.
                                           TIME          .92      .92

 HYDROGRAPH AT
+                 P2          .00     1   FLOW           0.       0.
                                           TIME          .92     1.00

  2 COMBINED AT
+                 C4          .00     1   FLOW           3.       1.
                                           TIME          .92      .92

 HYDROGRAPH AT
+                 T1          .13     1   FLOW         129.      59.
                                           TIME         1.17     1.17
1
                                           SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                               (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                   INTERPOLATED TO
                                                                                 COMPUTATION INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME TO     VOLUME
                                                      PEAK                                              PEAK

                                (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)     (MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
              R1     MANE          .99      1.60     55.54      2.03      5.00      1.59     55.00        2.03


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .8671E-01 EXCESS= .0000E+00 OUTFLOW= .8668E-01 BASIN STORAGE= .4225E-04 PERCENT ERROR=    .0


           FOR PLAN = 1  RATIO=  .00
              R1     MANE         1.11       .92     56.55      1.18      5.00       .90     55.00        1.18


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5038E-01 EXCESS= .0000E+00 OUTFLOW= .5037E-01 BASIN STORAGE= .4344E-04 PERCENT ERROR=   -.1



 *** NORMAL END OF HEC-1 ***
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