DRAINAGE STUDY
FOR
RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER

Job Number 14557

December 3, 2019
Revised: October 20, 2020

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Job Number 14557

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Exp. 06/21

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DECLARATION OF RESPONSIBLE CHARGE

I hereby declare that I am the engineer of work for drainage report for this project, that I have exercised responsible charge over this drainage report as defined in Section 6703 of the Business and Professionals Code, and opine that the drainage report is consistent with current standards.

I understand that the check of the drainage report by the County of San Diego is confined to a review only and does not relieve me, as the engineer of work, of any responsibilities for the drainage report.

_____

Jayne Janda-Timba, PE
RCE # 70649, Exp. 06/21

1.0 INTRODUCTION

1.1 Project Description

This drainage study presents the hydrologic and hydraulic (H&H) analyses for the development of the Rancho Guejito Tasting Facility and Event Center project (herein referred to as "the project") and accompanying site improvements. The project is located in the unincorporated area of San Diego County, at 17224 San Pasqual Valley Road (California Highway 78, CA-78), approximately 7.5 miles east of the City of Escondido, California. A vicinity map of the project location is provided in Figure 1-1. This study analyzes the hydrologic characteristics of the project site and contributing drainage areas for two separate levels of detail: (1) a watershed-scale analysis for Guejito Creek (also named Rockwood Canyon Creek), which runs along the western portion of the project site, and (2) a project local watershed analysis to determine the impacts associated with the proposed development. The results from the Guejito Creek Watershed hydrologic analyses were utilized in the hydraulic analysis of Guejito Creek.

1.2 Drainage Characteristics

Guejito Creek Watershed

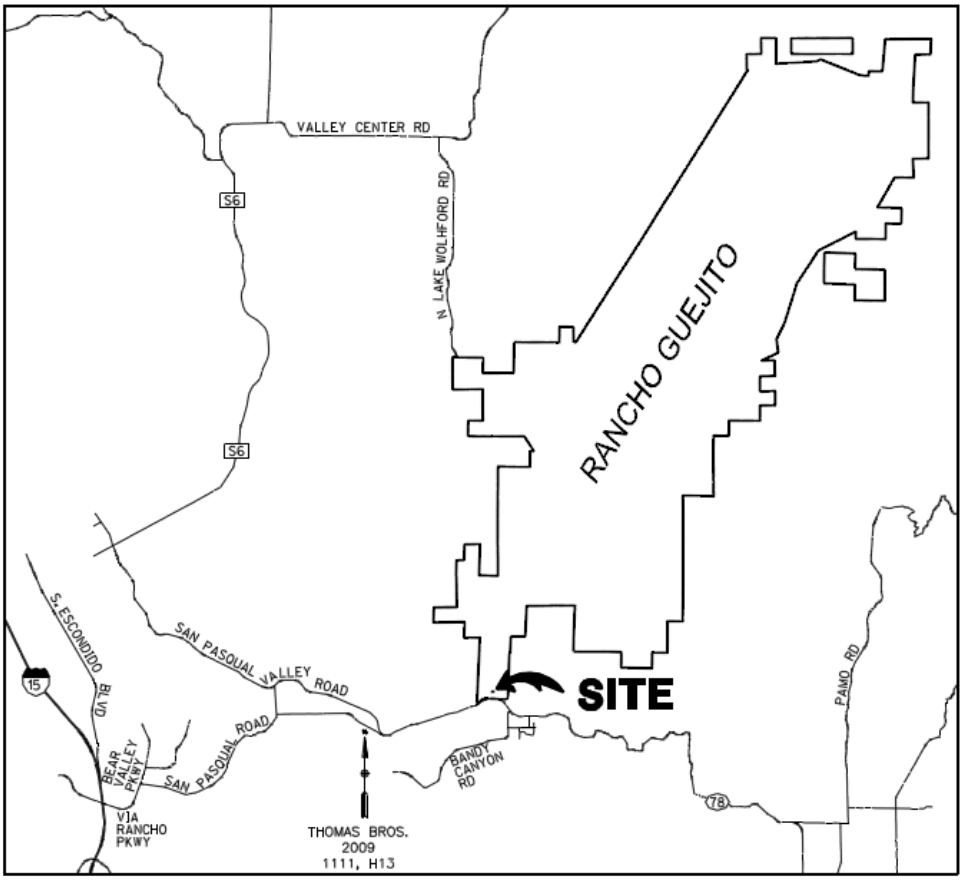
The Guejito Creek watershed covers approximately 27.7 square miles, from Rodriguez Mountain at the northern extent of the watershed to the confluence with Santa Ysabel Creek, south of CA-78. Drainage flows generally from northeast to southwest through largely natural and agricultural areas. The watershed is bordered by steep hillsides to the north, east, and west. Drainage follows relatively well-defined flowpaths, especially in the southern portions of the watershed. Several watercourses confluence upstream of the existing vineyards, and are eventually all collected within Guejito Creek, which runs along the western edge of the project site. The overall longitudinal slope for the watershed is relatively mild, averaging approximately 2% along the 10-mile length of the flowpath within the valley. Guejito Creek passes beneath a bridge structure along CA-78, and then continues southerly for approximately 1,500 feet prior to its confluence with Santa Ysabel Creek. Soil within the watershed consists of a combination of Hydrologic Soil Groups (HSG) A, B, C and D soils (see Appendix A).

Project Local Drainage Basin

The project local drainage basin for this study is the area upstream of the project site that is not collected within Guejito Creek prior to CA-78. The drainage basin contributes to the same discharge location in both existing and post-project conditions. The local drainage basin covers approximately 264 acres, extending from the ridge of the mountains located directly east of the project to a ridge in the agricultural fields area located west of the project. The drainage area consists largely of agricultural areas with few developments, including single-family residences and additional accessory structures. Concentrated drainage flows from the adjacent hillsides onto the existing vineyards, where the flow transitions into a sheet flow condition. Runoff then sheet

flows southerly through the existing vineyards at a mild slope (approximately 0.6%) prior to being collected within an existing depression that is located adjacent to the existing site access driveway along the north side of CA-78. From this collection point, an existing culvert conveys runoff beneath CA-78 and into an existing drainage ditch along the southern roadway shoulder. Runoff in the ditch then flows westerly and confluences with Guejito Creek.

Figure 1-1: Vicinity Map



VICINITY MAP
NOT TO SCALE

1.3 Flood Hazard Mapping

The project area is not located within a Federal Emergency Management Agency (FEMA) mapped Special Flood Hazard Area (SFHA). Two creeks run within the vicinity of the project area, Guejito Creek to the west and Santa Ysabel Creek to the south. Santa Ysabel Creek is FEMA mapped Zone AE; however, the 0.2 percent annual chance flood (500-year flood) for Santa Ysabel Creek does not reach the project area. Guejito Creek is not FEMA mapped within the vicinity of project area. The County of San Diego floodplain mapping does not differ from FEMA in this area.

The project is within a Dam Inundation Zone flood hazard from the Lake Sutherland dam approximately 13 miles upstream. In the event that this dam had a major, rapid dam failure while full, the project area would be inundated with floodwater from Santa Ysabel Creek to depth of several feet.

2.0 HYDROLOGIC ANALYSES

The proposed development is located within the overall Guejito Creek watershed. Two hydrologic analyses were performed: one for the overall Guejito Creek watershed and one for the project local drainage basin. The hydrologic analysis performed for the drainage to Guejito Creek, upstream of the confluence with Santa Ysabel Creek determined anticipated peak flow rates within the creek and subsequently, through hydraulic analyses, determine water surface elevations expected during the 100-year storm event. The project local basin analysis was performed so that a comparison between the existing and proposed conditions flow rates could be made in order to assess the potential increase in peak flow rates resulting from the proposed project.

2.1 Hydrologic Analysis Methodology – Guejito Creek Watershed

The watershed to Guejito Creek is greater than one square mile, and thus in accordance with the June 2003 *San Diego County Hydrology Manual* (Hydrology Manual) (San Diego County, 2003), the Natural Resources Conservation Service (NRCS) hydrologic method was used to determine existing condition peak flow rates for the 100-year frequency storm event.

The current Hydrology Manual requires that 24-hour "nested storm" with the 2/3, 1/3 distributions supersede the old Type B rainfall distribution (The rainfall distribution adopted the nested storm pattern, based on the United States Army Corps of Engineers (USACE), Hydrologic Engineering Center (HEC) Training Document Number 15). The NRCS's rainfall distribution is based on the Rational Method's 6-hour intensity-duration relationship and as a result, the NRCS method now closely mimics the results of the Rational Method. There can be significant differences in the peak flow rate calculated by the "Type B" and "nested storm" rainfall distributions, and in some cases the "nested storm" rainfall distribution may result in over three times the calculated peak flow rate in comparison to the "Type B" rainfall distribution calculations for the same watershed. Therefore, it is appropriate to use the NRCS Hydrologic method to determine the peak flow rates.

The US Army Corps of Engineers HEC-1 computer program was used to determine the 100-year peak discharge flow rates. The HEC-1 program allows the engineer to simulate both natural and improved or developed watersheds. Program parameter include basin area, lag time, rainfall distribution, and NRCS curve number (related to infiltration rates). These parameters were determined from soil and vegetative cover/land use maps, and topographic data. A watershed soil group map exhibit is provided in Appendix A. Runoff was estimated using NRCS curve numbers for the watershed. Estimated curve numbers are a function of land use or vegetative cover and soil type. The land uses were based on the County of San Diego land use (SANGIS), aerial imagery, and applicable data gathered during previous visits to the project site. Consistent with the Hydrology Manual guidance, a composite curve number was determined for the watershed

using an area-weighted average of the individual land use areas and corresponding curve numbers. A summary of the watershed parameters used in analysis are provided in Table 2-1. A watershed map is provided in Map Pocket 1.

Table 2-1: NRCS Method Key Hydrologic Parameters Summary

Hydrologic Parameter	Value
Basin Area	27.7 square miles (17,700 acres)
Topography	Min. 400 feet, Max. 1,800 feet (NAVD88)
100-year Design Storm Precipitation	6-hour, P=3.6 – 3.9 inches; 24-hour, P=6 - 9 inches
Unadjusted Precipitation Zone Number (PZN) (Figure C-1)	2.5 (Antecedent Moisture Condition = II)
Natural Open Channel Roughness (Per *San Diego County Hydraulic Design Manual*)(San Diego County, 2014)	Mountain Streams: Bottom, Cobbles with Large Boulders., n = 0.060

Additional HEC-1 input parameters were calculated. Rainfall rates and distributions were developed using the criteria, as outlined in the Hydrology Manual. Lag time for the watershed was calculated using criteria presented in the Hydrology Manual. The PZN adjustment was performed using the methodologies outlined in the Hydrology Manual. Additional information is provided on Worksheet 4-3, contained in Appendix B, related to the calculation of the input parameters. The HEC-1 model output results are also provided in Appendix B.

The NRCS synthetic unit hydrograph with curvilinear transformation was used to develop runoff hydrographs for the watershed. This unit hydrograph is dimensionless and is a function of the watershed area and lag time.

2.2 Hydrologic Analysis Results – Guejito Creek Watershed

The overall 27.7 square-mile Guejito Creek watershed was delineated into four (4) basins for the hydrologic analysis. Please refer to the Drainage Study Map for the Guejito Creek watershed provided in Map Pocket 1. The improvements associated with this project are located within Basin 400. It should be noted that although the project will increase the amount of impervious area on-site, the increase peak discharge for the Guejito Creek watershed will be negligible because of the relative size to the overall watershed and the vastly different time to peak for the proposed improvements compared to the entire watershed. Thus, the existing and proposed conditions are assumed equivalent for the Guejito Creek watershed analysis. Increases in peak flow rates associated with the proposed development are calculated in the section for the local drainage analysis (Section 2.3). The peak flow rate from the Guejito Creek watershed was calculated to be 16,000 cubic feet per second. The summary of input parameters for the Guejito

Creek watershed hydrologic analysis is provided in Table 2-2. Please refer to Appendix B for the HEC-1 inputs and output.

Table 2-2: Summary of HEC-1 Parameters

Basin	Area (square miles)	Watershed Length (miles)	NRCS Lag (hours)	Weighted CN[1]	Basin n[2]
100	22.5	10.74	1.956	93	0.06
200	3.03	3.36	0.683	92	0.06
300	1.06	2.47	0.517	92	0.06
400	1.10	1.45	0.639	92	0.06

Note 1: The PZN for the project site is 2.5. The PZN adjustment factor for 100-year event is 3. Therefore CN_3 values used.
Note 2: Basin n value from Table A-5 of the Hydraulic Design Manual for "Mountain Streams: Bottom, Cobbles with Large Boulders."

2.3 Hydrologic Analysis Methodology – Project Local Watershed

To determine the peak flow rates expected to reach the project's point of collection (depression location along the north side of CA-78), the Rational Method was used. In accordance with the Hydrology Manual, the Rational Method should be used for watersheds less than one (1) square mile (local drainage basin is 264 acres). To perform the rational method calculations, Advance Engineering Software (AES) Rational Method computer software was used. The hydrologic model was developed by first dividing the local drainage basin into several subareas. The delineation of each subarea was determined so that area within each subarea is comprised of similar hydrologic features, including topography, land use, and storm drain conveyance system (e.g., urban open channel, pipe, natural open channel, etc.). Nodes were identified at the upstream and downstream extents of each subarea, and subarea hydrologic data was determined, such as the land use(s) and drainage facility geometry, elevations, and lengths. Hydrologic backup information is included in Appendix C. Next, the hydrologic data describing each subarea were incorporated into the AES software in order to create a node-link model for each watershed. For each subarea the AES software performs calculations for the specific hydrologic process occurring in the subarea. There are 15 different hydrologic processes programed into the software, and each process is assigned a code number that is presented on the model results. The AES Rational Method computer software hydrologic processes code numbers are described in Table 2-3.

Table 2-3: Summary of AES Processes

Code	Subarea Type
Code 1	Confluence analysis at a node
Code 2	Initial subarea analysis
Code 3	Pipe flow travel time (computer-estimated pipe sizes)
Code 4	Pipe flow travel time (user-specified pipe size)
Code 5	Trapezoidal channel travel time
Code 6	Street flow analysis through a subarea
Code 7	User-specified information at a node
Code 8	Addition of the subarea runoff to mainline
Code 9	V-Gutter flow through subarea
Code 10	Copy mainstream data onto a memory bank
Code 11	Confluence a memory bank with the mainstream memory
Code 12	Clear a memory bank
Code 13	Clear the mainstream memory
Code 14	Copy a memory bank onto the mainstream memory
Code 15	Hydrologic data bank storage functions

Key hydrologic parameters utilized in the analysis in accordance with the County of San Diego's design criteria are summarized in Table 2-4.

Table 2-4. Rational Method Key Hydrologic Parameters Summary

Hydrologic Parameter	Value
Design Storm Precipitation[1]	100-year, 6-hour, P=3.5 inches
Runoff Coefficients[2] (Per 2003 County Hydrology Manual) (San Diego County, 2003)	Soil A, Open Space = 0.20 Soil B, Open Space = 0.25 Soil C, Open Space = 0.30
Natural Open Channel Roughness[2] (Per San Diego County Hydraulic Design Manual)(San Diego County, 2014)	Vineyards, n = 0.040 *Sheet flow through vineyards modeled as Mature Row Crops per Table A-5 of Hydraulic Design Manual*
Rainfall Intensity[2]	Per Section 3.0 of the County Hydrology Manual (San Diego County, 2003)

Note 1: Isopluvial maps provided in Appendix C.

Note 2: Additional hydrologic parameters are shown on the AES software output data (Rational Method Analyses) provided in Appendix C.

2.4 Hydrologic Analysis Results – Project Local Watershed

The local drainage basin is defined in this study as the upstream areas draining to the depression along the north side of CA-78, adjacent to the existing access driveway where storm water runoff leaves the site through an existing culvert. In order to appropriately compare the pre-project to post-project conditions, the analysis focuses on the local drainage area and does not this consider the runoff from Guejito Creek. All runoff in pre-project and post-project conditions is routed to the local depression and culvert, allowing for a direct comparison between pre-project and post-project peak flow rates. The drainage basin was delineated into four (4) basins and several subbasins for the hydrologic analysis, with all improvements (impervious areas) located within the subbasins associated with Nodes 203 to 110 and Nodes 104 to 110. Therefore, the other subbasins do not change from pre-project to post-project conditions. Please refer to the Drainage Study Maps for the pre-project and post-project conditions which are located in Map Pockets 2 and 3, respectively. In order to appropriately incorporate the increases in impervious cover into modeling, the runoff coefficient for the subbasins with impervious cover, for both the pre-project and post-project conditions, were calculated following the formula from Section 3.1.2 of the Hydrology Manual. The results are summarized below in Table 2-5.

Table 2-5: Calculated Runoff Coefficient 'C'

Nodes	Impervious Area (ac)	Total Subbasin Area (ac)	Percent Impervious	Subbasin Natural 'C'	Calculated 'C'[2]
Pre-Project Condition					
104 to 110	0.11	17.0	0.6%	0.225	0.229
203 to 110	0.37	6.0	6.1%	0.205	0.247
402 to 110	0.37	5.7	6.5%	0.218	0.262
Post-Project Condition					
104 to 105	0.10	5.7	1.8%	0.250	0.262
105 to 106	0.30	2.9	10.4%	0.250	0.318
106 to 107	0	2.3	0.0%	0.250	0.250
107 to 110	0.81	2.9	28.1%	0.200	0.397
203 to 110	1.48	9.3	15.9%	0.205	0.315
402 to 110	0.37	5.7	6.46%	0.218	0.262

[1] Please refer to Soils Group Map in Appendix A

[2] Runoff coefficient is calculated by C=0.90 x (% Imp) + C_p x (1-% Imp), C_p= Natural 'C'

The summary of the 100-year, peak flow rates resulting from the rational method analysis at key nodes, included the project area subbasin, is provided in Table 2-6. Please refer to Appendix C for the AES output file of the rational method results.

Table 2-6: Summary of Local Drainage Basin Rational Method Calculations

Condition	Modified Rational Method Node	Area (acres)	Time of Concentration (Minutes)	Intensity (inches/hour)	Peak Flow Velocity (feet/second)	Peak Flow without Mitigation (cfs)	Peak Flow with Mitigation (cfs)
Pre-Project	110	262.8	40.0	2.4	1.5	194.8	n/a
Post-Project	110	262.9	45.5	2.2	2.1	191.2	191.2

The rational method calculations determine that peak flow rates from the 100-year storm event draining to the existing depression and culvert are expected to decrease by 3.7 cubic feet per second in post-project conditions compared to pre-project as a result of the proposed development. This is a result of a slightly longer time of concentration (Tc) in the post-project condition, which in turn is a result of the proposed project slightly altering the on-site drainage patterns. More specifically, in the pre-project flow from Nodes 104 and Node 203 to Node 110 is in a near straight line across the existing agriculture field. In the post-project condition, flow between the same nodes will be in swales that will direct flows around the proposed project location in the agriculture field where flow currently travels straight. The slight increase in flow path length in post-project conditions results in a slightly longer Tc in the confluence calculations of the rational method and a reduced overall post-project condition peak flow rate.

2.5 Caltrans Hydrologic Analysis Methodology – Project Local Watershed

Because modifications are proposed to Caltrans drainage infrastructure, a hydrologic analysis of the local watershed was performed in accordance with the Caltrans *Highway Design Manual, Sixth Edition* (2018). The project includes widen to Highway 78 to accommodate a turning, deceleration, and acceleration lanes, which in turn will require that the existing dual-cell 5 feet (width) by 2 fee (height) reinforced concrete box (RCB) culvert be extended. The Caltrans hydrologic analysis utilized the same topographic watershed delineations as the County hydrologic analysis. The Hydrologic Engineering Center-Hydrologic Modeling System (HEC-HMS) software was utilized to perform the analysis. Each subbasin in the watershed was represented in the model using the Initial and Constant loss method and the Kinematic Wave transformation method. Rainfall data were incorporated into the model from NOAA Atlas 14 data. In order to prepare an appropriate hyetograph, the guidance provided in Chapter 6 of the FHWA *Hydraulic Design Series No. 2, Second Edition* (2002) was followed.

The Kinematic Wave transformation method was utilized to represent the internal flow routing for each subbasin. This method considers that runoff begins on plane, flows into subcollectors, collectors, and finally a channel. For this project, the modeling used Plane 1 to represent impervious areas and Plane 2 to represent pervious areas. Table 2-7 provides a summary of the data used in the modeling.

Table 2-7. Kinematic Wave Transformation Method Parameters

Feature	Length (feet)	Slope (feet/feet)	Roughness	Width (feet)	Side Slope (H:V)
Hillside					
Plane 2	25	0.4	0.045	n/a	n/a
Subcollector	75	.4	0.045	0.5	3
Collector	75	.4	0.045	2	3
Channel	Varies	Varies	0.045	5	3
Vineyard					
Plane 1	25	0.01	.015	n/a	n/a
Plane 2	25	0.006	0.040	n/a	n/a
Subcollector	75	0.006	0.045	0.5	3
Collector	75	0.006	0.045	2	3
Channel	Varies	Varies	0.045	5	3
Street					
Plane 1	30	0.06	0.015		
Plane 2	25	0.25	0.040		
Subcollector	75	0.01	0.015	0.5	3
Collector	75	0.25	0.015	1	3
Channel	Varies	Varies	0.040	5	4

For the Initial and Constant loss method constant loss rates were based on hydraulic conductivity data obtain from the USGS Web Soil Survey database. The database list a range of values, and for this project the lower end of the range values were used as summarized on Table 2-8. Where applicable, area-weighted values were used. A copy of the Web Soil Survey is provided in Appendix D. Please refer to the Caltrans Drainage Study Maps for the pre-project and post-project conditions which are located in Map Pockets 4 and 5, respectively.

Table 2-8. Soil Parameters Summary

Soil Name	Hydrologic Soil Group	Hydraulic Conductivity (in/hr)
CnG2-Cieneba Fallbrook	D	0.92
RaD2-Ramona	C	0.2
TuB-Tujunga	A	5.95
VaA-Visalia	A	1.98

The guidance provided in Chapter 6 of the FHWA *Hydraulic Design Series No. 2, Second Edition* (2002) was followed to prepare a hyetograph for the 100-year, 24-hour and 10-year, 24-hour storm events. This guidance specifies that a ½ - ½ nested distribution be utilized. Tables showing the resulting hyetograph are provided in Appendix D.

2.6 Caltrans Hydrologic Analysis Results – Project Local Watershed

The results of the hydrologic modeling are provided in Table 2-9.

Table 2-9. Caltrans Hydrologic Analysis Results Summary

Location	100-Year Storm Event		10-Year Storm Event	
	Pre-Project Peak Flow Rate (cfs)	Post-Project Peak Flow Rate (cfs)	Pre-Project Peak Flow Rate (cfs)	Post-Project Peak Flow Rate (cfs)
J-110 (Upstream of Culvert)	121.0	105.7	20.1	20.4
J-111 (Downstream of Culvert)	121.3	106.2	20.6	21.0
J-112 (at Downstream Project Limits)	121.5	106.4	20.8	21.3

The results indicate that the project will result in a decrease in peak flows reaching the Caltrans culvert in the post-project condition in comparison to the pre-project condition. More detailed output tables are provided in Appendix D that include the runoff from each subbasin along with the time of the peak flow. In the post-project condition, the majority of flow is a result of runoff from the hillsides and vineyard upstream of the project development area, and the project improvements result in an increase of 350 feet (flow path of 620 feet becomes 970 feet) in the distance that a majority of the runoff must travel to reach the culvert. This in turn results in the peak flow occurring 5 minutes later in the storm in the post-project condition when compared to the pre-project condition. Hydraulic modeling, discussed in Section 3.0, were prepared to estimate the hydraulic performance of the existing and modified (extended) culvert and downstream system during the 100-year peak flow rate for the existing and proposed condition, respectively.

The results indicate that during the 10-year storm event, the project improvements will result in slight increases in peak flow rates at the Caltrans culvert and downstream of the culvert. Hydraulic modeling, discussed in Section 3.0, were prepared to verify that the extended culvert will satisfy the 10-year peak flow rate hydraulic criteria.

3.0 LOCAL HYDRAULIC ANALYSES

Local hydraulic analyses were performed to assess the storm water conveyance capacity of the double 5 feet (wide) by 2 feet (high) RCB culvert, spanning CA-78, and the existing dual 24-inch corrugated metal pipe (CMP), spanning the residential driveway, down to Guejito Creek. As described in Section 1.2, runoff sheet flows southerly through project site prior to being collected within an existing depression that is located adjacent to the existing site access driveway along the north side of CA-78. From this collection point, the existing double 5 feet (wide) by 2 feet (high) RCB culvert conveys runoff beneath CA-78 and into an existing drainage ditch along the southern roadway shoulder. Runoff in the ditch then flows westerly, through the existing dual 24-inch CMP, and confluences with Guejito Creek approximately 500 feet downstream. Hydraulic modeling was performed for the pre- and post-project condition in accordance with the Caltrans *Highway Design Manual* for the 10-year and 100-year storm events.

3.1 Local Hydraulic Methodology

Hydraulic calculations were performed for this study using the Water Surface Pressure Gradient for Windows (WSPGW) modeling software. The WSPGW software was utilized to compute and plot the uniform and non-uniform steady flow water surface profiles and pressure gradients in open channels and closed conduits associated with the project. The WSPGW software can perform hydraulic calculations in a system where flow alternates between supercritical, sub-critical, or pressure flow in any sequence. The program uses mathematical and hydraulic principles to calculate key data such as cross-sectional area, wetted perimeter, normal depth, critical depth, pressure, momentum, and velocity. An existing condition WSPGW model was prepared to reflect the existing culvert and downstream, and this model was prepared based on topographic ground survey perform on September 25, 2020. A proposed condition WSPGW model was prepared using the existing condition model as base and incorporation the proposed culvert extension and upstream geometry based on the geometry and elevations shown on the improvement plans.

The WSPGW hydraulic model is a one-dimensional hydraulic model that does not capture the effects of ponding and potential split flow conditions along open channel banks and roadways. To account for split flow conditions (i.e., runoff that bypasses the existing storm drain conveyance system), broad-crested weir calculations in conjunction with the WSPGW results were used to determine the appropriate water surface elevation that would result in the total design peak flow rate for the existing and proposed conditions. Based on topographic survey data, the southern bank of the existing drainage ditch south of CA-78 has a lower elevation than the northern bank adjacent to the road. It is anticipated that runoff will overtop the southern bank and exit the system as weir flow during peak storm events while the remaining flow passes though the existing dual 24-inch CMP. The combined WSPGW modeling and weir flow (split

flow) analysis was an iterative process of varying the flow rate conveyed through the culvert until the resulting water surface elevation produced a flow rate through broad-crested weir flow calculations that, when combined with the 24-inch CMP WSPGW model flow rate, totaled the design peak flow rate.

3.2 Local Hydraulic Results

Table 3-1 provides a summary of water surface elevations and peak flow rates through the storm drain infrastructure for existing and proposed conditions.

Table 3-1. Summary of Local Hydraulic Results

Condition	Dual 24-inch CMP			Double 5 feet (W) by 2 feet (H) RCB	
	WSE (ft) - U/S of 24-inch CMP	Flow Rate (cfs) as Weir Flow	Flow Rate (cfs) through Culvert	Flow Rate (cfs) through Culvert	WSE (ft) - U/S of Double 5-ft (W) x 2-ft (H) RCB
Existing Condition[1] (Pre-Project 100-yr Storm Event)	422.76	75.1	46.2	121.0	424.03
Proposed Condition[1] (Post-Project 100-yr Storm Event)	422.72	60.4	45.8	105.7	424.25
Existing Condition[2,3] (Pre-Project 10-yr Storm Event)	421.13	N/A[5]	20.1	20.1	421.34
Proposed Condition[2,4] (Post-Project 10-yr Storm Event)	421.18	N/A[5]	21.3	21.3	422.74

1. Top of road, edge of pavement at double RCB= 424.62 f and 425.3 for the existing and post-project conditions, respectively.
2. Dual 24-inch CMP: Upstream Soffit = 420.64 ft. Downstream Soffit = 420. 46 ft.
3. Existing Double 5-ft (W) by 2-ft (H) RCB: Upstream Soffit = 422. 65 ft. Downstream Soffit = 422. 37 ft.
4. Proposed Double 5-ft (W) by 2-ft (H) RCB: Upstream Soffit = 424. 09 ft. Downstream Soffit = 422. 37 ft.
5. Weir flow begins along southern bank at elevation 422.17 ft.

Appendix E provides the input and output WSPGW files. Table 3-2 provides a summary of WSPGW file names and descriptions for reference. Broad-crested weir calculations are provided in Appendix E.

Table 3-2. Summary of WSPGW File Input and Outputs

WSPGW File Name	Description
rgex100a	Existing Condition - 100-yr Storm Event : Modeling double 5-ft (W) by 2-ft (H) RCB to dual 24-inch CMP, using starting WSE from rgex100b output
rgex100b	Existing Condition - 100-yr Storm Event: Modeling dual 24-inch CMP to Guejito Creek

WSPGW File Name	Description
rgpr100a	Proposed Condition - 100-yr Storm Event: Modeling from double 5-ft (W) by 2-ft (H) RCB to dual 24-inch CMP, using starting WSE from rgpr100b upstream
rgpr100b	Proposed Condition - 100-yr Storm Event: Modeling dual 24-inch CMP to Guejito Creek
rgex10	Existing Condition - 10-yr Storm Event: Complete Model from double 5-ft (W) by 2-ft (H) RCB to Guejito Creek
rgpr10	Proposed Condition - 10-yr Storm Event: Complete Model from double 5-ft (W) by 2-ft (H) RCB to Guejito Creek
rgex100	Existing Condition - 100-yr Storm Event: Complete Model from double 5-ft (W) by 2-ft (H) RCB to Guejito Creek
rgpr100	Proposed Condition - 100-yr Storm Event: Complete Model from double 5-ft (W) by 2-ft (H) RCB to Guejito Creek

Based on the results presented in Table 3-1 the project complies with the Highway Design Manual guidance related to the proposed culvert having the hydraulic capacity to convey the 10-year peak flow rate without causing the headwater elevation to rise above the inlet top of the culvert and to convey the 100-year peak flow rate without headwaters rising above an elevation that would cause objectionable backwater depths or outlet velocities. This study acknowledges that due to the flat grades within the project property upstream of the culvert, the analysis indicates that there will be shallow ponding, less than 1 foot depth in general, within the project property for the both existing and post-project conditions during the analyzed 100-year peak flow rates. Due to the flat topography combined with the limited capacity of the channel and dual 24-inch RCPs downstream of the culvert, the ponding within the project property is unavoidable. In the existing condition, the ponding within the project property upstream from the CA-78 culvert is limited to areas occupied by vineyard. In the proposed condition, the ponding within the project property upstream from the CA-78 culvert is generally limited to areas occupied by vineyard with minor areas of drive isles and park inundated with depths generally less than 6 inches. Because the ponding within the project property is an existing condition and in the post-project condition, the shallow ponding is generally the same as in the existing condition, the project does not result in objectionable backwater depths.

4.0 GUEJITO CREEK HYDRAULIC ANALYSIS

Hydraulic analyses were also performed for Guejito Creek as part of this study. Guejito Creek runs along the western portion of the project site and drains an approximately 27.7 square mile area upstream of the project site, which has been defined as the Guejito Creek watershed in this study. Existing Condition and Proposed Condition Models were created to analyze the anticipated water surface elevations resulting from the peak flows associated with the 100-year storm event and the hydraulic effects, if any, from the project on Guejito Creek. The peak flow rate was calculated previously in this study as 16,000 cubic feet per second.

The U.S. Army Corps of Engineers' Hydrologic Engineering Center's River Analysis System (HEC-RAS) v.4.1.0 was used to model the hydraulic characteristics of Guejito Creek and determine the water surface elevations associated with the peak flows from the 100-year storm event. HEC-RAS software is designed to perform one-dimensional hydraulic calculations for steady gradually-varied flow in natural and constructed channels.

4.1 Existing Condition Model Methodology

An Existing Condition Model was created to determine the anticipated water surface elevations from the 100-year storm event peak flows, and for comparison to the Proposed Condition Model in determining the hydraulic effects of the project. The topographic data utilized to define the Existing Condition Model channel geometry was obtained from SanGIS. The SanGIS obtained data is from a 2015 data set consisting of 5-foot contours, raw Light Detection and Ranging (LiDAR), hydro-flattened digital elevation model (DEM) and is relative to the North American Vertical Datum of 1988 (NAVD88). The DEM was adjusted to -2.19 feet to be consistent with the grading plans datum of National Geodetic Vertical Datum of 1929 (NGVD29). The downstream boundary control utilized for these analyses is based on the FEMA Flood Insurance Study (FIS) one percent annual chance Base Flood Elevation at the Guejito Creek confluence of 415.31 feet in reference to NGVD29 (417.5 NAVD 88). The hydraulic analysis was performed in accordance with guidelines from the San Diego County *Hydraulic Design Manual*.

Manning's Roughness Coefficient

The Manning's Roughness Coefficients (Manning's n) for the existing conditions model were estimated based on available data including aerial imagery, photos taken, and information gathered during previous visits to the project site. The estimated Manning's n values were correlated to the values provided in Appendix A of the Hydraulic Design Manual. The applicable excerpts from the Hydraulic Design Manual can be found in Appendix E. A summary of the values is provided in Table 4-1.

Table 4-1: Manning's Roughness Coefficient, n, Summary for HEC-RAS Analysis

Channel Section[1]	Manning's n	Description[2]
Left Overbank - Vineyard	0.040	Mature Row Crops
Channel	0.150	Maximum lifetime channel roughness[3]
Right Overbank - Orchard	0.060	Light Brush and Trees

Note 1: Channel section defined by looking downstream
Note 2: Description from Table A-5 of Hydraulic Design Manual
Note 3: Maximum lifetime channel roughness per Hydraulic Design Manual, freeboard design.

4.2 Proposed Condition Model Methodology

From the Existing Condition Model, the Proposed Condition Model was created by changing the applicable cross sections to reflect the proposed project improvements. The project transects cross sections 600 through 1000 of the Proposed Condition Model. Buildings were modeled as ineffective flow areas in the model. Additionally, contraction and expansion areas were modeled upstream and downstream of the buildings at 2:1 and 4:1 (in the direction of flow to the direction perpendicular to flow) ratios, respectively. The n-values of the Proposed Condition Model were kept the same as the Existing Condition Model. See the Hydraulic Workmap in Map Pocket 6 for the proposed improvements and the ineffective areas modeled.

4.3 Hydraulic Analysis Results

Comparisons between the Existing Condition Model and Proposed Condition Model water surface elevations are provided in Table 4-2 below.

Table 4-2: Water Surface Elevations for Guejito Creek

Station[1]	Existing WSE[2,3]	Proposed WSE[2,3]	Difference[4]
50	415.31	415.31	0
150	417.25	417.25	0
250	418.78	418.79	0.01
300	419.62	419.62	0
349.21	421.33	421.32	-0.01
398.94	427.2	427.2	0
450	427.43	427.43	0
500	427.58	427.58	0
550	427.65	427.65	0
600	427.75	427.75	0
650	427.86	427.85	-0.01
700	427.96	427.96	0

Station[1]	Existing WSE[2,3]	Proposed WSE[2,3]	Difference[4]
750	428.08	428.11	0.03
800	428.2	428.28	0.08
850	428.36	428.54	0.18
900	428.52	428.85	0.33
950	428.71	429.08	0.37
1000	428.91	429.28	0.37
1200	429.88	430.03	0.15
1400	431.02	431.03	0.01
1600	432.26	432.26	0
1800	433.35	433.35	0
2000	434.48	434.48	0

Note 1: Channel stations are listed in order from downstream to upstream
Note 2: WSE = water surface elevation
Note 3: Elevations are in reference to NGVD 29
Note 4: Difference in water surface elevations are proposed to existing (proposed – existing)

The hydraulic models prepared for this study indicates that flows are not confined within the channel banks of Guejito Creek during the 100-year storm event flow rate of 16,000 cubic feet per second. During this event, the valley provides active conveyance through the existing vineyards and agricultural areas. Based on the hydraulic analysis, the proposed tasting facility falls within the 100-year storm event limits of inundation. Additionally, the comparison of the floodplain water surface elevations indicates that the project will result in a minor rise to the water surface elevations along the upstream portion of the project area, however no rises in water surface elevations are experienced downstream of station 750.

The proposed tasting facility structure begins at hydraulic analysis station 10+00 along Guejito Creek (as defined by this analysis), as shown on the HEC-RAS workmap provided in Map Pocket 4. The anticipated 100-year water surface elevation at this station is 429.28 feet (NGVD29), which is approximately 2.5 feet above the existing ground at this location. The proposed tasting facility structure finished floor surface is 430.0 feet (NGVD29). The proposed event center structure begins at hydraulic analysis station 8+50 along Guejito Creek. The anticipated 100-year water surface elevation at station 8+50 is 428.5 feet (NGVD29), which is approximately 3.5 feet above the existing ground at this location. The proposed event center structure finished floor surface is 428.50 (NGVD29). A summary of the HEC-RAS hydraulic model results is provided in Appendix E.

5.0 CEQA DETERMINATION OF SIGNIFICANCE

In accordance with the County of San Diego's *Guidelines for Determining Significance,* dated July 2007, this study evaluated the California Environmental Quality Act (CEQA) level potential for adverse environmental impacts by providing responses to following the questions:

Would the project:

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
    - **The Rancho Guejito Tasting Facility and Event Center project will not significantly alter the existing drainage pattern.**
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on or off-site?
    - **The Rancho Guejito Tasting Facility and Event Center project will not substantially increase the amount or rate of surface runoff or the existing drainage pattern.**
- Create or contribute runoff water, which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
    - **The project proposes water quality measures designed in accordance with County of San Diego guidelines to treat runoff from proposed impervious areas. The proposed development will not significantly increase the amount or rate of runoff.**
- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary, a Flood Insurance Rate Map or another flood hazard delineation map?
    - **The project area is not mapped on a federal Flood Hazard Boundary, a Flood Insurance Rate Map or another flood hazard delineation map. The project does not propose any housing.**
- Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?
    - **The project does not propose structures that would impede or redirect flows significantly.**

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
    - **The resulting 100-year flow rate calculated using the conservative methodologies outlined in the County of San Diego Hydrology Manual. The hydraulic analysis utilized the conservative peak flow rate and determined the area where the development is proposed may be inundated by approximately 2.5 to 3.5 feet of water above existing elevations should this unlikely event occur. Based on the results of these analyses, the design of the proposed structures has been elevated at or above the 100-year calculated water surface elevation. The Rancho Guejito property currently has procedures in place that result in the closure of the site and the evacuation of personnel in the event that a significant rainfall is forecast. The property owner is aware of the inundation risk and associated maintenance that may be required should inundation occur. The risk of flood inundation to the farmhouse east of the project site (owned by the project applicant) will be increased as a result of project (shallow depth, less than 1 foot). The project application is aware of the slight increase in risk and accepts that increase in risk.**
- Inundation by seiche, tsunami, or mudflow?
    - **The project site is not subject to inundation by seiche, tsunami, or mudflow.**

6.0 SUMMARY AND CONCLUSION

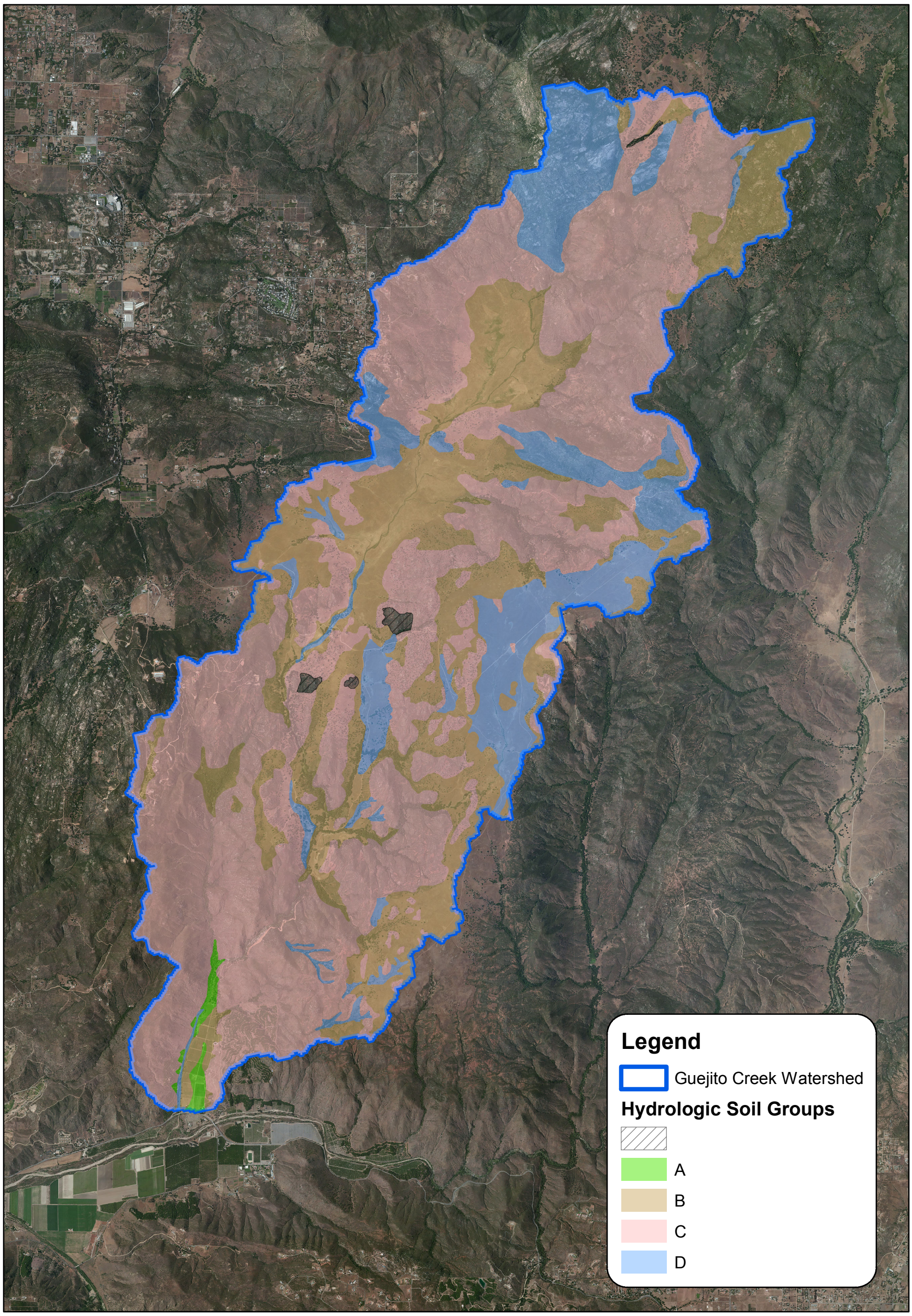
The analyses performed in this study determined both the estimated 100-year peak flow rate for the Guejito Creek watershed as well as the pre-project and post-project conditions peak flow rates in the local drainage area associated with the proposed tasting facility and event center development. The analyses following the methodologies outlined in the Hydrology Manual and determined that there will be a slight decrease in the 100-year stormwater peak flow rate (of 3.7 cubic feet per second) in the proposed development condition when compared to pre-project condition. The project will not substantially alter the existing drainage pattern of the site or area. The project will not alter the course of a stream or river in a manner that would result in substantial erosion or siltation on-site or off-site. No significant impacts to either downstream receiving waters or existing storm water conveyance systems are anticipated due to the proposed development.

Analyses were performed to evaluate the Guejito Creek hydrologic response for the design storm. The results indicate that the 100-year storm event results in a peak flow rate of approximately 16,000 cubic feet per second within Guejito Creek. HEC-RAS hydraulic modeling was performed using the calculated peak flow rate for the existing and proposed conditions. The hydraulic modeling indicates that the valley in the vicinity of the proposed improvements will provide active conveyance for flows during the 100-year storm event in both the existing and proposed conditions and that the proposed project will result in slight increases to water surface elevations of the creek along the project improvements with the limits of inundation contained to the project property.

The maximum resulting 100-year water surface elevation at the location where the tasting facility is proposed was calculated to be approximately 429.4 feet (NGVD29), which is approximately 2.5 feet above the existing ground at this location. The proposed tasting facility structure finished floor surface is 430.00 feet (NGVD29). The maximum resulting 100-year water surface elevation at the location where the proposed event center was calculated to be approximately 428.5 feet (NGVD29), which is approximately 3.5 feet above the existing ground surface at this location. The proposed event center structure finished floor surface is 428.50 (NGVD29).

Appendix A

Hydrologic Soil Group Maps



GUEJITO CREEK WATERSHED HYDROLOGIC SOIL GROUPS MAP RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER

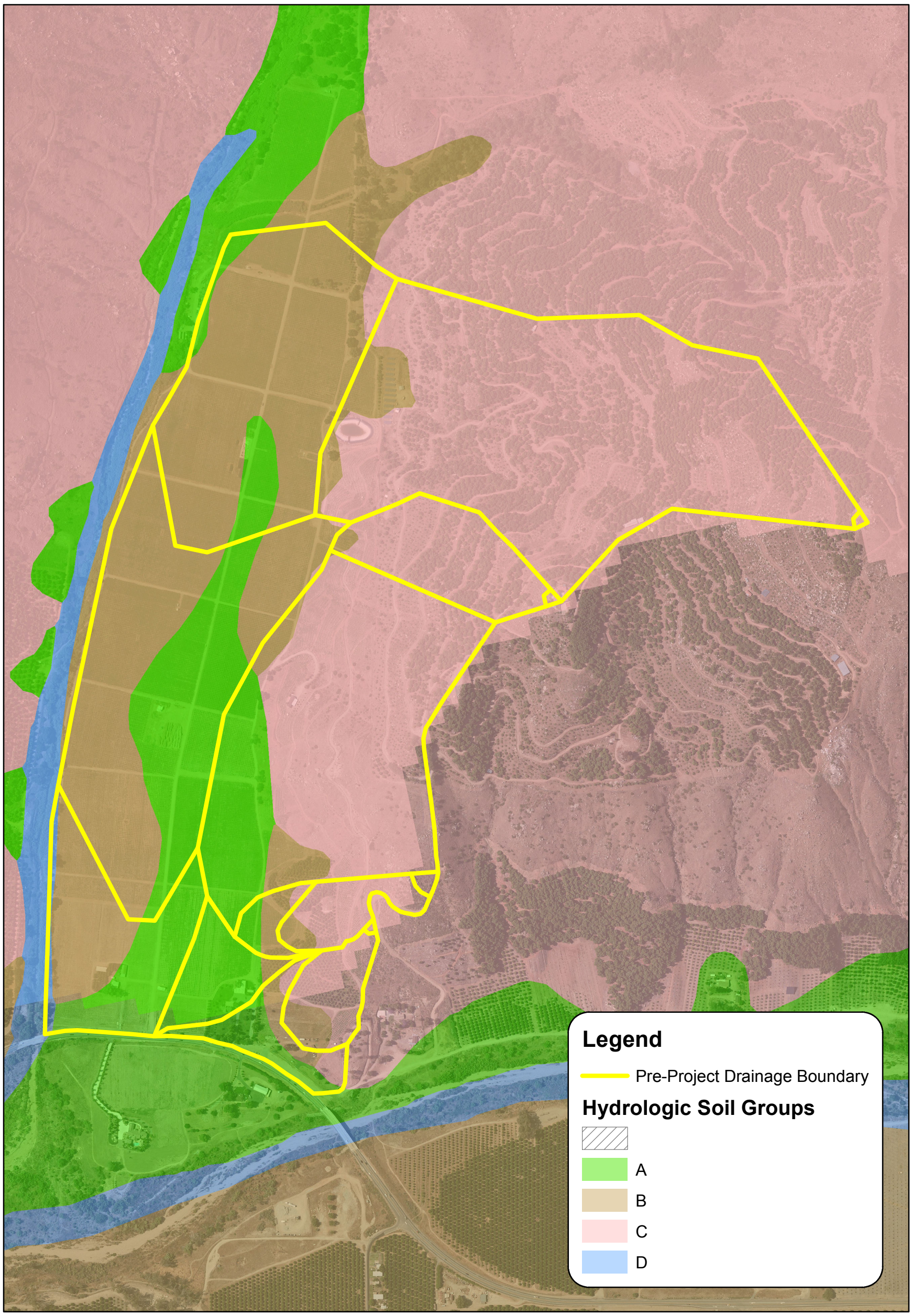
N
W E
S

0 2,500 5,000 10,000 Feet

EXHIBIT DATE: 10/24/2019 RICK JN: 14557

\\cp.rickeng.com\projects\C_SD_U\RanchoGuejito\Projects\14557W_Winery2\GIS\14557_HSG_Map1_GCW.mxd

RICK ENGINEERING COMPANY



PRE-PROJECT HYDROLOGIC SOIL GROUPS MAP RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER

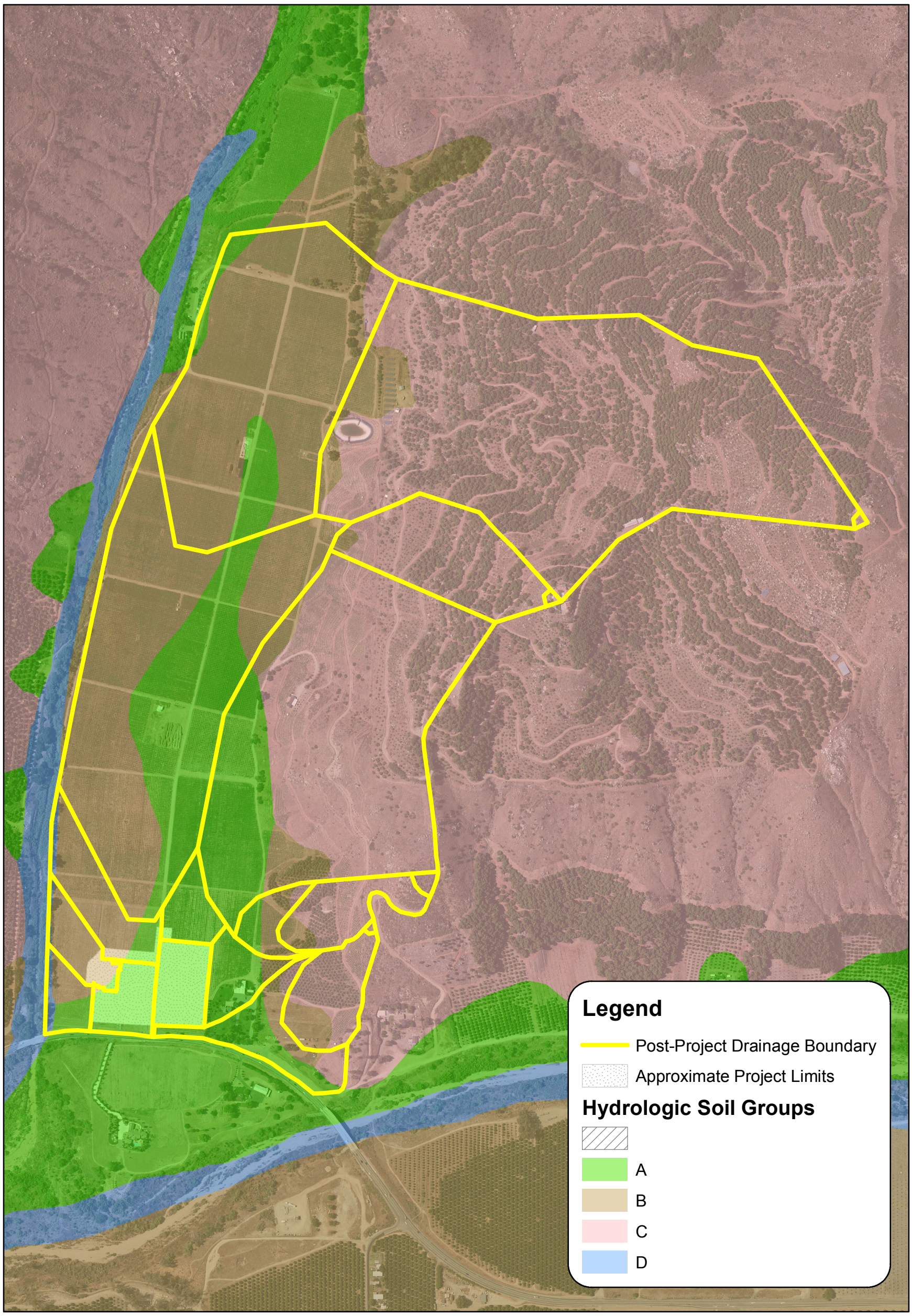
N
W E
S

0 290 580 1,160 Feet

EXHIBIT DATE: 10/24/2019 RICK JN: 14557

C:\RICK\Projects\C_SD_U\RanchoGuejito\Projects\14557W_Winery2\GIS\14557_HSG_Map2_Pre-Proj.mxd

RICK ENGINEERING COMPANY



POST-PROJECT HYDROLOGIC SOIL GROUPS MAP RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER

N
W E
S

0 290 580 1,160 Feet

EXHIBIT DATE: 10/24/2019 RICK JN: 14557

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RICK ENGINEERING COMPANY

Appendix B

HEC-1 Program Output and Support Material – Guejito Creek Watershed

NRCS Hydrologic Method
(Worksheet 4-3)

NRCS HYDROLOGIC METHOD

WORKSHEET 4-3 **Peak Discharge Computation**

Project Name:	**Rancho Guejito Tasting Room**	**RICK JN:**	14557
Computed by:	AMC	**Date:**	6/4/2018
Project Identification (Drainage Area Name):	Rancho Guejito Creek - Basin 100 (upper)		
Geographic location of center of drainage area:	Long:		

Drainage Area:	22.5	square miles
Storm Frequency *(Section 2.3)* :	100	-year
6-Hour Storm Duration Precipitation *(Appendix B)* :	3.90	inches
24-Hour Storm Duration Precipitation *(Appendix B)* :	8.75	inches

Precipitation Zone Number (PZN): PZN= 2.5
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 5-year to 35-year storm frequency (interpolate): PZN_{AF}= N/A
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 35-year to 150-year storm frequency (interpolate): PZN_{AF}= 3
(Section 4.1.2.4 and Table 4-6)

Composite CN - PZN 2 ***(Calculated Below)***	83	**PZN1**	67	**PZN3**	93
PZN Adjusted Runoff Curve Number (interpolate between nearest whole number PZN conditions): *(Section 4.1.2.4 and Table 4-6)*	**CN3**	93	**CN3**	93	
	CN3 =	**93**	***Final CN Used in Analysis - Interpolated***		

Watershed Information:

Watershed Length (L) *(Section 4.3.1)* :	10.74	miles			
Length to Centroid (Lc) *(Section 4.3.1)* :	5.37	miles			
U/S Elev:	3370	feet	D/S Elev:	450	feet
Slope (s) *(Section 4.3.1)* :	272	ft/mile			
Basin n Factor *(Section 4.3.5)* :	0.06				

Lag Time Calculations:

Corps lag (T_L) = 24 n ((L x Lc)/s$^{0.5}$)$^{0.3}$ *(Section 4.3.1.1)* :	2.317	hours
or		
Corps lag (T_L) = 0.8 T_c *(Section 4.3.1.2)* :		
Time to Peak = 0.862 x Corps lag *(Section 4.1.5.5)* :	1.998	hours
Time Step:	5	minutes
NRCS lag (T_L):	**1.956**	hours

Basin CN2 Calculation - PZN 2 ***Table 4-2***

Land Use Type-Cover-Hydrologic Condition (As Applicable)	Land Use Area (sq mi)	Percent of Total Area	CN	Weighted CN
Open Brush, Poor (NRCS A Soil)	0.000		62	0
Open Brush, Poor (NRCS B Soil)	5.630	25%	76	19
Open Brush, Poor (NRCS C Soil)	12.380	55%	84	46.2
Open Brush, Poor (NRCS D Soil)	4.500	20%	88	17.6
Total	22.50	**100%**	**Composite**	**83**

NRCS HYDROLOGIC METHOD

WORKSHEET 4-3 — **Peak Discharge Computation**

Project Name:	**Rancho Guejito Tasting Room**	**RICK JN:**	14557
Computed by:	AMC	**Date:**	6/4/2018
Project Identification (Drainage Area Name):	Rancho Guejito Creek - Basin 200 (Rockwell Canyon Creek)		
Geographic location of center of drainage area:	Long:		

Drainage Area:	3.03	square miles
Storm Frequency *(Section 2.3)* :	100	-year
6-Hour Storm Duration Precipitation *(Appendix B)* :	3.65	inches
24-Hour Storm Duration Precipitation *(Appendix B)* :	7.5	inches

Precipitation Zone Number (PZN): PZN= 2.5
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 5-year to 35-year storm frequency (interpolate): PZN_{AF}= N/A
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 35-year to 150-year storm frequency (interpolate): PZN_{AF}= 3
(Section 4.1.2.4 and Table 4-6)

Composite CN - PZN 2 ***(Calculated Below)***	82	**PZN1**	66	**PZN3**	92
PZN Adjusted Runoff Curve Number (interpolate between nearest whole number PZN conditions): *(Section 4.1.2.4 and Table 4-6)*	**CN3**	92	**CN3**	92	
	CN3 =	**92**	***Final CN Used in Analysis - Interpolated***		

Watershed Information:

Watershed Length (L) *(Section 4.3.1)* :	3.36	miles			
Length to Centroid (Lc) *(Section 4.3.1)* :	1.68	miles			
U/S Elev:	2265	feet	D/S Elev:	450	feet
Slope (s) *(Section 4.3.1)* :	540	ft/mile			
Basin n Factor *(Section 4.3.5)* :	0.06				

Lag Time Calculations:

Corps lag (T_L) = 24 n ((L x Lc)/$s^{0.5}$)$^{0.38}$ *(Section 4.3.1.1)* :	0.841	hours
or		
Corps lag (T_L) = 0.8 T_c *(Section 4.3.1.2)* :		
Time to Peak = 0.862 x Corps lag *(Section 4.1.5.5)* :	0.725	hours
Time Step:	5	minutes
NRCS lag (T_L):	**0.683**	hours

Basin CN2 Calculation - PZN 2 ***Table 4-2***

Land Use Type-Cover-Hydrologic Condition (As Applicable)	Land Use Area (sq mi)	Percent of Total Area	CN	Weighted CN
Open Brush, Poor (NRCS A Soil)	0.000		62	0
Open Brush, Poor (NRCS B Soil)	0.300	10%	76	7.6
Open Brush, Poor (NRCS C Soil)	2.730	90%	84	75.6
Open Brush, Poor (NRCS D Soil)	0.000		88	0
Total	3.03	**100%**	**Composite**	**83**

NRCS HYDROLOGIC METHOD

WORKSHEET 4-3 — **Peak Discharge Computation**

Project Name:	**Rancho Guejito Tasting Room**	**RICK JN:**	14557
Computed by:	AMC	**Date:**	6/4/2018

Project Identification (Drainage Area Name): Rancho Guejito Creek - Basin 300 (unnamed watershed)

Geographic location of center of drainage area: 3 Long:

Drainage Area:	1.06	square miles
Storm Frequency *(Section 2.3)* :	100	-year
6-Hour Storm Duration Precipitation *(Appendix B)* :	3.6	inches
24-Hour Storm Duration Precipitation *(Appendix B)* :	6	inches

Precipitation Zone Number (PZN): PZN= 2.5
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 5-year to 35-year storm frequency (interpolate): PZN_{AF}= N/A
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 35-year to 150-year storm frequency (interpolate): PZN_{AF}= 3
(Section 4.1.2.4 and Table 4-6)

Composite CN - PZN 2 ***(Calculated Below)*** 82 **PZN1** 66 **PZN3** 92

PZN Adjusted Runoff Curve Number (interpolate between nearest whole number PZN conditions): **CN3** 92 **CN3** 92
(Section 4.1.2.4 and Table 4-6)
CN3 = 92 ***Final CN Used in Analysis - Interpolated***

Watershed Information:

Watershed Length (L) *(Section 4.3.1)* :	2.47	miles			
Length to Centroid (Lc) *(Section 4.3.1)* :	1.235	miles			
U/S Elev:	1990	feet	D/S Elev:	450	feet
Slope (s) *(Section 4.3.1)* :	623	ft/mile			
Basin n Factor *(Section 4.3.5)* :	0.06				

Lag Time Calculations:

Corps lag (T_L) = 24 n ((L x Lc)/$s^{0.5}$)$^{0.38}$ *(Section 4.3.1.1)* :	0.648	hours
or		
Corps lag (T_L) = 0.8 T_c *(Section 4.3.1.2)* :		
Time to Peak = 0.862 x Corps lag *(Section 4.1.5.5)* :	0.558	hours
Time Step:	5	minutes
NRCS lag (T_L):	**0.517**	hours

Basin CN2 Calculation - PZN 2 ***Table 4-2***

Land Use Type-Cover-Hydrologic Condition (As Applicable)	Land Use Area (sq mi)	Percent of Total Area	CN	Weighted CN
Open Brush, Poor (NRCS A Soil)	0.000		62	0
Open Brush, Poor (NRCS B Soil)	0.320	30%	76	22.8
Open Brush, Poor (NRCS C Soil)	0.690	65%	84	54.6
Open Brush, Poor (NRCS D Soil)	0.050	5%	88	4.4
Total	1.06	**100%**	**Composite**	**82**

NRCS HYDROLOGIC METHOD

WORKSHEET 4-3 — **Peak Discharge Computation**

Project Name:	**Rancho Guejito Tasting Room**	**RICK JN:**	14557
Computed by:	AMC	**Date:**	6/4/2018
Project Identification (Drainage Area Name):	Rancho Guejito Creek - Basin 400 (Project Site / Active Ag Area)		
Geographic location of center of drainage area:	Long:		

Drainage Area:	1.1	square miles
Storm Frequency *(Section 2.3)* :	100	-year
6-Hour Storm Duration Precipitation *(Appendix B)* :	3.6	inches
24-Hour Storm Duration Precipitation *(Appendix B)* :	6	inches

Precipitation Zone Number (PZN): PZN= 2.5
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 5-year to 35-year storm frequency (interpolate): PZN_{AF}= N/A
(Section 4.1.2.4 and Appendix C)

PZN Adjustment Factor for 35-year to 150-year storm frequency (interpolate): PZN_{AF}= 3
(Section 4.1.2.4 and Table 4-6)

Composite CN - PZN 2 ***(Calculated Below)***	81	**PZN1**	64	**PZN3**	92
PZN Adjusted Runoff Curve Number (interpolate between nearest whole number PZN conditions): *(Section 4.1.2.4 and Table 4-6)*	**CN3**	92	**CN3**	92	
	CN3 =	**92**	***Final CN Used in Analysis - Interpolated***		

Watershed Information:

Watershed Length (L) *(Section 4.3.1)* :	1.45	miles			
Length to Centroid (Lc) *(Section 4.3.1)* :	0.725	miles			
U/S Elev:	450	feet	D/S Elev:	412	feet
Slope (s) *(Section 4.3.1)* :	26	ft/mile			
Basin n Factor *(Section 4.3.5)* :	0.06				

Lag Time Calculations:

Corps lag (T_L) = 24 n ((L x Lc)/$s^{0.5}$)$^{0.38}$ *(Section 4.3.1.1)* :	0.789	hours
or		
Corps lag (T_L) = 0.8 T_c *(Section 4.3.1.2)* :		
Time to Peak = 0.862 x Corps lag *(Section 4.1.5.5)* :	0.680	hours
Time Step:	5	minutes
NRCS lag (T_L):	**0.639**	hours

Basin CN2 Calculation - PZN 2 ***Table 4-2***

Land Use Type-Cover-Hydrologic Condition (As Applicable)	**Land Use Area (sq mi)**	**Percent of Total Area**	**CN**	**Weighted CN**
Open Brush, Poor (NRCS A Soil)	0.110	10%	62	6.2
Open Brush, Poor (NRCS B Soil)	0.170	15%	76	11.4
Open Brush, Poor (NRCS C Soil)	0.830	75%	84	63
Open Brush, Poor (NRCS D Soil)	0.000		88	0
Total	1.10	**100%**	**Composite**	**81**

HEC-1 Output

14557W-RANCHO GUEJITO TASTING ROOM
GUEJITO CREEK WATERSHED
100-YEAR STORM EVENT


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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   13JUN18  TIME  16:23:50  *                                                    *          (916) 756-1104              *
 *                                      *                                                    *                                      *
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                                                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

                         *DIAGRAM
             1           ID   RANCHO GUEJITO CREEK BASINS 100 THROUGH 400 - 100-YEAR HEC-1 RUN
 *** FREE ***
             2           IT       5 01JAN90    1200     300
             3           IO       1       2

             4           KKBASIN100RUNOFF
             5           KM   NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
             6           KM   COPYRIGHT 2003 RICK ENGINEERING COMPANY
             7           KM   FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
             8           KM   THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
             9           KM   VARIABLE MUST BE 1200 ON THE IT CARD.
            10           KM   THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
            11           KM   YOUR DATA SET:
            12           KM   IT 5 01JAN90 1200 300
            13           KM   6HR RAINFALL IS  3.9  INCHES
            14           KM   24HR RAINFALL IS  8.75  INCHES
            15           KM   DAR30 =  .783246
            16           KM   DAR60 =  .867702
            17           KM   DAR180 =  .93662
            18           KM   DAR360 =  .953003
            19           KM   DAR1440 =  .966541
            20           KM   BASIN AREA IS  27.69  SQUARE MILES
            21           IN       5 01JAN90    1200     300
            22           PI  .01741  .01746  .01748  .01753  .01756  .01761  .01764  .01769  .01772   .0177
            23           PI   .0178  .01785  .01788  .01793  .01796  .01801  .01804   .0181  .01813  .01818
            24           PI  .01821  .01827   .0183  .01836  .01839  .01845  .01848  .01854  .01857  .01864
            25           PI  .01867  .01873  .01876  .01883  .01886  .01893  .01896  .01903  .01906   .0191
            26           PI  .01916  .01923  .01927  .01934  .01937  .01945  .01948  .01956  .01959   .0196
            27           PI  .01971  .01978  .01982   .0199  .01994  .02002  .02006  .02014  .02018  .02027
            28           PI  .02031  .02039  .02044  .02052  .02057  .02066   .0207  .02079  .02084  .02093
            29           PI  .02098  .02107  .02112  .02122  .02127  .02137  .02142  .02152  .02157   .0216
            30           PI  .02173  .02184  .02189    .022  .02206  .02217  .02223  .02234   .0224  .02252
            31           PI  .02258  .02271  .02277  .02289  .02296  .02309  .02316  .02329  .02336   .0235
            32           PI  .02357  .02371  .02378  .02393   .024  .02415  .02423  .02439  .02447  .02463
            33           PI  .02471  .02488  .02497  .02514  .02523  .02541   .0255  .02569  .02579  .02598
            34           PI  .02608  .02628  .02639   .0266   .0267  .02692  .02704  .02727  .02738  .02763
            35           PI  .02775    .028  .02813  .02839  .02853   .0288  .02895  .02924  .02939   .0297
            36           PI  .02985  .03018  .03034  .02022  .02037  .02068  .02084  .02118  .02135   .0217
            37           PI  .02191  .02231  .02251  .02295  .02317  .02365  .02389  .02442  .02469   .0252
            38           PI  .02557  .02622  .02656  .02728  .02767  .02848  .02892  .03717  .03752   .0382
            39           PI  .03871  .03963  .04014  .04126  .04188  .04328  .04406  .04584  .04685   .0491
            40           PI  .05055  .05376  .05567  .08284  .08426  .08836  .09135  .07941  .09044   .1328
            41           PI  .18711  .67069  .10651  .09531  .08606  .05785  .05206  .04797  .04491   .0425
            42           PI  .04068  .03915  .03789  .02938  .02807  .02691  .02589  .02497  .02415   .0234
            43           PI  .02273   .0221  .02153  .02101  .02052  .03052  .03001  .02954  .02909  .02866
            44           PI  .02826  .02787   .0275  .02715  .02681  .02649  .02618  .02588   .0256  .02532
            45           PI  .02505   .0248  .02455  .02431  .02408  .02385  .02364  .02343  .02322  .02302
            46           PI  .02283  .02264  .02246  .02229  .02211  .02195  .02178  .02162  .02147   .0213
            47           PI  .02117  .02102  .02088  .02075  .02061  .02048  .02035  .02022   .0201  .01998
            48           PI  .01986  .01974  .01963  .01952  .01941   .0193   .0192  .01909  .01899  .01889
            49           PI   .0188   .0187   .0186  .01851  .01842  .01833  .01824  .01816  .01807  .01799
            50           PI   .0179  .01782  .01774  .01766  .01758  .01751  .01743       0       0       0
            51           PI       0       0       0       0       0       0       0       0       0       0
            52           PI       0       0
1                                                   HEC-1 INPUT                                                    PAGE  2

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

            53           BA   22.50
            54           LS       0      93
            55           UD   1.956

            56           KKBASIN200RUNOFF
            57           KM   NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
            58           KM   COPYRIGHT 2003 RICK ENGINEERING COMPANY
            59           KM   FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
            60           KM   THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
            61           KM   VARIABLE MUST BE 1200 ON THE IT CARD.
            62           KM   THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
            63           KM   YOUR DATA SET:
            64           KM   IT 5 01JAN90 1200 300
            65           KM   6HR RAINFALL IS  3.65  INCHES
            66           KM   24HR RAINFALL IS  7.5  INCHES
            67           KM   DAR30 =  .783246
            68           KM   DAR60 =  .867702
            69           KM   DAR180 =  .93662
            70           KM   DAR360 =  .953003
            71           KM   DAR1440 =  .966541
            72           KM   BASIN AREA IS  27.69  SQUARE MILES
```

```
 73          IN       5 01JAN90    1200     300
 74          PI  .01333  .01337  .01339  .01344  .01346  .01351  .01353  .01358   .0136  .01365
 75          PI  .01367  .01372  .01374  .01379  .01381  .01386  .01389  .01394  .01396   .0140
 76          PI  .01404  .01409  .01412  .01417   .0142  .01425  .01428  .01433  .01436  .01442
 77          PI  .01445   .0145  .01453  .01459  .01462  .01468  .01471  .01477   .0148  .01486
 78          PI  .01489  .01495  .01498  .01505  .01508  .01514  .01518  .01524  .01528   .0153
 79          PI  .01538  .01545  .01548  .01555  .01559  .01566   .0157  .01577  .01581  .01588
 80          PI  .01592    .016  .01604  .01612  .01616  .01624  .01628  .01636   .0164  .01649
 81          PI  .01653  .01662  .01666  .01675  .01679  .01689  .01693  .01702  .01707   .0171
 82          PI  .01722  .01731  .01736  .01747  .01752  .01762  .01767  .01778  .01784   .0179
 83          PI    .018  .01811  .01817  .01829  .01835  .01847  .01853  .01865  .01872  .01884
 84          PI  .01891  .01904  .01911  .01924  .01931  .01945  .01953  .01967  .01975   .0199
 85          PI  .01998  .02013  .02021  .02038  .02046  .02063  .02071  .02089  .02098   .0211
 86          PI  .02126  .02145  .02155  .02175  .02185  .02206  .02216  .02238  .02249   .0227
 87          PI  .02284  .02308   .0232  .02345  .02358  .02384  .02398  .02426   .0244   .0247
 88          PI  .02485  .02516  .02532  .01892  .01906  .01935  .01951  .01982  .01999   .0203
 89          PI   .0205  .02088  .02107  .02147  .02169  .02213  .02236  .02285  .02311  .02365
 90          PI  .02393  .02454  .02486  .02553  .02589  .02666  .02707  .03478  .03511   .0358
 91          PI  .03623  .03709  .03756  .03861   .0392  .04051  .04124   .0429  .04385  .04604
 92          PI  .04731  .05031   .0521  .07753  .07886   .0827  .08549  .07432  .08465  .12429
 93          PI  .17512  .62769  .09969   .0892  .08055  .05414  .04872  .04489  .04204  .03983
 94          PI  .03807  .03664  .03546  .02749  .02627  .02519  .02423  .02337   .0226   .0219
 95          PI  .02127  .02069  .02015  .01966  .01921  .02549    .025  .02455  .02412  .02371
 96          PI  .02332  .02295   .0226  .02227  .02195  .02165  .02135  .02107   .0208  .02054
 97          PI  .02029  .02005  .01982   .0196  .01938  .01918  .01897  .01878  .01859  .01841
 98          PI  .01823  .01806  .01789  .01773  .01757  .01742  .01727  .01712  .01698   .0168
 99          PI   .0167  .01657  .01644  .01632   .0162  .01608  .01596  .01585  .01573  .01563
100          PI  .01552  .01541  .01531  .01521  .01511  .01502  .01492  .01483  .01474   .0146
101          PI  .01456  .01447  .01439  .01431  .01423  .01415  .01407  .01399  .01391   .0138
102          PI  .01377  .01369  .01362  .01355  .01348  .01342  .01335       0       0       0
103          PI       0       0       0       0       0       0       0       0       0       0
104          PI       0       0
105          BA   3.030
106          LS       0      92
1                                          HEC-1 INPUT                                          PAGE  3

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

107          UD   0.683

108          KKBASIN300RUNOFF
109          KM   NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
110          KM   COPYRIGHT 2003 RICK ENGINEERING COMPANY
111          KM   FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
112          KM   THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
113          KM   VARIABLE MUST BE 1200 ON THE IT CARD.
114          KM   THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
115          KM   YOUR DATA SET:
116          KM   IT 5 01JAN90 1200 300
117          KM   6HR RAINFALL IS  3.6  INCHES
118          KM   24HR RAINFALL IS  6  INCHES
119          KM   DAR30 =  .783246
120          KM   DAR60 =  .867702
121          KM   DAR180 =  .93662
122          KM   DAR360 =  .953003
123          KM   DAR1440 =  .966541
124          KM   BASIN AREA IS  27.69  SQUARE MILES
125          IN       5 01JAN90    1200     300
126          PI  .00762  .00765  .00767   .0077  .00772  .00775  .00777  .00781  .00782  .00786
127          PI  .00788  .00792  .00793  .00797  .00799  .00803  .00805  .00808   .0081  .00814
128          PI  .00816   .0082  .00822  .00826  .00828  .00833  .00835  .00839  .00841  .00845
129          PI  .00847  .00852  .00854  .00859  .00861  .00865  .00868  .00872  .00875   .0088
130          PI  .00882  .00887  .00889  .00894  .00897  .00902  .00905   .0091  .00912  .00918
131          PI   .0092  .00926  .00929  .00934  .00937  .00943  .00946  .00952  .00955  .00961
132          PI  .00964   .0097  .00973  .00979  .00982  .00989  .00992  .00999  .01002  .01009
133          PI  .01012   .0102  .01023   .0103  .01034  .01041  .01045  .01053  .01057  .01064
134          PI  .01068  .01076  .01081  .01089  .01093  .01102  .01106  .01115  .01119   .0112
135          PI  .01133  .01143  .01147  .01157  .01162  .01172  .01177  .01188  .01193   .0120
136          PI  .01209   .0122  .01226  .01238  .01243  .01255  .01262  .01274   .0128  .01293
137          PI    .013  .01314   .0132  .01334  .01342  .01356  .01364  .01379  .01387  .01403
138          PI  .01411  .01428  .01437  .01454  .01463  .01482  .01491   .0151   .0152  .01541
139          PI  .01551  .01573  .01584  .01606  .01618  .01642  .01654   .0168  .01693   .0172
140          PI  .01734  .01763  .01778  .01866   .0188  .01909  .01924  .01955  .01971  .02005
141          PI  .02022  .02059  .02078  .02118  .02139  .02183  .02206  .02254  .02279   .0233
142          PI  .02361   .0242  .02452  .02518  .02554  .02629   .0267  .03431  .03463  .03534
143          PI  .03573  .03658  .03705  .03809  .03866  .03995  .04067  .04232  .04325   .0454
144          PI  .04666  .04962  .05139  .07647  .07778  .08157  .08432   .0733  .08349  .12258
145          PI  .17272  .61909  .09832  .08798  .07944   .0534  .04806  .04428  .04146  .03928
146          PI  .03755  .03614  .03498  .02712  .02591  .02484   .0239  .02305  .02229  .02161
147          PI  .02098   .0204  .01988  .01939  .01894  .01793  .01748  .01707  .01667   .0163
148          PI  .01595  .01562   .0153  .01501  .01472  .01445   .0142  .01395  .01371  .01349
149          PI  .01327  .01307  .01287  .01268  .01249  .01232  .01215  .01198  .01182   .0116
150          PI  .01152  .01138  .01124   .0111  .01097  .01085  .01072   .0106  .01049  .01038
151          PI  .01027  .01016  .01006  .00995  .00986  .00976  .00967  .00958  .00949   .0094
152          PI  .00931  .00923  .00915  .00907  .00899  .00892  .00884  .00877   .0087  .00863
153          PI  .00856   .0085  .00843  .00837   .0083  .00824  .00818  .00812  .00807  .00801
154          PI  .00795   .0079  .00784  .00779  .00774  .00769  .00764       0       0       0
155          PI       0       0       0       0       0       0       0       0       0       0
156          PI       0       0
157          BA   1.060
158          LS       0      92
159          UD   0.517
1                                          HEC-1 INPUT                                          PAGE  4

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

160          KKBASIN400RUNOFF
161          KM   NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
162          KM   COPYRIGHT 2003 RICK ENGINEERING COMPANY
163          KM   FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
164          KM   THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
165          KM   VARIABLE MUST BE 1200 ON THE IT CARD.
166          KM   THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
167          KM   YOUR DATA SET:
168          KM   IT 5 01JAN90 1200 300
169          KM   6HR RAINFALL IS  3.6  INCHES
170          KM   24HR RAINFALL IS  6  INCHES
171          KM   DAR30 =  .783246
172          KM   DAR60 =  .867702
173          KM   DAR180 =  .93662
174          KM   DAR360 =  .953003
175          KM   DAR1440 =  .966541
176          KM   BASIN AREA IS  27.69  SQUARE MILES
177          IN       5 01JAN90    1200     300
178          PI  .00762  .00765  .00767   .0077  .00772  .00775  .00777  .00781  .00782  .00786
179          PI  .00788  .00792  .00793  .00797  .00799  .00803  .00805  .00808   .0081  .00814
180          PI  .00816   .0082  .00822  .00826  .00828  .00833  .00835  .00839  .00841  .00845
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            181          PI  .00847  .00852  .00854  .00859  .00861  .00865  .00868  .00872  .00875   .0088
            182          PI  .00882  .00887  .00889  .00894  .00897  .00902  .00905   .0091  .00912  .00918
            183          PI   .0092  .00926  .00929  .00934  .00937  .00943  .00946  .00952  .00955  .00961
            184          PI  .00964   .0097  .00973  .00979  .00982  .00989  .00992  .00999  .01002  .01009
            185          PI  .01012   .0102  .01023   .0103  .01034  .01041  .01045  .01053  .01057  .01064
            186          PI  .01068  .01076  .01081  .01089  .01093  .01102  .01106  .01115  .01119   .0112
            187          PI  .01133  .01143  .01147  .01157  .01162  .01172  .01177  .01188  .01193   .0120
            188          PI  .01209   .0122  .01226  .01238  .01243  .01255  .01262  .01274   .0128  .01293
            189          PI    .013  .01314   .0132  .01334  .01342  .01356  .01364  .01379  .01387  .01403
            190          PI  .01411  .01428  .01437  .01454  .01463  .01482  .01491   .0151   .0152  .01541
            191          PI  .01551  .01573  .01584  .01606  .01618  .01642  .01654   .0168  .01693   .0172
            192          PI  .01734  .01763  .01778  .01866   .0188  .01909  .01924  .01955  .01971  .02005
            193          PI  .02022  .02059  .02078  .02118  .02139  .02183  .02206  .02254  .02279   .0233
            194          PI  .02361   .0242  .02452  .02518  .02554  .02629   .0267  .03431  .03463  .03534
            195          PI  .03573  .03658  .03705  .03809  .03866  .03995  .04067  .04232  .04325   .0454
            196          PI  .04666  .04962  .05139  .07647  .07778  .08157  .08432   .0733  .08349  .12258
            197          PI  .17272  .61909  .09832  .08798  .07944   .0534  .04806  .04428  .04146  .03928
            198          PI  .03755  .03614  .03498  .02712  .02591  .02484   .0239  .02305  .02229  .02161
            199          PI  .02098   .0204  .01988  .01939  .01894  .01793  .01748  .01707  .01667   .0163
            200          PI  .01595  .01562   .0153  .01501  .01472  .01445   .0142  .01395  .01371  .01349
            201          PI  .01327  .01307  .01287  .01268  .01249  .01232  .01215  .01198  .01182   .0116
            202          PI  .01152  .01138  .01124   .0111  .01097  .01085  .01072   .0106  .01049  .01038
            203          PI  .01027  .01016  .01006  .00995  .00986  .00976  .00967  .00958  .00949   .0094
            204          PI  .00931  .00923  .00915  .00907  .00899  .00892  .00884  .00877   .0087  .00863
            205          PI  .00856   .0085  .00843  .00837   .0083  .00824  .00818  .00812  .00807  .00801
            206          PI  .00795   .0079  .00784  .00779  .00774  .00769  .00764       0       0       0
            207          PI       0       0       0       0       0       0       0       0       0       0
            208          PI       0       0
            209          BA     1.1
            210          LS       0      92
            211          UD   0.639
1                                                  HEC-1 INPUT                                                PAGE  5

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


            212          KKCONFLUENCE_100_THROUGH_400
            213          HC       4
            214          ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

     4    BASIN100
                .
                .
    56          .    BASIN200
                .          .
                .          .
   108          .          .    BASIN300
                .          .           .
                .          .           .
   160          .          .           .    BASIN400
                .          .           .           .
                .          .           .           .
   212    CONFLUEN..................................

 (***) 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   13JUN18  TIME  16:23:50  *                                                    *           (916) 756-1104             *
 *                                      *                                                    *                                      *
 ****************************************                                                    ****************************************



                          RANCHO GUEJITO CREEK BASINS 100 THROUGH 400 - 100-YEAR HEC-1 RUN

    3 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          1  PRINT CONTROL
                        IPLOT          2  PLOT CONTROL
                        QSCAL         0.  HYDROGRAPH PLOT SCALE

      IT          HYDROGRAPH TIME DATA
                         NMIN          5  MINUTES IN COMPUTATION INTERVAL
                        IDATE     1JAN90  STARTING DATE
                        ITIME       1200  STARTING TIME
                           NQ        300  NUMBER OF HYDROGRAPH ORDINATES
                       NDDATE     2JAN90  ENDING DATE
                       NDTIME       1255  ENDING TIME
                        ICENT         19  CENTURY MARK

                   COMPUTATION INTERVAL     .08 HOURS
                        TOTAL TIME BASE   24.92 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


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


            **************
            *            *
    4 KK    *  BASIN100  *     RUNOFF
            *            *
            **************
                          NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
                          COPYRIGHT 2003 RICK ENGINEERING COMPANY
                          FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
                          THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
                          VARIABLE MUST BE 1200 ON THE IT CARD.
```

```
                           THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
                           YOUR DATA SET:
                           IT 5 01JAN90 1200 300
                           6HR RAINFALL IS  3.9  INCHES
                           24HR RAINFALL IS  8.75  INCHES
                           DAR30 =  .783246
                           DAR60 =  .867702
                           DAR180 =  .93662
                           DAR360 =  .953003
                           DAR1440 =  .966541
                           BASIN AREA IS  27.69  SQUARE MILES

  21 IN          TIME DATA FOR INPUT TIME SERIES
                       JXMIN           5  TIME INTERVAL IN MINUTES
                      JXDATE      1JAN90  STARTING DATE
                      JXTIME        1200  STARTING TIME

               SUBBASIN RUNOFF DATA

  53 BA          SUBBASIN CHARACTERISTICS
                       TAREA       22.50  SUBBASIN AREA

                 PRECIPITATION DATA

  22 PB                STORM        8.44  BASIN TOTAL PRECIPITATION

  22 PI            INCREMENTAL PRECIPITATION PATTERN
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .03       .03       .03       .03       .03       .03       .03
                       .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
                       .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
                       .03       .03       .03       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .03
                       .03       .03       .03       .03       .03       .03       .03       .04       .04       .04
                       .04       .04       .04       .04       .04       .04       .04       .05       .05       .05
                       .05       .05       .06       .08       .08       .09       .09       .08       .09       .13
                       .19       .67       .11       .10       .09       .06       .05       .05       .04       .04
                       .04       .04       .04       .03       .03       .03       .03       .02       .02       .02
                       .02       .02       .02       .02       .02       .03       .03       .03       .03       .03
                       .03       .03       .03       .03       .03       .03       .03       .03       .03       .03
                       .03       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02

  54 LS          SCS LOSS RATE
                       STRTL         .15  INITIAL ABSTRACTION
                      CRVNBR       93.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

  55 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG        1.96  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                    119 END-OF-PERIOD ORDINATES
                68.      136.      259.      418.      586.      790.      995.     1254.     1526.     1836.
              2199.     2563.     2995.     3426.     3815.     4178.     4516.     4766.     5016.     5172.
              5308.     5396.     5419.     5440.     5418.     5395.     5301.     5164.     5023.     4864.
              4705.     4527.     4346.     4144.     3917.     3688.     3416.     3144.     2901.     2674.
              2463.     2305.     2146.     2006.     1870.     1744.     1631.     1519.     1436.     1353.
              1270.     1187.     1108.     1040.      972.      904.      836.      779.      733.      688.
               642.      597.      559.      525.      491.      457.      423.      397.      372.      347.
               322.      298.      281.      264.      247.      230.      214.      202.      189.      177.
               164.      153.      144.      135.      126.      117.      109.      103.       96.       89.
                82.       77.       73.       68.       64.       60.       57.       54.       51.       49.
                46.       43.       40.       38.       35.       32.       30.       27.       25.       22.
                20.       18.       16.       13.       11.        9.        6.        4.        2.

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

                                                  HYDROGRAPH AT STATION BASIN100

***********************************************************************************************************************************
                                                                 *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
        1 JAN 1200    1     .00     .00     .00          0.      *        2 JAN 0030  151     .02     .00     .02      4266.
        1 JAN 1205    2     .02     .02     .00          0.      *        2 JAN 0035  152     .02     .00     .02      4284.
        1 JAN 1210    3     .02     .02     .00          0.      *        2 JAN 0040  153     .02     .00     .02      4300.
        1 JAN 1215    4     .02     .02     .00          0.      *        2 JAN 0045  154     .02     .00     .02      4314.
        1 JAN 1220    5     .02     .02     .00          0.      *        2 JAN 0050  155     .02     .00     .02      4325.
        1 JAN 1225    6     .02     .02     .00          0.      *        2 JAN 0055  156     .02     .00     .02      4332.
        1 JAN 1230    7     .02     .02     .00          0.      *        2 JAN 0100  157     .02     .00     .02      4335.
        1 JAN 1235    8     .02     .02     .00          0.      *        2 JAN 0105  158     .02     .00     .02      4335.
        1 JAN 1240    9     .02     .02     .00          0.      *        2 JAN 0110  159     .02     .00     .02      4331.
        1 JAN 1245   10     .02     .02     .00          0.      *        2 JAN 0115  160     .02     .00     .02      4325.
        1 JAN 1250   11     .02     .02     .00          0.      *        2 JAN 0120  161     .03     .00     .02      4315.
        1 JAN 1255   12     .02     .02     .00          0.      *        2 JAN 0125  162     .03     .00     .02      4304.
        1 JAN 1300   13     .02     .02     .00          1.      *        2 JAN 0130  163     .03     .00     .03      4291.
        1 JAN 1305   14     .02     .01     .00          1.      *        2 JAN 0135  164     .03     .00     .03      4277.
        1 JAN 1310   15     .02     .01     .00          2.      *        2 JAN 0140  165     .03     .00     .03      4262.
        1 JAN 1315   16     .02     .01     .00          4.      *        2 JAN 0145  166     .03     .00     .03      4248.
        1 JAN 1320   17     .02     .01     .00          6.      *        2 JAN 0150  167     .03     .00     .03      4233.
        1 JAN 1325   18     .02     .01     .01         10.      *        2 JAN 0155  168     .03     .00     .03      4220.
        1 JAN 1330   19     .02     .01     .01         14.      *        2 JAN 0200  169     .04     .00     .04      4209.
        1 JAN 1335   20     .02     .01     .01         19.      *        2 JAN 0205  170     .04     .00     .04      4199.
        1 JAN 1340   21     .02     .01     .01         26.      *        2 JAN 0210  171     .04     .00     .04      4192.
        1 JAN 1345   22     .02     .01     .01         35.      *        2 JAN 0215  172     .04     .00     .04      4190.
        1 JAN 1350   23     .02     .01     .01         45.      *        2 JAN 0220  173     .04     .00     .04      4191.
        1 JAN 1355   24     .02     .01     .01         58.      *        2 JAN 0225  174     .04     .00     .04      4196.
        1 JAN 1400   25     .02     .01     .01         73.      *        2 JAN 0230  175     .04     .00     .04      4207.
        1 JAN 1405   26     .02     .01     .01         90.      *        2 JAN 0235  176     .04     .00     .04      4222.
        1 JAN 1410   27     .02     .01     .01        111.      *        2 JAN 0240  177     .04     .00     .04      4243.
        1 JAN 1415   28     .02     .01     .01        134.      *        2 JAN 0245  178     .04     .00     .04      4271.
```

1	JAN	1420	29	.02	.01	.01	159.	*	2	JAN	0250	179	.05	.00	.04	4305.
1	JAN	1425	30	.02	.01	.01	188.	*	2	JAN	0255	180	.05	.00	.05	4346.
1	JAN	1430	31	.02	.01	.01	219.	*	2	JAN	0300	181	.05	.00	.05	4396.
1	JAN	1435	32	.02	.01	.01	253.	*	2	JAN	0305	182	.05	.00	.05	4454.
1	JAN	1440	33	.02	.01	.01	289.	*	2	JAN	0310	183	.05	.00	.05	4521.
1	JAN	1445	34	.02	.01	.01	328.	*	2	JAN	0315	184	.06	.00	.05	4596.
1	JAN	1450	35	.02	.01	.01	369.	*	2	JAN	0320	185	.08	.00	.08	4680.
1	JAN	1455	36	.02	.01	.01	413.	*	2	JAN	0325	186	.08	.00	.08	4774.
1	JAN	1500	37	.02	.01	.01	458.	*	2	JAN	0330	187	.09	.00	.09	4878.
1	JAN	1505	38	.02	.01	.01	505.	*	2	JAN	0335	188	.09	.00	.09	4994.
1	JAN	1510	39	.02	.01	.01	554.	*	2	JAN	0340	189	.08	.00	.08	5121.
1	JAN	1515	40	.02	.01	.01	604.	*	2	JAN	0345	190	.09	.00	.09	5261.
1	JAN	1520	41	.02	.01	.01	656.	*	2	JAN	0350	191	.13	.00	.13	5415.
1	JAN	1525	42	.02	.01	.01	709.	*	2	JAN	0355	192	.19	.00	.18	5588.
1	JAN	1530	43	.02	.01	.01	763.	*	2	JAN	0400	193	.67	.01	.66	5817.
1	JAN	1535	44	.02	.01	.01	817.	*	2	JAN	0405	194	.11	.00	.11	6068.
1	JAN	1540	45	.02	.01	.01	872.	*	2	JAN	0410	195	.10	.00	.09	6369.
1	JAN	1545	46	.02	.01	.01	927.	*	2	JAN	0415	196	.09	.00	.08	6709.
1	JAN	1550	47	.02	.01	.01	983.	*	2	JAN	0420	197	.06	.00	.06	7072.
1	JAN	1555	48	.02	.01	.01	1038.	*	2	JAN	0425	198	.05	.00	.05	7471.
1	JAN	1600	49	.02	.01	.01	1093.	*	2	JAN	0430	199	.05	.00	.05	7885.
1	JAN	1605	50	.02	.00	.01	1148.	*	2	JAN	0435	200	.04	.00	.04	8340.
1	JAN	1610	51	.02	.00	.01	1203.	*	2	JAN	0440	201	.04	.00	.04	8812.
1	JAN	1615	52	.02	.00	.01	1256.	*	2	JAN	0445	202	.04	.00	.04	9309.
1	JAN	1620	53	.02	.00	.02	1310.	*	2	JAN	0450	203	.04	.00	.04	9839.
1	JAN	1625	54	.02	.00	.02	1362.	*	2	JAN	0455	204	.04	.00	.04	10367.
1	JAN	1630	55	.02	.00	.02	1414.	*	2	JAN	0500	205	.03	.00	.03	10921.
1	JAN	1635	56	.02	.00	.02	1465.	*	2	JAN	0505	206	.03	.00	.03	11457.
1	JAN	1640	57	.02	.00	.02	1515.	*	2	JAN	0510	207	.03	.00	.03	11944.
1	JAN	1645	58	.02	.00	.02	1565.	*	2	JAN	0515	208	.03	.00	.03	12388.
1	JAN	1650	59	.02	.00	.02	1613.	*	2	JAN	0520	209	.02	.00	.02	12781.
1	JAN	1655	60	.02	.00	.02	1661.	*	2	JAN	0525	210	.02	.00	.02	13092.
1	JAN	1700	61	.02	.00	.02	1708.	*	2	JAN	0530	211	.02	.00	.02	13362.
1	JAN	1705	62	.02	.00	.02	1754.	*	2	JAN	0535	212	.02	.00	.02	13544.
1	JAN	1710	63	.02	.00	.02	1800.	*	2	JAN	0540	213	.02	.00	.02	13674.
1	JAN	1715	64	.02	.00	.02	1844.	*	2	JAN	0545	214	.02	.00	.02	13740.
1	JAN	1720	65	.02	.00	.02	1888.	*	2	JAN	0550	215	.02	.00	.02	13737.
1	JAN	1725	66	.02	.00	.02	1931.	*	2	JAN	0555	216	.02	.00	.02	13702.
1	JAN	1730	67	.02	.00	.02	1973.	*	2	JAN	0600	217	.03	.00	.03	13612.
1	JAN	1735	68	.02	.00	.02	2014.	*	2	JAN	0605	218	.03	.00	.03	13490.
1	JAN	1740	69	.02	.00	.02	2055.	*	2	JAN	0610	219	.03	.00	.03	13300.
1	JAN	1745	70	.02	.00	.02	2094.	*	2	JAN	0615	220	.03	.00	.03	13065.
1	JAN	1750	71	.02	.00	.02	2133.	*	2	JAN	0620	221	.03	.00	.03	12805.
1	JAN	1755	72	.02	.00	.02	2172.	*	2	JAN	0625	222	.03	.00	.03	12519.
1	JAN	1800	73	.02	.00	.02	2209.	*	2	JAN	0630	223	.03	.00	.03	12217.
1	JAN	1805	74	.02	.00	.02	2246.	*	2	JAN	0635	224	.03	.00	.03	11895.
1	JAN	1810	75	.02	.00	.02	2282.	*	2	JAN	0640	225	.03	.00	.03	11561.
1	JAN	1815	76	.02	.00	.02	2317.	*	2	JAN	0645	226	.03	.00	.03	11211.
1	JAN	1820	77	.02	.00	.02	2352.	*	2	JAN	0650	227	.03	.00	.03	10842.
1	JAN	1825	78	.02	.00	.02	2386.	*	2	JAN	0655	228	.03	.00	.03	10469.
1	JAN	1830	79	.02	.00	.02	2420.	*	2	JAN	0700	229	.03	.00	.03	10076.
1	JAN	1835	80	.02	.00	.02	2453.	*	2	JAN	0705	230	.03	.00	.03	9690.
1	JAN	1840	81	.02	.00	.02	2485.	*	2	JAN	0710	231	.03	.00	.03	9329.
1	JAN	1845	82	.02	.00	.02	2517.	*	2	JAN	0715	232	.03	.00	.02	8991.
1	JAN	1850	83	.02	.00	.02	2549.	*	2	JAN	0720	233	.02	.00	.02	8677.
1	JAN	1855	84	.02	.00	.02	2579.	*	2	JAN	0725	234	.02	.00	.02	8405.
1	JAN	1900	85	.02	.00	.02	2610.	*	2	JAN	0730	235	.02	.00	.02	8146.
1	JAN	1905	86	.02	.00	.02	2640.	*	2	JAN	0735	236	.02	.00	.02	7908.
1	JAN	1910	87	.02	.00	.02	2669.	*	2	JAN	0740	237	.02	.00	.02	7683.
1	JAN	1915	88	.02	.00	.02	2698.	*	2	JAN	0745	238	.02	.00	.02	7473.
1	JAN	1920	89	.02	.00	.02	2727.	*	2	JAN	0750	239	.02	.00	.02	7279.
1	JAN	1925	90	.02	.00	.02	2755.	*	2	JAN	0755	240	.02	.00	.02	7096.
1	JAN	1930	91	.02	.00	.02	2782.	*	2	JAN	0800	241	.02	.00	.02	6936.
1	JAN	1935	92	.02	.00	.02	2810.	*	2	JAN	0805	242	.02	.00	.02	6782.
1	JAN	1940	93	.02	.00	.02	2837.	*	2	JAN	0810	243	.02	.00	.02	6634.
1	JAN	1945	94	.02	.00	.02	2864.	*	2	JAN	0815	244	.02	.00	.02	6492.
1	JAN	1950	95	.02	.00	.02	2890.	*	2	JAN	0820	245	.02	.00	.02	6357.
1	JAN	1955	96	.02	.00	.02	2916.	*	2	JAN	0825	246	.02	.00	.02	6231.
1	JAN	2000	97	.02	.00	.02	2942.	*	2	JAN	0830	247	.02	.00	.02	6108.
1	JAN	2005	98	.02	.00	.02	2968.	*	2	JAN	0835	248	.02	.00	.02	5989.
1	JAN	2010	99	.02	.00	.02	2993.	*	2	JAN	0840	249	.02	.00	.02	5875.
1	JAN	2015	100	.02	.00	.02	3018.	*	2	JAN	0845	250	.02	.00	.02	5769.
1	JAN	2020	101	.02	.00	.02	3043.	*	2	JAN	0850	251	.02	.00	.02	5673.
1	JAN	2025	102	.02	.00	.02	3068.	*	2	JAN	0855	252	.02	.00	.02	5578.
1	JAN	2030	103	.02	.00	.02	3092.	*	2	JAN	0900	253	.02	.00	.02	5485.
1	JAN	2035	104	.02	.00	.02	3117.	*	2	JAN	0905	254	.02	.00	.02	5394.
1	JAN	2040	105	.02	.00	.02	3141.	*	2	JAN	0910	255	.02	.00	.02	5309.
1	JAN	2045	106	.02	.00	.02	3165.	*	2	JAN	0915	256	.02	.00	.02	5226.
1	JAN	2050	107	.02	.00	.02	3189.	*	2	JAN	0920	257	.02	.00	.02	5145.
1	JAN	2055	108	.02	.00	.02	3213.	*	2	JAN	0925	258	.02	.00	.02	5066.
1	JAN	2100	109	.02	.00	.02	3236.	*	2	JAN	0930	259	.02	.00	.02	4989.
1	JAN	2105	110	.02	.00	.02	3260.	*	2	JAN	0935	260	.02	.00	.02	4918.
1	JAN	2110	111	.02	.00	.02	3283.	*	2	JAN	0940	261	.02	.00	.02	4849.
1	JAN	2115	112	.02	.00	.02	3307.	*	2	JAN	0945	262	.02	.00	.02	4781.
1	JAN	2120	113	.02	.00	.02	3330.	*	2	JAN	0950	263	.02	.00	.02	4716.
1	JAN	2125	114	.02	.00	.02	3354.	*	2	JAN	0955	264	.02	.00	.02	4652.
1	JAN	2130	115	.03	.00	.02	3377.	*	2	JAN	1000	265	.02	.00	.02	4594.
1	JAN	2135	116	.03	.00	.02	3400.	*	2	JAN	1005	266	.02	.00	.02	4538.
1	JAN	2140	117	.03	.00	.02	3424.	*	2	JAN	1010	267	.02	.00	.02	4483.
1	JAN	2145	118	.03	.00	.02	3447.	*	2	JAN	1015	268	.02	.00	.02	4429.
1	JAN	2150	119	.03	.00	.02	3470.	*	2	JAN	1020	269	.02	.00	.02	4378.
1	JAN	2155	120	.03	.00	.02	3494.	*	2	JAN	1025	270	.02	.00	.02	4329.
1	JAN	2200	121	.03	.00	.02	3517.	*	2	JAN	1030	271	.02	.00	.02	4282.
1	JAN	2205	122	.03	.00	.02	3541.	*	2	JAN	1035	272	.02	.00	.02	4235.
1	JAN	2210	123	.03	.00	.02	3564.	*	2	JAN	1040	273	.02	.00	.02	4190.
1	JAN	2215	124	.03	.00	.02	3588.	*	2	JAN	1045	274	.02	.00	.02	4146.
1	JAN	2220	125	.03	.00	.03	3611.	*	2	JAN	1050	275	.02	.00	.02	4105.
1	JAN	2225	126	.03	.00	.03	3635.	*	2	JAN	1055	276	.02	.00	.02	4064.
1	JAN	2230	127	.03	.00	.03	3659.	*	2	JAN	1100	277	.02	.00	.02	4024.
1	JAN	2235	128	.03	.00	.03	3683.	*	2	JAN	1105	278	.02	.00	.02	3986.
1	JAN	2240	129	.03	.00	.03	3707.	*	2	JAN	1110	279	.02	.00	.02	3949.
1	JAN	2245	130	.03	.00	.03	3731.	*	2	JAN	1115	280	.02	.00	.02	3913.
1	JAN	2250	131	.03	.00	.03	3756.	*	2	JAN	1120	281	.02	.00	.02	3878.
1	JAN	2255	132	.03	.00	.03	3780.	*	2	JAN	1125	282	.02	.00	.02	3844.
1	JAN	2300	133	.03	.00	.03	3805.	*	2	JAN	1130	283	.02	.00	.02	3810.
1	JAN	2305	134	.03	.00	.03	3830.	*	2	JAN	1135	284	.02	.00	.02	3779.
1	JAN	2310	135	.03	.00	.03	3855.	*	2	JAN	1140	285	.02	.00	.02	3748.
1	JAN	2315	136	.03	.00	.03	3881.	*	2	JAN	1145	286	.02	.00	.02	3718.
1	JAN	2320	137	.03	.00	.03	3906.	*	2	JAN	1150	287	.02	.00	.02	3689.
1	JAN	2325	138	.03	.00	.03	3932.	*	2	JAN	1155	288	.02	.00	.02	3661.
1	JAN	2330	139	.03	.00	.03	3958.	*	2	JAN	1200	289	.00	.00	.00	3633.
1	JAN	2335	140	.03	.00	.03	3985.	*	2	JAN	1205	290	.00	.00	.00	3604.
1	JAN	2340	141	.03	.00	.03	4011.	*	2	JAN	1210	291	.00	.00	.00	3573.
1	JAN	2345	142	.03	.00	.03	4038.	*	2	JAN	1215	292	.00	.00	.00	3541.
1	JAN	2350	143	.03	.00	.03	4066.	*	2	JAN	1220	293	.00	.00	.00	3506.
1	JAN	2355	144	.03	.00	.03	4093.	*	2	JAN	1225	294	.00	.00	.00	3468.
2	JAN	0000	145	.02	.00	.02	4121.	*	2	JAN	1230	295	.00	.00	.00	3427.
2	JAN	0005	146	.02	.00	.02	4148.	*	2	JAN	1235	296	.00	.00	.00	3381.

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         2 JAN 0010  147     .02     .00     .02      4174.       *        2 JAN 1240  297     .00     .00     .00      3332.
         2 JAN 0015  148     .02     .00     .02      4199.       *        2 JAN 1245  298     .00     .00     .00      3278.
         2 JAN 0020  149     .02     .00     .02      4223.       *        2 JAN 1250  299     .00     .00     .00      3218.
         2 JAN 0025  150     .02     .00     .02      4245.       *        2 JAN 1255  300     .00     .00     .00      3152.
                                                                  *
 ***********************************************************************************************************************************

     TOTAL RAINFALL =    8.44, TOTAL LOSS =     .84, TOTAL EXCESS =    7.60

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+   13740.     17.75                 8799.       4383.       4222.        4222.
                        (INCHES)     3.636       7.245       7.245        7.245
                         (AC-FT)     4363.       8694.       8694.        8694.

                         CUMULATIVE AREA =   22.50 SQ MI

1                                                          STATION BASIN100

                          (O) OUTFLOW
          0.     2000.     4000.     6000.     8000.    10000.    12000.    14000.        0.        0.        0.        0.        0.
                                                                                                        (L) PRECIP,   (X) EXCESS
          .0        .0        .0        .0        .0        .0        .0        .0        .8        .6        .4        .2        .0
 DAHRMN PER
  11200   1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  11205   2O         .         .         .         .         .         .         .         .         .         .         .        L.
  11210   3O         .         .         .         .         .         .         .         .         .         .         .        L.
  11215   4O         .         .         .         .         .         .         .         .         .         .         .        L.
  11220   5O         .         .         .         .         .         .         .         .         .         .         .        L.
  11225   6O         .         .         .         .         .         .         .         .         .         .         .        L.
  11230   7O         .         .         .         .         .         .         .         .         .         .         .        L.
  11235   8O         .         .         .         .         .         .         .         .         .         .         .        L.
  11240   9O         .         .         .         .         .         .         .         .         .         .         .        L.
  11245  10O         .         .         .         .         .         .         .         .         .         .         .        L.
  11250  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
  11255  12O         .         .         .         .         .         .         .         .         .         .         .        L.
  11300  13O         .         .         .         .         .         .         .         .         .         .         .        L.
  11305  14O         .         .         .         .         .         .         .         .         .         .         .        L.
  11310  15O         .         .         .         .         .         .         .         .         .         .         .        L.
  11315  16O         .         .         .         .         .         .         .         .         .         .         .        L.
  11320  17O         .         .         .         .         .         .         .         .         .         .         .        L.
  11325  18O         .         .         .         .         .         .         .         .         .         .         .        L.
  11330  19O         .         .         .         .         .         .         .         .         .         .         .        L.
  11335  20O         .         .         .         .         .         .         .         .         .         .         .        L.
  11340  21O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
  11345  22O         .         .         .         .         .         .         .         .         .         .         .        L.
  11350  23O         .         .         .         .         .         .         .         .         .         .         .        L.
  11355  24O         .         .         .         .         .         .         .         .         .         .         .        L.
  11400  25O         .         .         .         .         .         .         .         .         .         .         .        L.
  11405  26O         .         .         .         .         .         .         .         .         .         .         .        L.
  11410  27.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11415  28.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11420  29.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11425  30.O        .         .         .         .         .         .         .         .         .         .         .        X.
  11430  31.O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11435  32.O        .         .         .         .         .         .         .         .         .         .         .        X.
  11440  33.O        .         .         .         .         .         .         .         .         .         .         .        X.
  11445  34. O       .         .         .         .         .         .         .         .         .         .         .        X.
  11450  35. O       .         .         .         .         .         .         .         .         .         .         .        X.
  11455  36. O       .         .         .         .         .         .         .         .         .         .         .        X.
  11500  37. O       .         .         .         .         .         .         .         .         .         .         .        X.
  11505  38.  O      .         .         .         .         .         .         .         .         .         .         .        X.
  11510  39.  O      .         .         .         .         .         .         .         .         .         .         .        X.
  11515  40.  O      .         .         .         .         .         .         .         .         .         .         .        X.
  11520  41. .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11525  42.   O     .         .         .         .         .         .         .         .         .         .         .        X.
  11530  43.   O     .         .         .         .         .         .         .         .         .         .         .        X.
  11535  44.   O     .         .         .         .         .         .         .         .         .         .         .        X.
  11540  45.   O     .         .         .         .         .         .         .         .         .         .         .        X.
  11545  46.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11550  47.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11555  48.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11600  49.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11605  50.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11610  51. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11615  52.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11620  53.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11625  54.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11630  55.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11635  56.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11640  57.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11645  58.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11650  59.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11655  60.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11700  61. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11705  62.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11710  63.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11715  64.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11720  65.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11725  66.         O         .         .         .         .         .         .         .         .         .         .        X.
  11730  67.         O         .         .         .         .         .         .         .         .         .         .        X.
  11735  68.         O         .         .         .         .         .         .         .         .         .         .        X.
  11740  69.         O         .         .         .         .         .         .         .         .         .         .        X.
  11745  70.         O         .         .         .         .         .         .         .         .         .         .        X.
  11750  71. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11755  72.         .O        .         .         .         .         .         .         .         .         .         .        X.
  11800  73.         .O        .         .         .         .         .         .         .         .         .         .        X.
  11805  74.         .O        .         .         .         .         .         .         .         .         .         .        X.
  11810  75.         .O        .         .         .         .         .         .         .         .         .         .        X.
  11815  76.         . O       .         .         .         .         .         .         .         .         .         .        X.
  11820  77.         . O       .         .         .         .         .         .         .         .         .         .        X.
  11825  78.         . O       .         .         .         .         .         .         .         .         .         .        X.
  11830  79.         . O       .         .         .         .         .         .         .         .         .         .        X.
  11835  80.         . O       .         .         .         .         .         .         .         .         .         .        X.
  11840  81. . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11845  82.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11850  83.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11855  84.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11900  85.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11905  86.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11910  87.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11915  88.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  11920  89.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  11925  90.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  11930  91. . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11935  92.         .   O     .         .         .         .         .         .         .         .         .         .        X.
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11940  93.         .   O     .         .         .         .         .         .         .         .         .         .        X.
11945  94.         .   O     .         .         .         .         .         .         .         .         .         .        X.
11950  95.         .   O     .         .         .         .         .         .         .         .         .         .        X.
11955  96.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12000  97.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12005  98.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12010  99.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12015 100.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12020 101. . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12025 102.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12030 103.         .    O    .         .         .         .         .         .         .         .         .         .        X.
12035 104.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12040 105.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12045 106.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12050 107.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12055 108.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12100 109.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12105 110.         .     O   .         .         .         .         .         .         .         .         .         .        X.
12110 111. . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12115 112.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12120 113.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12125 114.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12130 115.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12135 116.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12140 117.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12145 118.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12150 119.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12155 120.         .      O  .         .         .         .         .         .         .         .         .         .        X.
12200 121. . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12205 122.         .       O .         .         .         .         .         .         .         .         .         .        X.
12210 123.         .       O .         .         .         .         .         .         .         .         .         .        X.
12215 124.         .       O .         .         .         .         .         .         .         .         .         .        X.
12220 125.         .       O .         .         .         .         .         .         .         .         .         .        X.
12225 126.         .       O .         .         .         .         .         .         .         .         .         .        X.
12230 127.         .       O .         .         .         .         .         .         .         .         .         .        X.
12235 128.         .       O .         .         .         .         .         .         .         .         .         .        X.
12240 129.         .        O.         .         .         .         .         .         .         .         .         .        X.
12245 130.         .        O.         .         .         .         .         .         .         .         .         .        X.
12250 131. . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12255 132.         .        O.         .         .         .         .         .         .         .         .         .        X.
12300 133.         .        O.         .         .         .         .         .         .         .         .         .        X.
12305 134.         .        O.         .         .         .         .         .         .         .         .         .        X.
12310 135.         .        O.         .         .         .         .         .         .         .         .         .        X.
12315 136.         .        O.         .         .         .         .         .         .         .         .         .        X.
12320 137.         .         O         .         .         .         .         .         .         .         .         .        X.
12325 138.         .         O         .         .         .         .         .         .         .         .         .        X.
12330 139.         .         O         .         .         .         .         .         .         .         .         .        X.
12335 140.         .         O         .         .         .         .         .         .         .         .         .        X.
12340 141. . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12345 142.         .         O         .         .         .         .         .         .         .         .         .        X.
12350 143.         .         O         .         .         .         .         .         .         .         .         .       LX.
12355 144.         .         O         .         .         .         .         .         .         .         .         .       LX.
20000 145.         .         .O        .         .         .         .         .         .         .         .         .        X.
20005 146.         .         .O        .         .         .         .         .         .         .         .         .        X.
20010 147.         .         .O        .         .         .         .         .         .         .         .         .        X.
20015 148.         .         .O        .         .         .         .         .         .         .         .         .        X.
20020 149.         .         .O        .         .         .         .         .         .         .         .         .        X.
20025 150.         .         .O        .         .         .         .         .         .         .         .         .        X.
20030 151. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20035 152.         .         .O        .         .         .         .         .         .         .         .         .        X.
20040 153.         .         . O       .         .         .         .         .         .         .         .         .        X.
20045 154.         .         . O       .         .         .         .         .         .         .         .         .        X.
20050 155.         .         . O       .         .         .         .         .         .         .         .         .        X.
20055 156.         .         . O       .         .         .         .         .         .         .         .         .        X.
20100 157.         .         . O       .         .         .         .         .         .         .         .         .        X.
20105 158.         .         . O       .         .         .         .         .         .         .         .         .        X.
20110 159.         .         . O       .         .         .         .         .         .         .         .         .        X.
20115 160.         .         . O       .         .         .         .         .         .         .         .         .        X.
20120 161. . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20125 162.         .         . O       .         .         .         .         .         .         .         .         .        X.
20130 163.         .         .O        .         .         .         .         .         .         .         .         .        X.
20135 164.         .         .O        .         .         .         .         .         .         .         .         .        X.
20140 165.         .         .O        .         .         .         .         .         .         .         .         .        X.
20145 166.         .         .O        .         .         .         .         .         .         .         .         .        X.
20150 167.         .         .O        .         .         .         .         .         .         .         .         .        X.
20155 168.         .         .O        .         .         .         .         .         .         .         .         .        X.
20200 169.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20205 170.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20210 171. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XX.
20215 172.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20220 173.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20225 174.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20230 175.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20235 176.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20240 177.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20245 178.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20250 179.         .         . O       .         .         .         .         .         .         .         .         .       XX.
20255 180.         .         . O       .         .         .         .         .         .         .         .         .       XX.
20300 181. . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XX.
20305 182.         .         . O       .         .         .         .         .         .         .         .         .      LXX.
20310 183.         .         .  O      .         .         .         .         .         .         .         .         .      XXX.
20315 184.         .         .  O      .         .         .         .         .         .         .         .         .      XXX.
20320 185.         .         .  O      .         .         .         .         .         .         .         .         .     XXXX.
20325 186.         .         .   O     .         .         .         .         .         .         .         .         .     XXXX.
20330 187.         .         .   O     .         .         .         .         .         .         .         .         .     XXXX.
20335 188.         .         .    O    .         .         .         .         .         .         .         .         .    LXXXX.
20340 189.         .         .     O   .         .         .         .         .         .         .         .         .     XXXX.
20345 190.         .         .     O   .         .         .         .         .         .         .         .         .    LXXXX.
20350 191. . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .XXXXXXX.
20355 192.         .         .       O .         .         .         .         .         .         .         .         .XXXXXXXXX.
20400 193.         .         .        O.         .         .         .         .         .     LXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX.
20405 194.         .         .         O         .         .         .         .         .         .         .         .    XXXXX.
20410 195.         .         .         . O       .         .         .         .         .         .         .         .    XXXXX.
20415 196.         .         .         .   O     .         .         .         .         .         .         .         .     XXXX.
20420 197.         .         .         .    O    .         .         .         .         .         .         .         .      XXX.
20425 198.         .         .         .      O  .         .         .         .         .         .         .         .      XXX.
20430 199.         .         .         .        O.         .         .         .         .         .         .         .       XX.
20435 200.         .         .         .         . O       .         .         .         .         .         .         .       XX.
20440 201. . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XX.
20445 202.         .         .         .         .      O  .         .         .         .         .         .         .       XX.
20450 203.         .         .         .         .        O.         .         .         .         .         .         .       XX.
20455 204.         .         .         .         .         . O       .         .         .         .         .         .       XX.
20500 205.         .         .         .         .         .    O    .         .         .         .         .         .        X.
20505 206.         .         .         .         .         .      O  .         .         .         .         .         .        X.
20510 207.         .         .         .         .         .         O         .         .         .         .         .        X.
20515 208.         .         .         .         .         .         . O       .         .         .         .         .        X.
20520 209.         .         .         .         .         .         .   O     .         .         .         .         .        X.
20525 210.         .         .         .         .         .         .    O    .         .         .         .         .        X.
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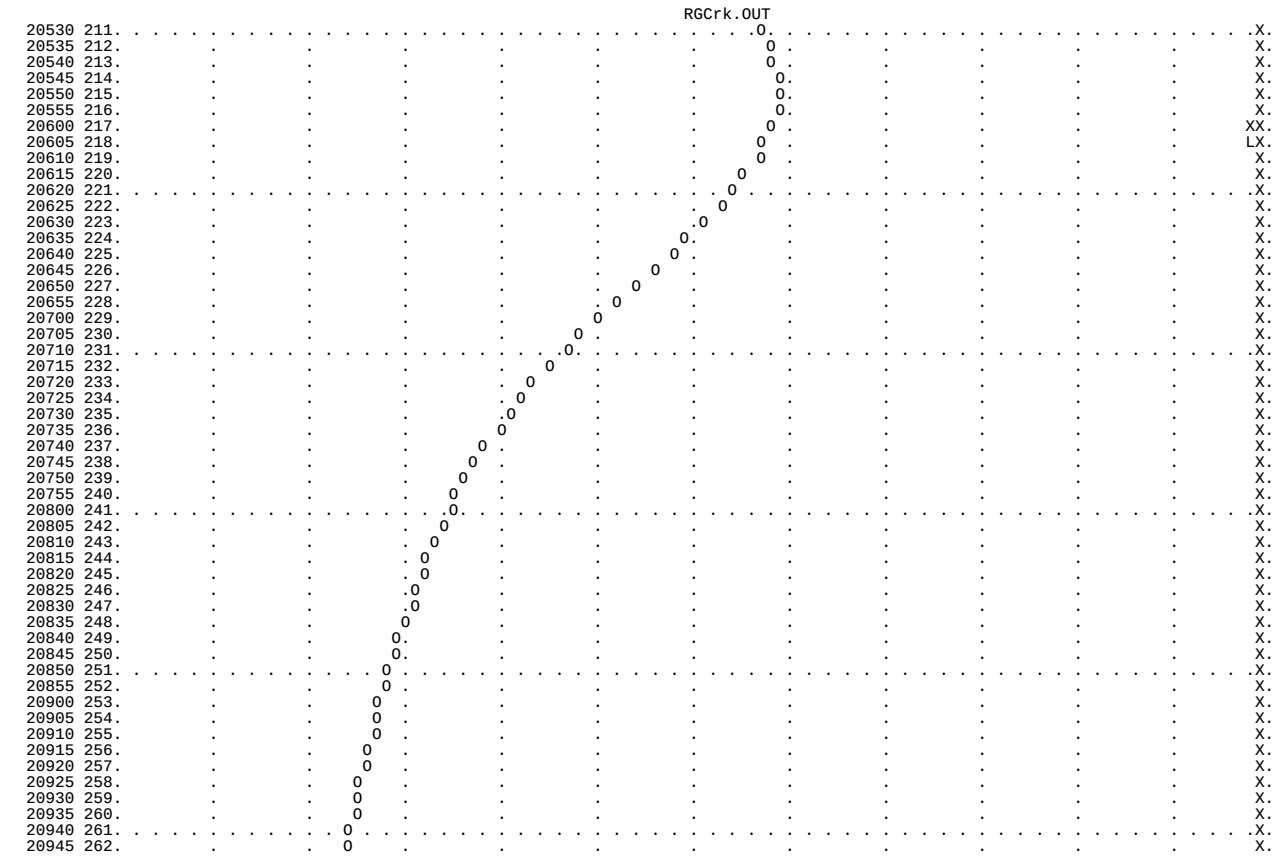

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  20530 211. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20535 212.         .         .         .         .         .         .       O .         .         .         .         .        X.
  20540 213.         .         .         .         .         .         .       O .         .         .         .         .        X.
  20545 214.         .         .         .         .         .         .        O.         .         .         .         .        X.
  20550 215.         .         .         .         .         .         .        O.         .         .         .         .        X.
  20555 216.         .         .         .         .         .         .        O.         .         .         .         .        X.
  20600 217.         .         .         .         .         .         .       O .         .         .         .         .       XX.
  20605 218.         .         .         .         .         .         .      O  .         .         .         .         .       LX.
  20610 219.         .         .         .         .         .         .      O  .         .         .         .         .        X.
  20615 220.         .         .         .         .         .         .    O    .         .         .         .         .        X.
  20620 221. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20625 222.         .         .         .         .         .         .  O      .         .         .         .         .        X.
  20630 223.         .         .         .         .         .         .O        .         .         .         .         .        X.
  20635 224.         .         .         .         .         .        O.         .         .         .         .         .        X.
  20640 225.         .         .         .         .         .       O .         .         .         .         .         .        X.
  20645 226.         .         .         .         .         .     O   .         .         .         .         .         .        X.
  20650 227.         .         .         .         .         .   O     .         .         .         .         .         .        X.
  20655 228.         .         .         .         .         . O       .         .         .         .         .         .        X.
  20700 229.         .         .         .         .         O         .         .         .         .         .         .        X.
  20705 230.         .         .         .         .       O .         .         .         .         .         .         .        X.
  20710 231. . . . . . . . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20715 232.         .         .         .         .    O    .         .         .         .         .         .         .        X.
  20720 233.         .         .         .         .  O      .         .         .         .         .         .         .        X.
  20725 234.         .         .         .         . O       .         .         .         .         .         .         .        X.
  20730 235.         .         .         .         .O        .         .         .         .         .         .         .        X.
  20735 236.         .         .         .         O         .         .         .         .         .         .         .        X.
  20740 237.         .         .         .       O .         .         .         .         .         .         .         .        X.
  20745 238.         .         .         .      O  .         .         .         .         .         .         .         .        X.
  20750 239.         .         .         .     O   .         .         .         .         .         .         .         .        X.
  20755 240.         .         .         .    O    .         .         .         .         .         .         .         .        X.
  20800 241. . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20805 242.         .         .         .   O     .         .         .         .         .         .         .         .        X.
  20810 243.         .         .         .  O      .         .         .         .         .         .         .         .        X.
  20815 244.         .         .         . O       .         .         .         .         .         .         .         .        X.
  20820 245.         .         .         . O       .         .         .         .         .         .         .         .        X.
  20825 246.         .         .         .O        .         .         .         .         .         .         .         .        X.
  20830 247.         .         .         .O        .         .         .         .         .         .         .         .        X.
  20835 248.         .         .         O         .         .         .         .         .         .         .         .        X.
  20840 249.         .         .        O.         .         .         .         .         .         .         .         .        X.
  20845 250.         .         .        O.         .         .         .         .         .         .         .         .        X.
  20850 251. . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20855 252.         .         .       O .         .         .         .         .         .         .         .         .        X.
  20900 253.         .         .      O  .         .         .         .         .         .         .         .         .        X.
  20905 254.         .         .      O  .         .         .         .         .         .         .         .         .        X.
  20910 255.         .         .      O  .         .         .         .         .         .         .         .         .        X.
  20915 256.         .         .     O   .         .         .         .         .         .         .         .         .        X.
  20920 257.         .         .     O   .         .         .         .         .         .         .         .         .        X.
  20925 258.         .         .    O    .         .         .         .         .         .         .         .         .        X.
  20930 259.         .         .    O    .         .         .         .         .         .         .         .         .        X.
  20935 260.         .         .    O    .         .         .         .         .         .         .         .         .        X.
  20940 261. . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20945 262.         .         .   O     .         .         .         .         .         .         .         .         .        X.
  20950 263.         .         .   O     .         .         .         .         .         .         .         .         .        X.
  20955 264.         .         .  O      .         .         .         .         .         .         .         .         .        X.
  21000 265.         .         .  O      .         .         .         .         .         .         .         .         .        X.
  21005 266.         .         .  O      .         .         .         .         .         .         .         .         .        X.
  21010 267.         .         . O       .         .         .         .         .         .         .         .         .        X.
  21015 268.         .         . O       .         .         .         .         .         .         .         .         .        X.
  21020 269.         .         . O       .         .         .         .         .         .         .         .         .        X.
  21025 270.         .         . O       .         .         .         .         .         .         .         .         .        X.
  21030 271. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  21035 272.         .         .O        .         .         .         .         .         .         .         .         .        X.
  21040 273.         .         .O        .         .         .         .         .         .         .         .         .        X.
  21045 274.         .         .O        .         .         .         .         .         .         .         .         .        X.
  21050 275.         .         .O        .         .         .         .         .         .         .         .         .        X.
  21055 276.         .         O         .         .         .         .         .         .         .         .         .        X.
  21100 277.         .         O         .         .         .         .         .         .         .         .         .        X.
  21105 278.         .         O         .         .         .         .         .         .         .         .         .        X.
  21110 279.         .         O         .         .         .         .         .         .         .         .         .        X.
  21115 280.         .         O         .         .         .         .         .         .         .         .         .        X.
  21120 281. . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  21125 282.         .        O.         .         .         .         .         .         .         .         .         .        X.
  21130 283.         .        O.         .         .         .         .         .         .         .         .         .        X.
  21135 284.         .        O.         .         .         .         .         .         .         .         .         .        X.
  21140 285.         .        O.         .         .         .         .         .         .         .         .         .        X.
  21145 286.         .        O.         .         .         .         .         .         .         .         .         .        X.
  21150 287.         .       O .         .         .         .         .         .         .         .         .         .        X.
  21155 288.         .       O .         .         .         .         .         .         .         .         .         .        X.
  21200 289.         .       O .         .         .         .         .         .         .         .         .         .         .
  21205 290.         .       O .         .         .         .         .         .         .         .         .         .         .
  21210 291. . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  21215 292.         .       O .         .         .         .         .         .         .         .         .         .         .
  21220 293.         .       O .         .         .         .         .         .         .         .         .         .         .
  21225 294.         .      O  .         .         .         .         .         .         .         .         .         .         .
  21230 295.         .      O  .         .         .         .         .         .         .         .         .         .         .
  21235 296.         .      O  .         .         .         .         .         .         .         .         .         .         .
  21240 297.         .      O  .         .         .         .         .         .         .         .         .         .         .
  21245 298.         .     O   .         .         .         .         .         .         .         .         .         .         .
  21250 299.         .     O   .         .         .         .         .         .         .         .         .         .         .
  21255 300.---------.-----O---.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1


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             **************
             *            *
   56 KK     *  BASIN200  *     RUNOFF
             *            *
             **************
                            NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
                            COPYRIGHT 2003 RICK ENGINEERING COMPANY
                            FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
                            THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
                            VARIABLE MUST BE 1200 ON THE IT CARD.
                            THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
                            YOUR DATA SET:
                            IT 5 01JAN90 1200 300
                            6HR RAINFALL IS  3.65  INCHES
                            24HR RAINFALL IS  7.5  INCHES
                            DAR30 =  .783246
                            DAR60 =  .867702
                            DAR180 =  .93662
                            DAR360 =  .953003
                            DAR1440 =  .966541
                            BASIN AREA IS  27.69  SQUARE MILES
```

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 73 IN          TIME DATA FOR INPUT TIME SERIES
                     JXMIN          5  TIME INTERVAL IN MINUTES
                    JXDATE      1JAN90  STARTING DATE
                    JXTIME        1200  STARTING TIME

              SUBBASIN RUNOFF DATA

105 BA          SUBBASIN CHARACTERISTICS
                     TAREA       3.03  SUBBASIN AREA

                PRECIPITATION DATA

 74 PB                STORM       8.44  BASIN TOTAL PRECIPITATION

 74 PI            INCREMENTAL PRECIPITATION PATTERN
                      .01        .01        .01        .01        .01        .01        .01        .01        .01        .01
                      .01        .01        .01        .01        .01        .01        .01        .01        .01        .01
                      .01        .01        .01        .01        .01        .01        .01        .01        .01        .01
                      .01        .01        .01        .01        .01        .01        .01        .01        .01        .01
                      .01        .01        .01        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .03        .03        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .03        .03        .03        .03        .03        .04        .04
                      .04        .04        .04        .04        .04        .04        .04        .04        .04        .05
                      .05        .05        .05        .08        .08        .08        .09        .07        .08        .12
                      .18        .63        .10        .09        .08        .05        .05        .04        .04        .04
                      .04        .04        .04        .03        .03        .03        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .03        .03        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .02        .02        .02        .02
                      .02        .02        .02        .02        .02        .02        .01        .01        .01        .01
                      .01        .01        .01        .01        .01        .01        .01        .01        .01        .01
                      .01        .01        .01        .01        .01        .01        .01

106 LS          SCS LOSS RATE
                     STRTL        .17  INITIAL ABSTRACTION
                    CRVNBR       92.00  CURVE NUMBER
                     RTIMP        .00  PERCENT IMPERVIOUS AREA

107 UD          SCS DIMENSIONLESS UNITGRAPH
                      TLAG        .68  LAG

                                                  ***

                                              UNIT HYDROGRAPH
                                         43 END-OF-PERIOD ORDINATES
                82.      256.      493.      820.     1236.     1623.     1884.     2003.     2012.     1938.
              1786.     1607.     1383.     1110.      893.      739.      611.      514.      429.      357.
               291.      244.      202.      168.      139.      113.       95.       79.       66.       55.
                45.       38.       31.       26.       22.       19.       16.       13.       10.        8.
                 6.        3.        1.
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                                          HYDROGRAPH AT STATION BASIN200

*****************************************************************************************************************************
                                                                  *
      DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q        *      DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                  *
       1 JAN 1200    1     .00     .00     .00         0.        *       2 JAN 0030  151     .02     .00     .02       586.
       1 JAN 1205    2     .02     .02     .00         0.        *       2 JAN 0035  152     .02     .00     .02       578.
       1 JAN 1210    3     .02     .02     .00         0.        *       2 JAN 0040  153     .02     .00     .02       569.
       1 JAN 1215    4     .02     .02     .00         0.        *       2 JAN 0045  154     .02     .00     .02       561.
       1 JAN 1220    5     .02     .02     .00         0.        *       2 JAN 0050  155     .03     .00     .02       554.
       1 JAN 1225    6     .02     .02     .00         0.        *       2 JAN 0055  156     .03     .00     .02       549.
       1 JAN 1230    7     .02     .02     .00         0.        *       2 JAN 0100  157     .03     .00     .02       545.
       1 JAN 1235    8     .02     .02     .00         0.        *       2 JAN 0105  158     .03     .00     .02       544.
       1 JAN 1240    9     .02     .02     .00         0.        *       2 JAN 0110  159     .03     .00     .03       544.
       1 JAN 1245   10     .02     .02     .00         0.        *       2 JAN 0115  160     .03     .00     .03       546.
       1 JAN 1250   11     .02     .02     .00         0.        *       2 JAN 0120  161     .03     .00     .03       549.
       1 JAN 1255   12     .02     .02     .00         0.        *       2 JAN 0125  162     .03     .00     .03       553.
       1 JAN 1300   13     .02     .02     .00         0.        *       2 JAN 0130  163     .03     .00     .03       558.
       1 JAN 1305   14     .02     .02     .00         0.        *       2 JAN 0135  164     .03     .00     .03       563.
       1 JAN 1310   15     .02     .01     .00         0.        *       2 JAN 0140  165     .03     .00     .03       570.
       1 JAN 1315   16     .02     .01     .00         1.        *       2 JAN 0145  166     .03     .00     .03       577.
       1 JAN 1320   17     .02     .01     .00         2.        *       2 JAN 0150  167     .03     .00     .03       585.
       1 JAN 1325   18     .02     .01     .00         4.        *       2 JAN 0155  168     .03     .00     .03       594.
       1 JAN 1330   19     .02     .01     .00         7.        *       2 JAN 0200  169     .04     .00     .04       604.
       1 JAN 1335   20     .02     .01     .00        11.        *       2 JAN 0205  170     .04     .00     .04       616.
       1 JAN 1340   21     .02     .01     .00        16.        *       2 JAN 0210  171     .04     .00     .04       630.
       1 JAN 1345   22     .02     .01     .00        22.        *       2 JAN 0215  172     .04     .00     .04       648.
       1 JAN 1350   23     .02     .01     .00        28.        *       2 JAN 0220  173     .04     .00     .04       670.
       1 JAN 1355   24     .02     .01     .01        36.        *       2 JAN 0225  174     .04     .00     .04       695.
       1 JAN 1400   25     .02     .01     .01        43.        *       2 JAN 0230  175     .05     .00     .04       722.
       1 JAN 1405   26     .02     .01     .01        52.        *       2 JAN 0235  176     .05     .00     .04       752.
       1 JAN 1410   27     .02     .01     .01        60.        *       2 JAN 0240  177     .05     .00     .05       781.
       1 JAN 1415   28     .02     .01     .01        69.        *       2 JAN 0245  178     .05     .00     .05       811.
       1 JAN 1420   29     .02     .01     .01        78.        *       2 JAN 0250  179     .05     .00     .05       841.
       1 JAN 1425   30     .02     .01     .01        86.        *       2 JAN 0255  180     .05     .00     .05       870.
       1 JAN 1430   31     .02     .01     .01        95.        *       2 JAN 0300  181     .05     .00     .05       899.
       1 JAN 1435   32     .02     .01     .01       103.        *       2 JAN 0305  182     .06     .00     .05       927.
       1 JAN 1440   33     .02     .01     .01       112.        *       2 JAN 0310  183     .06     .00     .06       956.
       1 JAN 1445   34     .02     .01     .01       120.        *       2 JAN 0315  184     .06     .00     .06       985.
       1 JAN 1450   35     .02     .01     .01       128.        *       2 JAN 0320  185     .09     .00     .09      1019.
       1 JAN 1455   36     .02     .01     .01       136.        *       2 JAN 0325  186     .09     .00     .09      1059.
       1 JAN 1500   37     .02     .01     .01       143.        *       2 JAN 0330  187     .10     .00     .09      1107.
       1 JAN 1505   38     .02     .01     .01       151.        *       2 JAN 0335  188     .10     .00     .10      1167.
       1 JAN 1510   39     .02     .01     .01       158.        *       2 JAN 0340  189     .09     .00     .08      1240.
       1 JAN 1515   40     .02     .01     .01       165.        *       2 JAN 0345  190     .10     .00     .10      1324.
       1 JAN 1520   41     .02     .01     .01       172.        *       2 JAN 0350  191     .14     .00     .14      1419.
       1 JAN 1525   42     .02     .01     .01       179.        *       2 JAN 0355  192     .20     .00     .20      1530.
       1 JAN 1530   43     .02     .01     .01       185.        *       2 JAN 0400  193     .73     .01     .72      1702.
       1 JAN 1535   44     .02     .01     .01       192.        *       2 JAN 0405  194     .12     .00     .11      1940.
       1 JAN 1540   45     .02     .01     .01       198.        *       2 JAN 0410  195     .10     .00     .10      2226.
       1 JAN 1545   46     .02     .01     .01       204.        *       2 JAN 0415  196     .09     .00     .09      2571.
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1	JAN	1550	47	.02	.01	.01	210.	*	2	JAN	0420	197	.06	.00	.06	2952.
1	JAN	1555	48	.02	.01	.01	216.	*	2	JAN	0425	198	.06	.00	.06	3281.
1	JAN	1600	49	.02	.01	.01	221.	*	2	JAN	0430	199	.05	.00	.05	3492.
1	JAN	1605	50	.02	.01	.01	227.	*	2	JAN	0435	200	.05	.00	.05	3577.
1	JAN	1610	51	.02	.01	.01	232.	*	2	JAN	0440	201	.05	.00	.05	3553.
1	JAN	1615	52	.02	.01	.01	237.	*	2	JAN	0445	202	.04	.00	.04	3443.
1	JAN	1620	53	.02	.01	.01	243.	*	2	JAN	0450	203	.04	.00	.04	3258.
1	JAN	1625	54	.02	.01	.01	248.	*	2	JAN	0455	204	.04	.00	.04	3033.
1	JAN	1630	55	.02	.01	.01	252.	*	2	JAN	0500	205	.03	.00	.03	2767.
1	JAN	1635	56	.02	.01	.01	257.	*	2	JAN	0505	206	.03	.00	.03	2472.
1	JAN	1640	57	.02	.01	.01	262.	*	2	JAN	0510	207	.03	.00	.03	2216.
1	JAN	1645	58	.02	.01	.01	266.	*	2	JAN	0515	208	.03	.00	.03	2005.
1	JAN	1650	59	.02	.01	.01	271.	*	2	JAN	0520	209	.03	.00	.03	1817.
1	JAN	1655	60	.02	.00	.01	275.	*	2	JAN	0525	210	.03	.00	.03	1655.
1	JAN	1700	61	.02	.00	.01	280.	*	2	JAN	0530	211	.03	.00	.03	1510.
1	JAN	1705	62	.02	.00	.01	284.	*	2	JAN	0535	212	.02	.00	.02	1379.
1	JAN	1710	63	.02	.00	.01	288.	*	2	JAN	0540	213	.02	.00	.02	1260.
1	JAN	1715	64	.02	.00	.01	292.	*	2	JAN	0545	214	.02	.00	.02	1160.
1	JAN	1720	65	.02	.00	.01	296.	*	2	JAN	0550	215	.02	.00	.02	1069.
1	JAN	1725	66	.02	.00	.01	300.	*	2	JAN	0555	216	.02	.00	.02	990.
1	JAN	1730	67	.02	.00	.01	304.	*	2	JAN	0600	217	.03	.00	.03	921.
1	JAN	1735	68	.02	.00	.01	308.	*	2	JAN	0605	218	.03	.00	.03	862.
1	JAN	1740	69	.02	.00	.01	312.	*	2	JAN	0610	219	.03	.00	.03	814.
1	JAN	1745	70	.02	.00	.01	315.	*	2	JAN	0615	220	.03	.00	.03	774.
1	JAN	1750	71	.02	.00	.02	319.	*	2	JAN	0620	221	.03	.00	.03	744.
1	JAN	1755	72	.02	.00	.02	323.	*	2	JAN	0625	222	.03	.00	.03	721.
1	JAN	1800	73	.02	.00	.02	326.	*	2	JAN	0630	223	.03	.00	.03	704.
1	JAN	1805	74	.02	.00	.02	330.	*	2	JAN	0635	224	.03	.00	.03	691.
1	JAN	1810	75	.02	.00	.02	334.	*	2	JAN	0640	225	.03	.00	.03	680.
1	JAN	1815	76	.02	.00	.02	337.	*	2	JAN	0645	226	.03	.00	.03	673.
1	JAN	1820	77	.02	.00	.02	341.	*	2	JAN	0650	227	.03	.00	.02	665.
1	JAN	1825	78	.02	.00	.02	344.	*	2	JAN	0655	228	.02	.00	.02	659.
1	JAN	1830	79	.02	.00	.02	347.	*	2	JAN	0700	229	.02	.00	.02	652.
1	JAN	1835	80	.02	.00	.02	351.	*	2	JAN	0705	230	.02	.00	.02	644.
1	JAN	1840	81	.02	.00	.02	354.	*	2	JAN	0710	231	.02	.00	.02	636.
1	JAN	1845	82	.02	.00	.02	358.	*	2	JAN	0715	232	.02	.00	.02	627.
1	JAN	1850	83	.02	.00	.02	361.	*	2	JAN	0720	233	.02	.00	.02	618.
1	JAN	1855	84	.02	.00	.02	364.	*	2	JAN	0725	234	.02	.00	.02	609.
1	JAN	1900	85	.02	.00	.02	367.	*	2	JAN	0730	235	.02	.00	.02	600.
1	JAN	1905	86	.02	.00	.02	371.	*	2	JAN	0735	236	.02	.00	.02	592.
1	JAN	1910	87	.02	.00	.02	374.	*	2	JAN	0740	237	.02	.00	.02	585.
1	JAN	1915	88	.02	.00	.02	377.	*	2	JAN	0745	238	.02	.00	.02	578.
1	JAN	1920	89	.02	.00	.02	380.	*	2	JAN	0750	239	.02	.00	.02	571.
1	JAN	1925	90	.02	.00	.02	384.	*	2	JAN	0755	240	.02	.00	.02	565.
1	JAN	1930	91	.02	.00	.02	387.	*	2	JAN	0800	241	.02	.00	.02	558.
1	JAN	1935	92	.02	.00	.02	390.	*	2	JAN	0805	242	.02	.00	.02	552.
1	JAN	1940	93	.02	.00	.02	393.	*	2	JAN	0810	243	.02	.00	.02	546.
1	JAN	1945	94	.02	.00	.02	397.	*	2	JAN	0815	244	.02	.00	.02	540.
1	JAN	1950	95	.02	.00	.02	400.	*	2	JAN	0820	245	.02	.00	.02	534.
1	JAN	1955	96	.02	.00	.02	403.	*	2	JAN	0825	246	.02	.00	.02	528.
1	JAN	2000	97	.02	.00	.02	406.	*	2	JAN	0830	247	.02	.00	.02	523.
1	JAN	2005	98	.02	.00	.02	409.	*	2	JAN	0835	248	.02	.00	.02	517.
1	JAN	2010	99	.02	.00	.02	413.	*	2	JAN	0840	249	.02	.00	.02	512.
1	JAN	2015	100	.02	.00	.02	416.	*	2	JAN	0845	250	.02	.00	.02	507.
1	JAN	2020	101	.02	.00	.02	419.	*	2	JAN	0850	251	.02	.00	.02	502.
1	JAN	2025	102	.02	.00	.02	422.	*	2	JAN	0855	252	.02	.00	.02	497.
1	JAN	2030	103	.02	.00	.02	426.	*	2	JAN	0900	253	.02	.00	.02	492.
1	JAN	2035	104	.02	.00	.02	429.	*	2	JAN	0905	254	.02	.00	.02	488.
1	JAN	2040	105	.02	.00	.02	432.	*	2	JAN	0910	255	.02	.00	.02	483.
1	JAN	2045	106	.02	.00	.02	436.	*	2	JAN	0915	256	.02	.00	.02	479.
1	JAN	2050	107	.02	.00	.02	439.	*	2	JAN	0920	257	.02	.00	.02	475.
1	JAN	2055	108	.02	.00	.02	442.	*	2	JAN	0925	258	.02	.00	.02	470.
1	JAN	2100	109	.02	.00	.02	446.	*	2	JAN	0930	259	.02	.00	.02	466.
1	JAN	2105	110	.02	.00	.02	449.	*	2	JAN	0935	260	.02	.00	.02	462.
1	JAN	2110	111	.02	.00	.02	453.	*	2	JAN	0940	261	.02	.00	.02	459.
1	JAN	2115	112	.02	.00	.02	456.	*	2	JAN	0945	262	.02	.00	.02	455.
1	JAN	2120	113	.02	.00	.02	460.	*	2	JAN	0950	263	.02	.00	.02	451.
1	JAN	2125	114	.02	.00	.02	463.	*	2	JAN	0955	264	.02	.00	.02	448.
1	JAN	2130	115	.02	.00	.02	467.	*	2	JAN	1000	265	.02	.00	.02	444.
1	JAN	2135	116	.02	.00	.02	470.	*	2	JAN	1005	266	.02	.00	.02	441.
1	JAN	2140	117	.02	.00	.02	474.	*	2	JAN	1010	267	.02	.00	.02	438.
1	JAN	2145	118	.02	.00	.02	477.	*	2	JAN	1015	268	.02	.00	.02	434.
1	JAN	2150	119	.02	.00	.02	481.	*	2	JAN	1020	269	.02	.00	.02	431.
1	JAN	2155	120	.02	.00	.02	485.	*	2	JAN	1025	270	.02	.00	.02	428.
1	JAN	2200	121	.02	.00	.02	489.	*	2	JAN	1030	271	.02	.00	.02	425.
1	JAN	2205	122	.02	.00	.02	492.	*	2	JAN	1035	272	.02	.00	.02	422.
1	JAN	2210	123	.03	.00	.02	496.	*	2	JAN	1040	273	.02	.00	.02	419.
1	JAN	2215	124	.03	.00	.02	500.	*	2	JAN	1045	274	.02	.00	.02	417.
1	JAN	2220	125	.03	.00	.02	504.	*	2	JAN	1050	275	.02	.00	.02	414.
1	JAN	2225	126	.03	.00	.02	508.	*	2	JAN	1055	276	.02	.00	.02	411.
1	JAN	2230	127	.03	.00	.02	512.	*	2	JAN	1100	277	.02	.00	.02	408.
1	JAN	2235	128	.03	.00	.02	516.	*	2	JAN	1105	278	.02	.00	.02	406.
1	JAN	2240	129	.03	.00	.02	520.	*	2	JAN	1110	279	.02	.00	.02	403.
1	JAN	2245	130	.03	.00	.02	525.	*	2	JAN	1115	280	.02	.00	.02	401.
1	JAN	2250	131	.03	.00	.02	529.	*	2	JAN	1120	281	.02	.00	.02	398.
1	JAN	2255	132	.03	.00	.02	533.	*	2	JAN	1125	282	.02	.00	.02	396.
1	JAN	2300	133	.03	.00	.03	538.	*	2	JAN	1130	283	.02	.00	.02	394.
1	JAN	2305	134	.03	.00	.03	542.	*	2	JAN	1135	284	.02	.00	.02	391.
1	JAN	2310	135	.03	.00	.03	547.	*	2	JAN	1140	285	.02	.00	.02	389.
1	JAN	2315	136	.03	.00	.03	551.	*	2	JAN	1145	286	.02	.00	.02	387.
1	JAN	2320	137	.03	.00	.03	556.	*	2	JAN	1150	287	.02	.00	.02	385.
1	JAN	2325	138	.03	.00	.03	561.	*	2	JAN	1155	288	.02	.00	.02	382.
1	JAN	2330	139	.03	.00	.03	566.	*	2	JAN	1200	289	.00	.00	.00	379.
1	JAN	2335	140	.03	.00	.03	571.	*	2	JAN	1205	290	.00	.00	.00	373.
1	JAN	2340	141	.03	.00	.03	576.	*	2	JAN	1210	291	.00	.00	.00	363.
1	JAN	2345	142	.03	.00	.03	581.	*	2	JAN	1215	292	.00	.00	.00	349.
1	JAN	2350	143	.03	.00	.03	587.	*	2	JAN	1220	293	.00	.00	.00	328.
1	JAN	2355	144	.03	.00	.03	592.	*	2	JAN	1225	294	.00	.00	.00	302.
2	JAN	0000	145	.02	.00	.02	597.	*	2	JAN	1230	295	.00	.00	.00	271.
2	JAN	0005	146	.02	.00	.02	601.	*	2	JAN	1235	296	.00	.00	.00	239.
2	JAN	0010	147	.02	.00	.02	603.	*	2	JAN	1240	297	.00	.00	.00	207.
2	JAN	0015	148	.02	.00	.02	603.	*	2	JAN	1245	298	.00	.00	.00	176.
2	JAN	0020	149	.02	.00	.02	600.	*	2	JAN	1250	299	.00	.00	.00	148.
2	JAN	0025	150	.02	.00	.02	594.	*	2	JAN	1255	300	.00	.00	.00	122.
								*								

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TOTAL RAINFALL = 8.44, TOTAL LOSS = .96, TOTAL EXCESS = 7.48

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 3577.	16.58		1303.	607.	585.	585.
		(INCHES)	3.999	7.452	7.452	7.452
		(AC-FT)	646.	1204.	1204.	1204.

CUMULATIVE AREA = 3.03 SQ MI

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1                                                          STATION BASIN200

                          (O) OUTFLOW
          0.      400.      800.     1200.     1600.     2000.     2400.     2800.     3200.     3600.        0.        0.        0.
                                                                                                        (L) PRECIP,   (X) EXCESS
          .0        .0        .0        .0        .0        .0        .0        .0        .8        .6        .4        .2        .0
 DAHRMN PER
  11200   10---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  11205   20         .         .         .         .         .         .         .         .         .         .         .        L.
  11210   30         .         .         .         .         .         .         .         .         .         .         .        L.
  11215   40         .         .         .         .         .         .         .         .         .         .         .        L.
  11220   50         .         .         .         .         .         .         .         .         .         .         .        L.
  11225   60         .         .         .         .         .         .         .         .         .         .         .        L.
  11230   70         .         .         .         .         .         .         .         .         .         .         .        L.
  11235   80         .         .         .         .         .         .         .         .         .         .         .        L.
  11240   90         .         .         .         .         .         .         .         .         .         .         .        L.
  11245  100         .         .         .         .         .         .         .         .         .         .         .        L.
  11250  110 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
  11255  120         .         .         .         .         .         .         .         .         .         .         .        L.
  11300  130         .         .         .         .         .         .         .         .         .         .         .        L.
  11305  140         .         .         .         .         .         .         .         .         .         .         .        L.
  11310  150         .         .         .         .         .         .         .         .         .         .         .        L.
  11315  160         .         .         .         .         .         .         .         .         .         .         .        L.
  11320  170         .         .         .         .         .         .         .         .         .         .         .        L.
  11325  180         .         .         .         .         .         .         .         .         .         .         .        L.
  11330  190         .         .         .         .         .         .         .         .         .         .         .        L.
  11335  200         .         .         .         .         .         .         .         .         .         .         .        L.
  11340  210 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
  11345  22.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11350  23.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11355  24.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11400  25.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11405  26.O        .         .         .         .         .         .         .         .         .         .         .        L.
  11410  27. O       .         .         .         .         .         .         .         .         .         .         .        L.
  11415  28. O       .         .         .         .         .         .         .         .         .         .         .        L.
  11420  29. O       .         .         .         .         .         .         .         .         .         .         .        L.
  11425  30. O       .         .         .         .         .         .         .         .         .         .         .        L.
  11430  31. O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
  11435  32.  O      .         .         .         .         .         .         .         .         .         .         .        L.
  11440  33.  O      .         .         .         .         .         .         .         .         .         .         .        L.
  11445  34.  O      .         .         .         .         .         .         .         .         .         .         .        L.
  11450  35.  O      .         .         .         .         .         .         .         .         .         .         .        L.
  11455  36.  O      .         .         .         .         .         .         .         .         .         .         .        L.
  11500  37.   O     .         .         .         .         .         .         .         .         .         .         .        L.
  11505  38.   O     .         .         .         .         .         .         .         .         .         .         .        L.
  11510  39.   O     .         .         .         .         .         .         .         .         .         .         .        L.
  11515  40.   O     .         .         .         .         .         .         .         .         .         .         .        L.
  11520  41. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11525  42.   O     .         .         .         .         .         .         .         .         .         .         .        X.
  11530  43.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11535  44.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11540  45.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11545  46.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11550  47.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11555  48.    O    .         .         .         .         .         .         .         .         .         .         .        X.
  11600  49.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11605  50.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11610  51. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11615  52.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11620  53.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11625  54.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11630  55.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11635  56.     O   .         .         .         .         .         .         .         .         .         .         .        X.
  11640  57.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11645  58.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11650  59.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11655  60.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11700  61. . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11705  62.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11710  63.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11715  64.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11720  65.      O  .         .         .         .         .         .         .         .         .         .         .        X.
  11725  66.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11730  67.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11735  68.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11740  69.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11745  70.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11750  71. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11755  72.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11800  73.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11805  74.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11810  75.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11815  76.       O .         .         .         .         .         .         .         .         .         .         .        X.
  11820  77.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11825  78.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11830  79.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11835  80.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11840  81. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11845  82.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11850  83.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11855  84.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11900  85.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11905  86.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11910  87.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11915  88.        O.         .         .         .         .         .         .         .         .         .         .        X.
  11920  89.         O         .         .         .         .         .         .         .         .         .         .        X.
  11925  90.         O         .         .         .         .         .         .         .         .         .         .        X.
  11930  91. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  11935  92.         O         .         .         .         .         .         .         .         .         .         .        X.
  11940  93.         O         .         .         .         .         .         .         .         .         .         .        X.
  11945  94.         O         .         .         .         .         .         .         .         .         .         .        X.
  11950  95.         O         .         .         .         .         .         .         .         .         .         .        X.
  11955  96.         O         .         .         .         .         .         .         .         .         .         .        X.
  12000  97.         O         .         .         .         .         .         .         .         .         .         .        X.
  12005  98.         O         .         .         .         .         .         .         .         .         .         .        X.
  12010  99.         O         .         .         .         .         .         .         .         .         .         .        X.
  12015 100.         O         .         .         .         .         .         .         .         .         .         .        X.
  12020 101. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  12025 102.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12030 103.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12035 104.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12040 105.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12045 106.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12050 107.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12055 108.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12100 109.         .O        .         .         .         .         .         .         .         .         .         .        X.
  12105 110.         .O        .         .         .         .         .         .         .         .         .         .        X.
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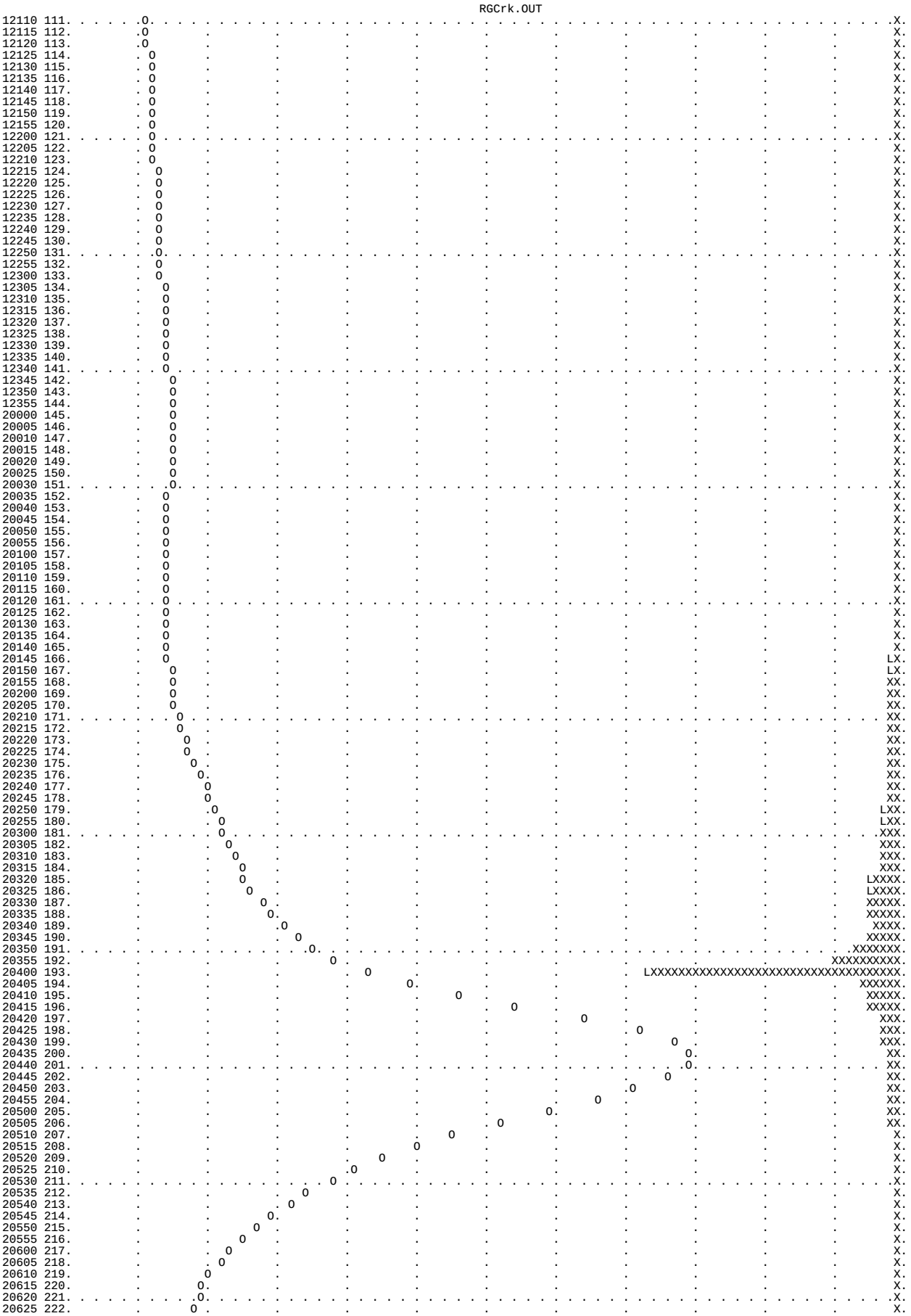

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  20700 229.         .     O   .         .         .         .         .         .         .         .         .         .        X.
  20705 230.         .     O   .         .         .         .         .         .         .         .         .         .        X.
  20710 231. . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20715 232.         .     O   .         .         .         .         .         .         .         .         .         .        X.
  20720 233.         .    O    .         .         .         .         .         .         .         .         .         .        X.
  20725 234.         .    O    .         .         .         .         .         .         .         .         .         .        X.
  20730 235.         .    O    .         .         .         .         .         .         .         .         .         .        X.
  20735 236.         .    O    .         .         .         .         .         .         .         .         .         .        X.
  20740 237.         .    O    .         .         .         .         .         .         .         .         .         .        X.
  20745 238.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  20750 239.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  20755 240.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  20800 241. . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20805 242.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  20810 243.         .   O     .         .         .         .         .         .         .         .         .         .        X.
  20815 244.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20820 245.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20825 246.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20830 247.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20835 248.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20840 249.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20845 250.         .  O      .         .         .         .         .         .         .         .         .         .        X.
  20850 251. . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20855 252.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20900 253.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20905 254.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20910 255.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20915 256.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20920 257.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20925 258.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20930 259.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20935 260.         . O       .         .         .         .         .         .         .         .         .         .        X.
  20940 261. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  20945 262.         .O        .         .         .         .         .         .         .         .         .         .        X.
  20950 263.         .O        .         .         .         .         .         .         .         .         .         .        X.
  20955 264.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21000 265.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21005 266.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21010 267.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21015 268.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21020 269.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21025 270.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21030 271. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  21035 272.         .O        .         .         .         .         .         .         .         .         .         .        X.
  21040 273.         O         .         .         .         .         .         .         .         .         .         .        X.
  21045 274.         O         .         .         .         .         .         .         .         .         .         .        X.
  21050 275.         O         .         .         .         .         .         .         .         .         .         .        X.
  21055 276.         O         .         .         .         .         .         .         .         .         .         .        X.
  21100 277.         O         .         .         .         .         .         .         .         .         .         .        X.
  21105 278.         O         .         .         .         .         .         .         .         .         .         .        X.
  21110 279.         O         .         .         .         .         .         .         .         .         .         .        X.
  21115 280.         O         .         .         .         .         .         .         .         .         .         .        X.
  21120 281. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
  21125 282.         O         .         .         .         .         .         .         .         .         .         .        X.
  21130 283.         O         .         .         .         .         .         .         .         .         .         .        X.
  21135 284.         O         .         .         .         .         .         .         .         .         .         .        X.
  21140 285.         O         .         .         .         .         .         .         .         .         .         .        X.
  21145 286.         O         .         .         .         .         .         .         .         .         .         .        X.
  21150 287.         O         .         .         .         .         .         .         .         .         .         .        X.
  21155 288.         O         .         .         .         .         .         .         .         .         .         .        X.
  21200 289.        O.         .         .         .         .         .         .         .         .         .         .         .
  21205 290.        O.         .         .         .         .         .         .         .         .         .         .         .
  21210 291. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  21215 292.        O.         .         .         .         .         .         .         .         .         .         .         .
  21220 293.       O .         .         .         .         .         .         .         .         .         .         .         .
  21225 294.       O .         .         .         .         .         .         .         .         .         .         .         .
  21230 295.      O  .         .         .         .         .         .         .         .         .         .         .         .
  21235 296.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21240 297.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21245 298.   O     .         .         .         .         .         .         .         .         .         .         .         .
  21250 299.   O     .         .         .         .         .         .         .         .         .         .         .         .
  21255 300.--O------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1



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             **************
             *            *
  108 KK     *  BASIN300  *     RUNOFF
             *            *
             **************
                            NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
                            COPYRIGHT 2003 RICK ENGINEERING COMPANY
                            FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
                            THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
                            VARIABLE MUST BE 1200 ON THE IT CARD.
                            THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
                            YOUR DATA SET:
                            IT 5 01JAN90 1200 300
                            6HR RAINFALL IS  3.6  INCHES
                            24HR RAINFALL IS  6  INCHES
                            DAR30 =  .783246
                            DAR60 =  .867702
                            DAR180 =  .93662
                            DAR360 =  .953003
                            DAR1440 =  .966541
                            BASIN AREA IS  27.69  SQUARE MILES

  125 IN          TIME DATA FOR INPUT TIME SERIES
                        JXMIN           5  TIME INTERVAL IN MINUTES
                       JXDATE      1JAN90  STARTING DATE
                       JXTIME        1200  STARTING TIME

                SUBBASIN RUNOFF DATA

  157 BA          SUBBASIN CHARACTERISTICS
                        TAREA        1.06  SUBBASIN AREA

                  PRECIPITATION DATA

  126 PB                STORM        8.44  BASIN TOTAL PRECIPITATION

  126 PI            INCREMENTAL PRECIPITATION PATTERN
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
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                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .03       .03       .03       .03       .03       .03       .04
                       .04       .04       .04       .04       .04       .04       .04       .04       .04       .05
                       .05       .05       .05       .08       .08       .08       .08       .07       .08       .12
                       .17       .62       .10       .09       .08       .05       .05       .04       .04       .04
                       .04       .04       .03       .03       .03       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                       .02       .02       .02       .02       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                       .01       .01       .01       .01       .01       .01       .01

 158 LS          SCS LOSS RATE
                       STRTL         .17  INITIAL ABSTRACTION
                      CRVNBR       92.00  CURVE NUMBER
                       RTIMP         .00  PERCENT IMPERVIOUS AREA

 159 UD          SCS DIMENSIONLESS UNITGRAPH
                        TLAG         .52  LAG

                                                                ***

                                                          UNIT HYDROGRAPH
                                                     33 END-OF-PERIOD ORDINATES
                59.      173.      354.      599.      798.      904.      912.      856.      757.      631.
               476.      364.      284.      227.      179.      138.      110.       86.       67.       52.
                41.       33.       25.       20.       16.       12.       10.        8.        6.        5.
                 3.        2.        1.

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

                                                  HYDROGRAPH AT STATION BASIN300

***********************************************************************************************************************************
                                                                 *
       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q       *       DA MON HRMN  ORD    RAIN    LOSS  EXCESS     COMP Q
                                                                 *
        1 JAN 1200    1     .00     .00     .00         0.       *        2 JAN 0030  151     .03     .00     .03       196.
        1 JAN 1205    2     .01     .01     .00         0.       *        2 JAN 0035  152     .03     .00     .03       200.
        1 JAN 1210    3     .01     .01     .00         0.       *        2 JAN 0040  153     .03     .00     .03       203.
        1 JAN 1215    4     .01     .01     .00         0.       *        2 JAN 0045  154     .03     .00     .03       206.
        1 JAN 1220    5     .01     .01     .00         0.       *        2 JAN 0050  155     .03     .00     .03       209.
        1 JAN 1225    6     .01     .01     .00         0.       *        2 JAN 0055  156     .03     .00     .03       213.
        1 JAN 1230    7     .01     .01     .00         0.       *        2 JAN 0100  157     .03     .00     .03       216.
        1 JAN 1235    8     .01     .01     .00         0.       *        2 JAN 0105  158     .03     .00     .03       219.
        1 JAN 1240    9     .01     .01     .00         0.       *        2 JAN 0110  159     .03     .00     .03       223.
        1 JAN 1245   10     .01     .01     .00         0.       *        2 JAN 0115  160     .03     .00     .03       226.
        1 JAN 1250   11     .01     .01     .00         0.       *        2 JAN 0120  161     .03     .00     .03       230.
        1 JAN 1255   12     .01     .01     .00         0.       *        2 JAN 0125  162     .03     .00     .03       234.
        1 JAN 1300   13     .01     .01     .00         0.       *        2 JAN 0130  163     .04     .00     .03       237.
        1 JAN 1305   14     .01     .01     .00         0.       *        2 JAN 0135  164     .04     .00     .03       241.
        1 JAN 1310   15     .01     .01     .00         0.       *        2 JAN 0140  165     .04     .00     .03       246.
        1 JAN 1315   16     .01     .01     .00         0.       *        2 JAN 0145  166     .04     .00     .04       250.
        1 JAN 1320   17     .01     .01     .00         0.       *        2 JAN 0150  167     .04     .00     .04       255.
        1 JAN 1325   18     .01     .01     .00         0.       *        2 JAN 0155  168     .04     .00     .04       260.
        1 JAN 1330   19     .01     .01     .00         0.       *        2 JAN 0200  169     .05     .00     .05       265.
        1 JAN 1335   20     .01     .01     .00         0.       *        2 JAN 0205  170     .05     .00     .05       272.
        1 JAN 1340   21     .01     .01     .00         1.       *        2 JAN 0210  171     .05     .00     .05       281.
        1 JAN 1345   22     .01     .01     .00         1.       *        2 JAN 0215  172     .05     .00     .05       293.
        1 JAN 1350   23     .01     .01     .00         2.       *        2 JAN 0220  173     .05     .00     .05       306.
        1 JAN 1355   24     .01     .01     .00         3.       *        2 JAN 0225  174     .05     .00     .05       321.
        1 JAN 1400   25     .01     .01     .00         5.       *        2 JAN 0230  175     .06     .00     .05       336.
        1 JAN 1405   26     .01     .01     .00         6.       *        2 JAN 0235  176     .06     .00     .05       351.
        1 JAN 1410   27     .01     .01     .00         8.       *        2 JAN 0240  177     .06     .00     .06       365.
        1 JAN 1415   28     .01     .01     .00        10.       *        2 JAN 0245  178     .06     .00     .06       378.
        1 JAN 1420   29     .01     .01     .00        12.       *        2 JAN 0250  179     .06     .00     .06       390.
        1 JAN 1425   30     .01     .01     .00        14.       *        2 JAN 0255  180     .06     .00     .06       402.
        1 JAN 1430   31     .01     .01     .00        16.       *        2 JAN 0300  181     .07     .00     .06       414.
        1 JAN 1435   32     .01     .01     .00        18.       *        2 JAN 0305  182     .07     .00     .07       427.
        1 JAN 1440   33     .01     .01     .00        20.       *        2 JAN 0310  183     .07     .00     .07       439.
        1 JAN 1445   34     .01     .01     .00        21.       *        2 JAN 0315  184     .07     .00     .07       453.
        1 JAN 1450   35     .01     .01     .00        23.       *        2 JAN 0320  185     .11     .00     .11       470.
        1 JAN 1455   36     .01     .01     .00        25.       *        2 JAN 0325  186     .11     .00     .11       493.
        1 JAN 1500   37     .01     .01     .00        27.       *        2 JAN 0330  187     .12     .00     .12       522.
        1 JAN 1505   38     .01     .01     .01        29.       *        2 JAN 0335  188     .12     .00     .12       561.
        1 JAN 1510   39     .01     .01     .01        31.       *        2 JAN 0340  189     .11     .00     .10       606.
        1 JAN 1515   40     .01     .01     .01        32.       *        2 JAN 0345  190     .12     .00     .12       656.
        1 JAN 1520   41     .01     .01     .01        34.       *        2 JAN 0350  191     .18     .00     .17       708.
        1 JAN 1525   42     .01     .01     .01        36.       *        2 JAN 0355  192     .25     .01     .25       766.
        1 JAN 1530   43     .01     .01     .01        37.       *        2 JAN 0400  193     .90     .02     .88       877.
        1 JAN 1535   44     .01     .01     .01        39.       *        2 JAN 0405  194     .14     .00     .14      1037.
        1 JAN 1540   45     .01     .01     .01        41.       *        2 JAN 0410  195     .13     .00     .13      1250.
        1 JAN 1545   46     .01     .01     .01        42.       *        2 JAN 0415  196     .12     .00     .11      1497.
        1 JAN 1550   47     .01     .01     .01        44.       *        2 JAN 0420  197     .08     .00     .08      1687.
        1 JAN 1555   48     .01     .01     .01        45.       *        2 JAN 0425  198     .07     .00     .07      1780.
        1 JAN 1600   49     .01     .01     .01        47.       *        2 JAN 0430  199     .06     .00     .06      1773.
        1 JAN 1605   50     .01     .01     .01        48.       *        2 JAN 0435  200     .06     .00     .06      1692.
        1 JAN 1610   51     .01     .01     .01        50.       *        2 JAN 0440  201     .06     .00     .06      1557.
        1 JAN 1615   52     .01     .01     .01        51.       *        2 JAN 0445  202     .05     .00     .05      1389.
        1 JAN 1620   53     .01     .01     .01        53.       *        2 JAN 0450  203     .05     .00     .05      1199.
        1 JAN 1625   54     .01     .01     .01        54.       *        2 JAN 0455  204     .05     .00     .05      1046.
        1 JAN 1630   55     .01     .01     .01        55.       *        2 JAN 0500  205     .04     .00     .04       923.
        1 JAN 1635   56     .01     .01     .01        57.       *        2 JAN 0505  206     .04     .00     .04       822.
        1 JAN 1640   57     .01     .01     .01        58.       *        2 JAN 0510  207     .04     .00     .04       734.
        1 JAN 1645   58     .01     .01     .01        59.       *        2 JAN 0515  208     .03     .00     .03       657.
        1 JAN 1650   59     .01     .01     .01        61.       *        2 JAN 0520  209     .03     .00     .03       593.
        1 JAN 1655   60     .01     .01     .01        62.       *        2 JAN 0525  210     .03     .00     .03       536.
        1 JAN 1700   61     .01     .01     .01        63.       *        2 JAN 0530  211     .03     .00     .03       486.
        1 JAN 1705   62     .01     .01     .01        64.       *        2 JAN 0535  212     .03     .00     .03       443.
        1 JAN 1710   63     .01     .01     .01        66.       *        2 JAN 0540  213     .03     .00     .03       407.
        1 JAN 1715   64     .01     .00     .01        67.       *        2 JAN 0545  214     .03     .00     .03       377.
        1 JAN 1720   65     .01     .00     .01        68.       *        2 JAN 0550  215     .03     .00     .03       351.
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1	JAN	1725	66	.01	.00	.01	69.	*	2	JAN	0555	216	.03	.00	.03	329.
1	JAN	1730	67	.01	.00	.01	70.	*	2	JAN	0600	217	.03	.00	.03	310.
1	JAN	1735	68	.01	.00	.01	72.	*	2	JAN	0605	218	.03	.00	.03	294.
1	JAN	1740	69	.01	.00	.01	73.	*	2	JAN	0610	219	.02	.00	.02	280.
1	JAN	1745	70	.01	.00	.01	74.	*	2	JAN	0615	220	.02	.00	.02	267.
1	JAN	1750	71	.01	.00	.01	75.	*	2	JAN	0620	221	.02	.00	.02	256.
1	JAN	1755	72	.01	.00	.01	76.	*	2	JAN	0625	222	.02	.00	.02	246.
1	JAN	1800	73	.01	.00	.01	77.	*	2	JAN	0630	223	.02	.00	.02	236.
1	JAN	1805	74	.01	.00	.01	79.	*	2	JAN	0635	224	.02	.00	.02	227.
1	JAN	1810	75	.02	.00	.01	80.	*	2	JAN	0640	225	.02	.00	.02	219.
1	JAN	1815	76	.02	.00	.01	81.	*	2	JAN	0645	226	.02	.00	.02	212.
1	JAN	1820	77	.02	.00	.01	82.	*	2	JAN	0650	227	.02	.00	.02	206.
1	JAN	1825	78	.02	.00	.01	83.	*	2	JAN	0655	228	.02	.00	.02	200.
1	JAN	1830	79	.02	.00	.01	84.	*	2	JAN	0700	229	.02	.00	.02	195.
1	JAN	1835	80	.02	.00	.01	85.	*	2	JAN	0705	230	.02	.00	.02	191.
1	JAN	1840	81	.02	.00	.01	86.	*	2	JAN	0710	231	.02	.00	.02	187.
1	JAN	1845	82	.02	.00	.01	88.	*	2	JAN	0715	232	.02	.00	.02	183.
1	JAN	1850	83	.02	.00	.01	89.	*	2	JAN	0720	233	.02	.00	.02	179.
1	JAN	1855	84	.02	.00	.01	90.	*	2	JAN	0725	234	.02	.00	.02	175.
1	JAN	1900	85	.02	.00	.01	91.	*	2	JAN	0730	235	.02	.00	.02	172.
1	JAN	1905	86	.02	.00	.01	92.	*	2	JAN	0735	236	.02	.00	.02	169.
1	JAN	1910	87	.02	.00	.01	93.	*	2	JAN	0740	237	.02	.00	.02	166.
1	JAN	1915	88	.02	.00	.01	94.	*	2	JAN	0745	238	.02	.00	.02	163.
1	JAN	1920	89	.02	.00	.01	95.	*	2	JAN	0750	239	.02	.00	.02	160.
1	JAN	1925	90	.02	.00	.01	96.	*	2	JAN	0755	240	.02	.00	.02	157.
1	JAN	1930	91	.02	.00	.01	98.	*	2	JAN	0800	241	.02	.00	.02	155.
1	JAN	1935	92	.02	.00	.01	99.	*	2	JAN	0805	242	.02	.00	.02	153.
1	JAN	1940	93	.02	.00	.01	100.	*	2	JAN	0810	243	.02	.00	.02	150.
1	JAN	1945	94	.02	.00	.01	101.	*	2	JAN	0815	244	.02	.00	.02	148.
1	JAN	1950	95	.02	.00	.01	102.	*	2	JAN	0820	245	.02	.00	.02	146.
1	JAN	1955	96	.02	.00	.01	103.	*	2	JAN	0825	246	.02	.00	.02	144.
1	JAN	2000	97	.02	.00	.01	104.	*	2	JAN	0830	247	.02	.00	.02	142.
1	JAN	2005	98	.02	.00	.01	105.	*	2	JAN	0835	248	.02	.00	.02	140.
1	JAN	2010	99	.02	.00	.01	107.	*	2	JAN	0840	249	.02	.00	.02	138.
1	JAN	2015	100	.02	.00	.01	108.	*	2	JAN	0845	250	.02	.00	.02	136.
1	JAN	2020	101	.02	.00	.01	109.	*	2	JAN	0850	251	.02	.00	.01	135.
1	JAN	2025	102	.02	.00	.01	110.	*	2	JAN	0855	252	.01	.00	.01	133.
1	JAN	2030	103	.02	.00	.01	111.	*	2	JAN	0900	253	.01	.00	.01	131.
1	JAN	2035	104	.02	.00	.01	112.	*	2	JAN	0905	254	.01	.00	.01	130.
1	JAN	2040	105	.02	.00	.02	114.	*	2	JAN	0910	255	.01	.00	.01	128.
1	JAN	2045	106	.02	.00	.02	115.	*	2	JAN	0915	256	.01	.00	.01	127.
1	JAN	2050	107	.02	.00	.02	116.	*	2	JAN	0920	257	.01	.00	.01	126.
1	JAN	2055	108	.02	.00	.02	117.	*	2	JAN	0925	258	.01	.00	.01	124.
1	JAN	2100	109	.02	.00	.02	119.	*	2	JAN	0930	259	.01	.00	.01	123.
1	JAN	2105	110	.02	.00	.02	120.	*	2	JAN	0935	260	.01	.00	.01	122.
1	JAN	2110	111	.02	.00	.02	121.	*	2	JAN	0940	261	.01	.00	.01	120.
1	JAN	2115	112	.02	.00	.02	122.	*	2	JAN	0945	262	.01	.00	.01	119.
1	JAN	2120	113	.02	.00	.02	124.	*	2	JAN	0950	263	.01	.00	.01	118.
1	JAN	2125	114	.02	.00	.02	125.	*	2	JAN	0955	264	.01	.00	.01	117.
1	JAN	2130	115	.02	.00	.02	126.	*	2	JAN	1000	265	.01	.00	.01	116.
1	JAN	2135	116	.02	.00	.02	128.	*	2	JAN	1005	266	.01	.00	.01	114.
1	JAN	2140	117	.02	.00	.02	129.	*	2	JAN	1010	267	.01	.00	.01	113.
1	JAN	2145	118	.02	.00	.02	130.	*	2	JAN	1015	268	.01	.00	.01	112.
1	JAN	2150	119	.02	.00	.02	132.	*	2	JAN	1020	269	.01	.00	.01	111.
1	JAN	2155	120	.02	.00	.02	133.	*	2	JAN	1025	270	.01	.00	.01	110.
1	JAN	2200	121	.02	.00	.02	135.	*	2	JAN	1030	271	.01	.00	.01	109.
1	JAN	2205	122	.02	.00	.02	136.	*	2	JAN	1035	272	.01	.00	.01	108.
1	JAN	2210	123	.02	.00	.02	138.	*	2	JAN	1040	273	.01	.00	.01	107.
1	JAN	2215	124	.02	.00	.02	139.	*	2	JAN	1045	274	.01	.00	.01	106.
1	JAN	2220	125	.02	.00	.02	141.	*	2	JAN	1050	275	.01	.00	.01	106.
1	JAN	2225	126	.02	.00	.02	142.	*	2	JAN	1055	276	.01	.00	.01	105.
1	JAN	2230	127	.02	.00	.02	144.	*	2	JAN	1100	277	.01	.00	.01	104.
1	JAN	2235	128	.02	.00	.02	145.	*	2	JAN	1105	278	.01	.00	.01	103.
1	JAN	2240	129	.02	.00	.02	147.	*	2	JAN	1110	279	.01	.00	.01	102.
1	JAN	2245	130	.02	.00	.02	149.	*	2	JAN	1115	280	.01	.00	.01	101.
1	JAN	2250	131	.02	.00	.02	150.	*	2	JAN	1120	281	.01	.00	.01	101.
1	JAN	2255	132	.02	.00	.02	152.	*	2	JAN	1125	282	.01	.00	.01	100.
1	JAN	2300	133	.02	.00	.02	154.	*	2	JAN	1130	283	.01	.00	.01	99.
1	JAN	2305	134	.02	.00	.02	156.	*	2	JAN	1135	284	.01	.00	.01	98.
1	JAN	2310	135	.02	.00	.02	157.	*	2	JAN	1140	285	.01	.00	.01	98.
1	JAN	2315	136	.02	.00	.02	159.	*	2	JAN	1145	286	.01	.00	.01	97.
1	JAN	2320	137	.02	.00	.02	161.	*	2	JAN	1150	287	.01	.00	.01	96.
1	JAN	2325	138	.02	.00	.02	163.	*	2	JAN	1155	288	.01	.00	.01	95.
1	JAN	2330	139	.02	.00	.02	165.	*	2	JAN	1200	289	.00	.00	.00	94.
1	JAN	2335	140	.02	.00	.02	167.	*	2	JAN	1205	290	.00	.00	.00	92.
1	JAN	2340	141	.03	.00	.02	169.	*	2	JAN	1210	291	.00	.00	.00	87.
1	JAN	2345	142	.03	.00	.02	172.	*	2	JAN	1215	292	.00	.00	.00	80.
1	JAN	2350	143	.03	.00	.02	174.	*	2	JAN	1220	293	.00	.00	.00	71.
1	JAN	2355	144	.03	.00	.02	176.	*	2	JAN	1225	294	.00	.00	.00	60.
2	JAN	0000	145	.03	.00	.02	178.	*	2	JAN	1230	295	.00	.00	.00	50.
2	JAN	0005	146	.03	.00	.03	181.	*	2	JAN	1235	296	.00	.00	.00	40.
2	JAN	0010	147	.03	.00	.03	184.	*	2	JAN	1240	297	.00	.00	.00	32.
2	JAN	0015	148	.03	.00	.03	187.	*	2	JAN	1245	298	.00	.00	.00	24.
2	JAN	0020	149	.03	.00	.03	190.	*	2	JAN	1250	299	.00	.00	.00	19.
2	JAN	0025	150	.03	.00	.03	193.	*	2	JAN	1255	300	.00	.00	.00	15.
								*								

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TOTAL RAINFALL = 8.44, TOTAL LOSS = .96, TOTAL EXCESS = 7.48

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)	(CFS)				
+ 1780.	16.42		552.	213.	205.	205.
		(INCHES)	4.839	7.471	7.471	7.471
		(AC-FT)	274.	422.	422.	422.

CUMULATIVE AREA = 1.06 SQ MI

1 STATION BASIN300

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                    (O) OUTFLOW                                                                                  (L) PRECIP,   (X) EXCESS
          0.      200.      400.      600.      800.     1000.     1200.     1400.     1600.     1800.        0.        0.        0.
          .0        .0        .0        .0        .0        .0        .0        .0        .0       1.2        .8        .4        .0
 DAHRMN PER
  11200   1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  11205   2O         .         .         .         .         .         .         .         .         .         .         .         .
  11210   3O         .         .         .         .         .         .         .         .         .         .         .         .
  11215   4O         .         .         .         .         .         .         .         .         .         .         .         .
  11220   5O         .         .         .         .         .         .         .         .         .         .         .         .
  11225   6O         .         .         .         .         .         .         .         .         .         .         .         .
  11230   7O         .         .         .         .         .         .         .         .         .         .         .         .
  11235   8O         .         .         .         .         .         .         .         .         .         .         .         .
  11240   9O         .         .         .         .         .         .         .         .         .         .         .         .
  11245  10O         .         .         .         .         .         .         .         .         .         .         .         .
  11250  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
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11255  120
11300  130
11305  140
11310  150
11315  160
11320  170
11325  180
11330  190
11335  200
11340  210
11345  220
11350  230
11355  240
11400  250
11405  260
11410  270
11415  280
11420  29.0
11425  30.0
11430  31.0
11435  32.0
11440  33.0
11445  34.0
11450  35.0
11455  36.0
11500  37.0
11505  38.0
11510  39. 0
11515  40. 0
11520  41. 0
11525  42. 0
11530  43. 0
11535  44. 0
11540  45. 0
11545  46. 0
11550  47. 0
11555  48. 0
11600  49. 0
11605  50. 0
11610  51. 0
11615  52.  0
11620  53.  0
11625  54.  0
11630  55.  0
11635  56.  0
11640  57.  0
11645  58.  0
11650  59.  0
11655  60.  0
11700  61. .0
11705  62.  0
11710  63.  0
11715  64.  0
11720  65.  0
11725  66.  0
11730  67.   0
11735  68.   0
11740  69.   0
11745  70.   0
11750  71. . 0
11755  72.   0
11800  73.   0
11805  74.   0
11810  75.   0
11815  76.   0
11820  77.   0
11825  78.   0
11830  79.   0
11835  80.   0
11840  81. . 0
11845  82.   0
11850  83.   0
11855  84.   0
11900  85.    0
11905  86.    0
11910  87.    0
11915  88.    0
11920  89.    0
11925  90.    0
11930  91. . .0
11935  92.    0
11940  93.    0
11945  94.    0
11950  95.    0
11955  96.    0
12000  97.    0
12005  98.    0
12010  99.    0
12015 100.    0
12020 101. . .0
12025 102.     0
12030 103.     0
12035 104.     0
12040 105.     0
12045 106.     0
12050 107.     0
12055 108.     0
12100 109.     0
12105 110.     0
12110 111. . . 0
12115 112.     0
12120 113.     0
12125 114.     0
12130 115.     0
12135 116.     0
12140 117.     0
12145 118.      0
12150 119.      0                                                    L.
12155 120.      0                                                    L.
12200 121. . . .0                                                   .L.
12205 122.      0                                                    L.
12210 123.      0                                                    L.
12215 124.      0                                                    L.
12220 125.      0                                                    L.
12225 126.      0                                                    L.
12230 127.      0                                                    L.
12235 128.      0                                                    L.
12240 129.      0                                                    L.
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12245 130.      O  .         .         .         .         .         .         .         .         .         .         .        L.
12250 131. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12255 132.       O .         .         .         .         .         .         .         .         .         .         .        X.
12300 133.       O .         .         .         .         .         .         .         .         .         .         .        X.
12305 134.       O .         .         .         .         .         .         .         .         .         .         .        X.
12310 135.       O .         .         .         .         .         .         .         .         .         .         .        X.
12315 136.       O .         .         .         .         .         .         .         .         .         .         .        X.
12320 137.       O .         .         .         .         .         .         .         .         .         .         .        X.
12325 138.       O .         .         .         .         .         .         .         .         .         .         .        X.
12330 139.       O .         .         .         .         .         .         .         .         .         .         .        X.
12335 140.       O .         .         .         .         .         .         .         .         .         .         .        X.
12340 141. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
12345 142.        O.         .         .         .         .         .         .         .         .         .         .        X.
12350 143.        O.         .         .         .         .         .         .         .         .         .         .        X.
12355 144.        O.         .         .         .         .         .         .         .         .         .         .        X.
20000 145.        O.         .         .         .         .         .         .         .         .         .         .        X.
20005 146.        O.         .         .         .         .         .         .         .         .         .         .        X.
20010 147.        O.         .         .         .         .         .         .         .         .         .         .        X.
20015 148.        O.         .         .         .         .         .         .         .         .         .         .        X.
20020 149.        O.         .         .         .         .         .         .         .         .         .         .        X.
20025 150.         O         .         .         .         .         .         .         .         .         .         .        X.
20030 151. . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20035 152.         O         .         .         .         .         .         .         .         .         .         .        X.
20040 153.         O         .         .         .         .         .         .         .         .         .         .        X.
20045 154.         O         .         .         .         .         .         .         .         .         .         .        X.
20050 155.         O         .         .         .         .         .         .         .         .         .         .        X.
20055 156.         .O        .         .         .         .         .         .         .         .         .         .        X.
20100 157.         .O        .         .         .         .         .         .         .         .         .         .        X.
20105 158.         .O        .         .         .         .         .         .         .         .         .         .        X.
20110 159.         .O        .         .         .         .         .         .         .         .         .         .        X.
20115 160.         .O        .         .         .         .         .         .         .         .         .         .        X.
20120 161. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20125 162.         . O       .         .         .         .         .         .         .         .         .         .        X.
20130 163.         . O       .         .         .         .         .         .         .         .         .         .        X.
20135 164.         . O       .         .         .         .         .         .         .         .         .         .        X.
20140 165.         . O       .         .         .         .         .         .         .         .         .         .        X.
20145 166.         .  O      .         .         .         .         .         .         .         .         .         .        X.
20150 167.         .  O      .         .         .         .         .         .         .         .         .         .        X.
20155 168.         .  O      .         .         .         .         .         .         .         .         .         .        X.
20200 169.         .  O      .         .         .         .         .         .         .         .         .         .        X.
20205 170.         .   O     .         .         .         .         .         .         .         .         .         .        X.
20210 171. . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20215 172.         .    O    .         .         .         .         .         .         .         .         .         .        X.
20220 173.         .    O    .         .         .         .         .         .         .         .         .         .        X.
20225 174.         .     O   .         .         .         .         .         .         .         .         .         .        X.
20230 175.         .      O  .         .         .         .         .         .         .         .         .         .        X.
20235 176.         .       O .         .         .         .         .         .         .         .         .         .        X.
20240 177.         .       O .         .         .         .         .         .         .         .         .         .        X.
20245 178.         .        O.         .         .         .         .         .         .         .         .         .        X.
20250 179.         .         O         .         .         .         .         .         .         .         .         .       LX.
20255 180.         .         O         .         .         .         .         .         .         .         .         .       XX.
20300 181. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XX.
20305 182.         .         .O        .         .         .         .         .         .         .         .         .       XX.
20310 183.         .         . O       .         .         .         .         .         .         .         .         .       XX.
20315 184.         .         .  O      .         .         .         .         .         .         .         .         .       XX.
20320 185.         .         .   O     .         .         .         .         .         .         .         .         .      XXX.
20325 186.         .         .    O    .         .         .         .         .         .         .         .         .      XXX.
20330 187.         .         .     O   .         .         .         .         .         .         .         .         .      XXX.
20335 188.         .         .       O .         .         .         .         .         .         .         .         .      XXX.
20340 189.         .         .         O         .         .         .         .         .         .         .         .      XXX.
20345 190.         .         .         .  O      .         .         .         .         .         .         .         .      XXX.
20350 191. . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . XXXX.
20355 192.         .         .         .       O .         .         .         .         .         .         .         .   XXXXXX.
20400 193.         .         .         .         .   O     .         .         .         .         .      LXXXXXXXXXXXXXXXXXXXXXX.
20405 194.         .         .         .         .         . O       .         .         .         .         .         .     XXXX.
20410 195.         .         .         .         .         .         . O       .         .         .         .         .      XXX.
20415 196.         .         .         .         .         .         .         .    O    .         .         .         .      XXX.
20420 197.         .         .         .         .         .         .         .         .   O     .         .         .       XX.
20425 198.         .         .         .         .         .         .         .         .        O.         .         .       XX.
20430 199.         .         .         .         .         .         .         .         .        O.         .         .       XX.
20435 200.         .         .         .         .         .         .         .         .    O    .         .         .       LX.
20440 201. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . .X.
20445 202.         .         .         .         .         .         .        O.         .         .         .         .        X.
20450 203.         .         .         .         .         .         O         .         .         .         .         .        X.
20455 204.         .         .         .         .         . O       .         .         .         .         .         .        X.
20500 205.         .         .         .         .     O   .         .         .         .         .         .         .        X.
20505 206.         .         .         .         .O        .         .         .         .         .         .         .        X.
20510 207.         .         .         .      O  .         .         .         .         .         .         .         .        X.
20515 208.         .         .         .  O      .         .         .         .         .         .         .         .        X.
20520 209.         .         .         O         .         .         .         .         .         .         .         .        X.
20525 210.         .         .      O  .         .         .         .         .         .         .         .         .        X.
20530 211. . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20535 212.         .         . O       .         .         .         .         .         .         .         .         .        X.
20540 213.         .         O         .         .         .         .         .         .         .         .         .        X.
20545 214.         .        O.         .         .         .         .         .         .         .         .         .        X.
20550 215.         .       O .         .         .         .         .         .         .         .         .         .        X.
20555 216.         .     O   .         .         .         .         .         .         .         .         .         .        X.
20600 217.         .     O   .         .         .         .         .         .         .         .         .         .        X.
20605 218.         .    O    .         .         .         .         .         .         .         .         .         .        X.
20610 219.         .   O     .         .         .         .         .         .         .         .         .         .        X.
20615 220.         .  O      .         .         .         .         .         .         .         .         .         .        X.
20620 221. . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .X.
20625 222.         . O       .         .         .         .         .         .         .         .         .         .        X.
20630 223.         . O       .         .         .         .         .         .         .         .         .         .        X.
20635 224.         .O        .         .         .         .         .         .         .         .         .         .        X.
20640 225.         .O        .         .         .         .         .         .         .         .         .         .        X.
20645 226.         .O        .         .         .         .         .         .         .         .         .         .        X.
20650 227.         O         .         .         .         .         .         .         .         .         .         .        X.
20655 228.         O         .         .         .         .         .         .         .         .         .         .        X.
20700 229.         O         .         .         .         .         .         .         .         .         .         .        X.
20705 230.         O         .         .         .         .         .         .         .         .         .         .         .
20710 231. . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20715 232.        O.         .         .         .         .         .         .         .         .         .         .         .
20720 233.        O.         .         .         .         .         .         .         .         .         .         .         .
20725 234.        O.         .         .         .         .         .         .         .         .         .         .         .
20730 235.        O.         .         .         .         .         .         .         .         .         .         .         .
20735 236.       O .         .         .         .         .         .         .         .         .         .         .         .
20740 237.       O .         .         .         .         .         .         .         .         .         .         .         .
20745 238.       O .         .         .         .         .         .         .         .         .         .         .         .
20750 239.       O .         .         .         .         .         .         .         .         .         .         .         .
20755 240.       O .         .         .         .         .         .         .         .         .         .         .         .
20800 241. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20805 242.       O .         .         .         .         .         .         .         .         .         .         .         .
20810 243.       O .         .         .         .         .         .         .         .         .         .         .         .
20815 244.      O  .         .         .         .         .         .         .         .         .         .         .         .
20820 245.      O  .         .         .         .         .         .         .         .         .         .         .         .
20825 246.      O  .         .         .         .         .         .         .         .         .         .         .         .
20830 247.      O  .         .         .         .         .         .         .         .         .         .         .         .
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  20835 248.      O  .         .         .         .         .         .         .         .         .         .         .         .
  20840 249.      O  .         .         .         .         .         .         .         .         .         .         .         .
  20845 250.      O  .         .         .         .         .         .         .         .         .         .         .         .
  20850 251. . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  20855 252.      O  .         .         .         .         .         .         .         .         .         .         .         .
  20900 253.      O  .         .         .         .         .         .         .         .         .         .         .         .
  20905 254.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20910 255.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20915 256.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20920 257.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20925 258.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20930 259.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20935 260.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20940 261. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  20945 262.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20950 263.     O   .         .         .         .         .         .         .         .         .         .         .         .
  20955 264.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21000 265.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21005 266.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21010 267.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21015 268.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21020 269.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21025 270.     O   .         .         .         .         .         .         .         .         .         .         .         .
  21030 271. . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  21035 272.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21040 273.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21045 274.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21050 275.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21055 276.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21100 277.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21105 278.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21110 279.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21115 280.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21120 281. . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  21125 282.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21130 283.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21135 284.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21140 285.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21145 286.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21150 287.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21155 288.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21200 289.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21205 290.    O    .         .         .         .         .         .         .         .         .         .         .         .
  21210 291. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  21215 292.   O     .         .         .         .         .         .         .         .         .         .         .         .
  21220 293.   O     .         .         .         .         .         .         .         .         .         .         .         .
  21225 294.  O      .         .         .         .         .         .         .         .         .         .         .         .
  21230 295. O       .         .         .         .         .         .         .         .         .         .         .         .
  21235 296. O       .         .         .         .         .         .         .         .         .         .         .         .
  21240 297. O       .         .         .         .         .         .         .         .         .         .         .         .
  21245 298.O        .         .         .         .         .         .         .         .         .         .         .         .
  21250 299.O        .         .         .         .         .         .         .         .         .         .         .         .
  21255 300.O--------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
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             **************
             *            *
  160 KK     *  BASIN400  *     RUNOFF
             *            *
             **************
                            NESTED STORM PER COUNTY OF SAN DIEGO HYDROLOGY MANUAL
                            COPYRIGHT 2003 RICK ENGINEERING COMPANY
                            FOR THIS DATA TO BE USED PROPERLYIN HEC-1,
                            THE 1DATE1 VARIABLE MUST BE 01JAN90 AND THE 1TIME1
                            VARIABLE MUST BE 1200 ON THE IT CARD.
                            THE FOLLOWING IT CARD IS SUGGESTED TO BE USED IN
                            YOUR DATA SET:
                            IT 5 01JAN90 1200 300
                            6HR RAINFALL IS  3.6  INCHES
                            24HR RAINFALL IS  6  INCHES
                            DAR30 =  .783246
                            DAR60 =  .867702
                            DAR180 =  .93662
                            DAR360 =  .953003
                            DAR1440 =  .966541
                            BASIN AREA IS  27.69  SQUARE MILES

  177 IN          TIME DATA FOR INPUT TIME SERIES
                        JXMIN           5  TIME INTERVAL IN MINUTES
                       JXDATE      1JAN90  STARTING DATE
                       JXTIME        1200  STARTING TIME

                SUBBASIN RUNOFF DATA

  209 BA          SUBBASIN CHARACTERISTICS
                        TAREA        1.10  SUBBASIN AREA

                  PRECIPITATION DATA

  178 PB                STORM        8.44  BASIN TOTAL PRECIPITATION

  178 PI            INCREMENTAL PRECIPITATION PATTERN
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                        .01       .01       .01       .01       .01       .01       .01       .02       .02       .02
                        .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                        .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                        .02       .02       .02       .02       .02       .02       .02       .02       .02       .02
                        .02       .02       .02       .03       .03       .03       .03       .03       .03       .04
                        .04       .04       .04       .04       .04       .04       .04       .04       .04       .05
                        .05       .05       .05       .08       .08       .08       .08       .07       .08       .12
                        .17       .62       .10       .09       .08       .05       .05       .04       .04       .04
                        .04       .04       .03       .03       .03       .02       .02       .02       .02       .02
```

.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
.02	.02	.02	.02	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.01			

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210 LS          SCS LOSS RATE
                     STRTL         .17  INITIAL ABSTRACTION
                    CRVNBR       92.00  CURVE NUMBER
                     RTIMP         .00  PERCENT IMPERVIOUS AREA

211 UD          SCS DIMENSIONLESS UNITGRAPH
                       TLAG         .64  LAG
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UNIT HYDROGRAPH
40 END-OF-PERIOD ORDINATES

36.	110.	211.	354.	531.	670.	753.	779.	772.	713.
642.	555.	445.	352.	287.	235.	195.	161.	132.	107.
88.	73.	59.	48.	39.	32.	27.	22.	18.	15.
12.	10.	8.	7.	6.	5.	4.	3.	2.	1.

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HYDROGRAPH AT STATION BASIN400

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DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q	*	DA	MON	HRMN	ORD	RAIN	LOSS	EXCESS	COMP Q
1	JAN	1200	1	.00	.00	.00	0.	*	2	JAN	0030	151	.03	.00	.03	198.
1	JAN	1205	2	.01	.01	.00	0.	*	2	JAN	0035	152	.03	.00	.03	201.
1	JAN	1210	3	.01	.01	.00	0.	*	2	JAN	0040	153	.03	.00	.03	204.
1	JAN	1215	4	.01	.01	.00	0.	*	2	JAN	0045	154	.03	.00	.03	208.
1	JAN	1220	5	.01	.01	.00	0.	*	2	JAN	0050	155	.03	.00	.03	211.
1	JAN	1225	6	.01	.01	.00	0.	*	2	JAN	0055	156	.03	.00	.03	215.
1	JAN	1230	7	.01	.01	.00	0.	*	2	JAN	0100	157	.03	.00	.03	218.
1	JAN	1235	8	.01	.01	.00	0.	*	2	JAN	0105	158	.03	.00	.03	221.
1	JAN	1240	9	.01	.01	.00	0.	*	2	JAN	0110	159	.03	.00	.03	225.
1	JAN	1245	10	.01	.01	.00	0.	*	2	JAN	0115	160	.03	.00	.03	228.
1	JAN	1250	11	.01	.01	.00	0.	*	2	JAN	0120	161	.03	.00	.03	232.
1	JAN	1255	12	.01	.01	.00	0.	*	2	JAN	0125	162	.03	.00	.03	236.
1	JAN	1300	13	.01	.01	.00	0.	*	2	JAN	0130	163	.04	.00	.03	239.
1	JAN	1305	14	.01	.01	.00	0.	*	2	JAN	0135	164	.04	.00	.03	243.
1	JAN	1310	15	.01	.01	.00	0.	*	2	JAN	0140	165	.04	.00	.03	247.
1	JAN	1315	16	.01	.01	.00	0.	*	2	JAN	0145	166	.04	.00	.04	252.
1	JAN	1320	17	.01	.01	.00	0.	*	2	JAN	0150	167	.04	.00	.04	256.
1	JAN	1325	18	.01	.01	.00	0.	*	2	JAN	0155	168	.04	.00	.04	261.
1	JAN	1330	19	.01	.01	.00	0.	*	2	JAN	0200	169	.05	.00	.05	266.
1	JAN	1335	20	.01	.01	.00	0.	*	2	JAN	0205	170	.05	.00	.05	272.
1	JAN	1340	21	.01	.01	.00	0.	*	2	JAN	0210	171	.05	.00	.05	280.
1	JAN	1345	22	.01	.01	.00	1.	*	2	JAN	0215	172	.05	.00	.05	289.
1	JAN	1350	23	.01	.01	.00	2.	*	2	JAN	0220	173	.05	.00	.05	299.
1	JAN	1355	24	.01	.01	.00	2.	*	2	JAN	0225	174	.05	.00	.05	312.
1	JAN	1400	25	.01	.01	.00	3.	*	2	JAN	0230	175	.06	.00	.05	325.
1	JAN	1405	26	.01	.01	.00	5.	*	2	JAN	0235	176	.06	.00	.05	339.
1	JAN	1410	27	.01	.01	.00	6.	*	2	JAN	0240	177	.06	.00	.06	353.
1	JAN	1415	28	.01	.01	.00	8.	*	2	JAN	0245	178	.06	.00	.06	367.
1	JAN	1420	29	.01	.01	.00	9.	*	2	JAN	0250	179	.06	.00	.06	380.
1	JAN	1425	30	.01	.01	.00	11.	*	2	JAN	0255	180	.06	.00	.06	394.
1	JAN	1430	31	.01	.01	.00	13.	*	2	JAN	0300	181	.07	.00	.06	406.
1	JAN	1435	32	.01	.01	.00	15.	*	2	JAN	0305	182	.07	.00	.07	419.
1	JAN	1440	33	.01	.01	.00	17.	*	2	JAN	0310	183	.07	.00	.07	432.
1	JAN	1445	34	.01	.01	.00	19.	*	2	JAN	0315	184	.07	.00	.07	446.
1	JAN	1450	35	.01	.01	.00	21.	*	2	JAN	0320	185	.11	.00	.11	461.
1	JAN	1455	36	.01	.01	.00	23.	*	2	JAN	0325	186	.11	.00	.11	480.
1	JAN	1500	37	.01	.01	.00	25.	*	2	JAN	0330	187	.12	.00	.12	503.
1	JAN	1505	38	.01	.01	.01	26.	*	2	JAN	0335	188	.12	.00	.12	533.
1	JAN	1510	39	.01	.01	.01	28.	*	2	JAN	0340	189	.11	.00	.10	569.
1	JAN	1515	40	.01	.01	.01	30.	*	2	JAN	0345	190	.12	.00	.12	610.
1	JAN	1520	41	.01	.01	.01	32.	*	2	JAN	0350	191	.18	.00	.17	655.
1	JAN	1525	42	.01	.01	.01	34.	*	2	JAN	0355	192	.25	.01	.25	708.
1	JAN	1530	43	.01	.01	.01	36.	*	2	JAN	0400	193	.90	.02	.88	793.
1	JAN	1535	44	.01	.01	.01	37.	*	2	JAN	0405	194	.14	.00	.14	912.
1	JAN	1540	45	.01	.01	.01	39.	*	2	JAN	0410	195	.13	.00	.13	1056.
1	JAN	1545	46	.01	.01	.01	41.	*	2	JAN	0415	196	.12	.00	.11	1231.
1	JAN	1550	47	.01	.01	.01	42.	*	2	JAN	0420	197	.08	.00	.08	1418.
1	JAN	1555	48	.01	.01	.01	44.	*	2	JAN	0425	198	.07	.00	.07	1560.
1	JAN	1600	49	.01	.01	.01	46.	*	2	JAN	0430	199	.06	.00	.06	1639.
1	JAN	1605	50	.01	.01	.01	47.	*	2	JAN	0435	200	.06	.00	.06	1656.
1	JAN	1610	51	.01	.01	.01	49.	*	2	JAN	0440	201	.06	.00	.06	1627.
1	JAN	1615	52	.01	.01	.01	50.	*	2	JAN	0445	202	.05	.00	.05	1543.
1	JAN	1620	53	.01	.01	.01	52.	*	2	JAN	0450	203	.05	.00	.05	1438.
1	JAN	1625	54	.01	.01	.01	53.	*	2	JAN	0455	204	.05	.00	.05	1311.
1	JAN	1630	55	.01	.01	.01	55.	*	2	JAN	0500	205	.04	.00	.04	1167.
1	JAN	1635	56	.01	.01	.01	56.	*	2	JAN	0505	206	.04	.00	.04	1037.
1	JAN	1640	57	.01	.01	.01	57.	*	2	JAN	0510	207	.04	.00	.04	933.
1	JAN	1645	58	.01	.01	.01	59.	*	2	JAN	0515	208	.03	.00	.03	841.
1	JAN	1650	59	.01	.01	.01	60.	*	2	JAN	0520	209	.03	.00	.03	763.
1	JAN	1655	60	.01	.01	.01	62.	*	2	JAN	0525	210	.03	.00	.03	693.
1	JAN	1700	61	.01	.01	.01	63.	*	2	JAN	0530	211	.03	.00	.03	630.
1	JAN	1705	62	.01	.01	.01	64.	*	2	JAN	0535	212	.03	.00	.03	574.
1	JAN	1710	63	.01	.01	.01	66.	*	2	JAN	0540	213	.03	.00	.03	526.
1	JAN	1715	64	.01	.00	.01	67.	*	2	JAN	0545	214	.03	.00	.03	483.
1	JAN	1720	65	.01	.00	.01	68.	*	2	JAN	0550	215	.03	.00	.03	445.
1	JAN	1725	66	.01	.00	.01	69.	*	2	JAN	0555	216	.03	.00	.03	413.
1	JAN	1730	67	.01	.00	.01	71.	*	2	JAN	0600	217	.03	.00	.03	385.
1	JAN	1735	68	.01	.00	.01	72.	*	2	JAN	0605	218	.03	.00	.03	361.
1	JAN	1740	69	.01	.00	.01	73.	*	2	JAN	0610	219	.02	.00	.02	340.
1	JAN	1745	70	.01	.00	.01	74.	*	2	JAN	0615	220	.02	.00	.02	321.
1	JAN	1750	71	.01	.00	.01	76.	*	2	JAN	0620	221	.02	.00	.02	305.
1	JAN	1755	72	.01	.00	.01	77.	*	2	JAN	0625	222	.02	.00	.02	290.
1	JAN	1800	73	.01	.00	.01	78.	*	2	JAN	0630	223	.02	.00	.02	277.
1	JAN	1805	74	.01	.00	.01	79.	*	2	JAN	0635	224	.02	.00	.02	265.
1	JAN	1810	75	.02	.00	.01	80.	*	2	JAN	0640	225	.02	.00	.02	254.
1	JAN	1815	76	.02	.00	.01	82.	*	2	JAN	0645	226	.02	.00	.02	245.
1	JAN	1820	77	.02	.00	.01	83.	*	2	JAN	0650	227	.02	.00	.02	236.
1	JAN	1825	78	.02	.00	.01	84.	*	2	JAN	0655	228	.02	.00	.02	228.
1	JAN	1830	79	.02	.00	.01	85.	*	2	JAN	0700	229	.02	.00	.02	220.
1	JAN	1835	80	.02	.00	.01	86.	*	2	JAN	0705	230	.02	.00	.02	214.
1	JAN	1840	81	.02	.00	.01	88.	*	2	JAN	0710	231	.02	.00	.02	207.
1	JAN	1845	82	.02	.00	.01	89.	*	2	JAN	0715	232	.02	.00	.02	201.
1	JAN	1850	83	.02	.00	.01	90.	*	2	JAN	0720	233	.02	.00	.02	196.
1	JAN	1855	84	.02	.00	.01	91.	*	2	JAN	0725	234	.02	.00	.02	191.

1	JAN	1900	85	.02	.00	.01	92.	*	2	JAN	0730	235	.02	.00	.02	187.
1	JAN	1905	86	.02	.00	.01	93.	*	2	JAN	0735	236	.02	.00	.02	183.
1	JAN	1910	87	.02	.00	.01	94.	*	2	JAN	0740	237	.02	.00	.02	179.
1	JAN	1915	88	.02	.00	.01	96.	*	2	JAN	0745	238	.02	.00	.02	176.
1	JAN	1920	89	.02	.00	.01	97.	*	2	JAN	0750	239	.02	.00	.02	173.
1	JAN	1925	90	.02	.00	.01	98.	*	2	JAN	0755	240	.02	.00	.02	170.
1	JAN	1930	91	.02	.00	.01	99.	*	2	JAN	0800	241	.02	.00	.02	167.
1	JAN	1935	92	.02	.00	.01	100.	*	2	JAN	0805	242	.02	.00	.02	164.
1	JAN	1940	93	.02	.00	.01	101.	*	2	JAN	0810	243	.02	.00	.02	161.
1	JAN	1945	94	.02	.00	.01	103.	*	2	JAN	0815	244	.02	.00	.02	159.
1	JAN	1950	95	.02	.00	.01	104.	*	2	JAN	0820	245	.02	.00	.02	156.
1	JAN	1955	96	.02	.00	.01	105.	*	2	JAN	0825	246	.02	.00	.02	154.
1	JAN	2000	97	.02	.00	.01	106.	*	2	JAN	0830	247	.02	.00	.02	152.
1	JAN	2005	98	.02	.00	.01	107.	*	2	JAN	0835	248	.02	.00	.02	150.
1	JAN	2010	99	.02	.00	.01	108.	*	2	JAN	0840	249	.02	.00	.02	147.
1	JAN	2015	100	.02	.00	.01	110.	*	2	JAN	0845	250	.02	.00	.02	145.
1	JAN	2020	101	.02	.00	.01	111.	*	2	JAN	0850	251	.02	.00	.01	144.
1	JAN	2025	102	.02	.00	.01	112.	*	2	JAN	0855	252	.01	.00	.01	142.
1	JAN	2030	103	.02	.00	.01	113.	*	2	JAN	0900	253	.01	.00	.01	140.
1	JAN	2035	104	.02	.00	.01	114.	*	2	JAN	0905	254	.01	.00	.01	138.
1	JAN	2040	105	.02	.00	.02	116.	*	2	JAN	0910	255	.01	.00	.01	137.
1	JAN	2045	106	.02	.00	.02	117.	*	2	JAN	0915	256	.01	.00	.01	135.
1	JAN	2050	107	.02	.00	.02	118.	*	2	JAN	0920	257	.01	.00	.01	133.
1	JAN	2055	108	.02	.00	.02	119.	*	2	JAN	0925	258	.01	.00	.01	132.
1	JAN	2100	109	.02	.00	.02	121.	*	2	JAN	0930	259	.01	.00	.01	130.
1	JAN	2105	110	.02	.00	.02	122.	*	2	JAN	0935	260	.01	.00	.01	129.
1	JAN	2110	111	.02	.00	.02	123.	*	2	JAN	0940	261	.01	.00	.01	128.
1	JAN	2115	112	.02	.00	.02	125.	*	2	JAN	0945	262	.01	.00	.01	126.
1	JAN	2120	113	.02	.00	.02	126.	*	2	JAN	0950	263	.01	.00	.01	125.
1	JAN	2125	114	.02	.00	.02	127.	*	2	JAN	0955	264	.01	.00	.01	124.
1	JAN	2130	115	.02	.00	.02	129.	*	2	JAN	1000	265	.01	.00	.01	122.
1	JAN	2135	116	.02	.00	.02	130.	*	2	JAN	1005	266	.01	.00	.01	121.
1	JAN	2140	117	.02	.00	.02	131.	*	2	JAN	1010	267	.01	.00	.01	120.
1	JAN	2145	118	.02	.00	.02	133.	*	2	JAN	1015	268	.01	.00	.01	119.
1	JAN	2150	119	.02	.00	.02	134.	*	2	JAN	1020	269	.01	.00	.01	118.
1	JAN	2155	120	.02	.00	.02	136.	*	2	JAN	1025	270	.01	.00	.01	117.
1	JAN	2200	121	.02	.00	.02	137.	*	2	JAN	1030	271	.01	.00	.01	115.
1	JAN	2205	122	.02	.00	.02	139.	*	2	JAN	1035	272	.01	.00	.01	114.
1	JAN	2210	123	.02	.00	.02	140.	*	2	JAN	1040	273	.01	.00	.01	113.
1	JAN	2215	124	.02	.00	.02	142.	*	2	JAN	1045	274	.01	.00	.01	112.
1	JAN	2220	125	.02	.00	.02	143.	*	2	JAN	1050	275	.01	.00	.01	111.
1	JAN	2225	126	.02	.00	.02	145.	*	2	JAN	1055	276	.01	.00	.01	110.
1	JAN	2230	127	.02	.00	.02	146.	*	2	JAN	1100	277	.01	.00	.01	110.
1	JAN	2235	128	.02	.00	.02	148.	*	2	JAN	1105	278	.01	.00	.01	109.
1	JAN	2240	129	.02	.00	.02	149.	*	2	JAN	1110	279	.01	.00	.01	108.
1	JAN	2245	130	.02	.00	.02	151.	*	2	JAN	1115	280	.01	.00	.01	107.
1	JAN	2250	131	.02	.00	.02	153.	*	2	JAN	1120	281	.01	.00	.01	106.
1	JAN	2255	132	.02	.00	.02	155.	*	2	JAN	1125	282	.01	.00	.01	105.
1	JAN	2300	133	.02	.00	.02	156.	*	2	JAN	1130	283	.01	.00	.01	104.
1	JAN	2305	134	.02	.00	.02	158.	*	2	JAN	1135	284	.01	.00	.01	104.
1	JAN	2310	135	.02	.00	.02	160.	*	2	JAN	1140	285	.01	.00	.01	103.
1	JAN	2315	136	.02	.00	.02	162.	*	2	JAN	1145	286	.01	.00	.01	102.
1	JAN	2320	137	.02	.00	.02	164.	*	2	JAN	1150	287	.01	.00	.01	101.
1	JAN	2325	138	.02	.00	.02	166.	*	2	JAN	1155	288	.01	.00	.01	101.
1	JAN	2330	139	.02	.00	.02	168.	*	2	JAN	1200	289	.00	.00	.00	99.
1	JAN	2335	140	.02	.00	.02	170.	*	2	JAN	1205	290	.00	.00	.00	97.
1	JAN	2340	141	.03	.00	.02	172.	*	2	JAN	1210	291	.00	.00	.00	94.
1	JAN	2345	142	.03	.00	.02	174.	*	2	JAN	1215	292	.00	.00	.00	90.
1	JAN	2350	143	.03	.00	.02	176.	*	2	JAN	1220	293	.00	.00	.00	84.
1	JAN	2355	144	.03	.00	.02	178.	*	2	JAN	1225	294	.00	.00	.00	76.
2	JAN	0000	145	.03	.00	.02	181.	*	2	JAN	1230	295	.00	.00	.00	67.
2	JAN	0005	146	.03	.00	.03	183.	*	2	JAN	1235	296	.00	.00	.00	58.
2	JAN	0010	147	.03	.00	.03	186.	*	2	JAN	1240	297	.00	.00	.00	49.
2	JAN	0015	148	.03	.00	.03	189.	*	2	JAN	1245	298	.00	.00	.00	41.
2	JAN	0020	149	.03	.00	.03	192.	*	2	JAN	1250	299	.00	.00	.00	34.
2	JAN	0025	150	.03	.00	.03	195.	*	2	JAN	1255	300	.00	.00	.00	27.
								*								

****

TOTAL RAINFALL = 8.44, TOTAL LOSS = .96, TOTAL EXCESS = 7.48

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 1656.	16.58	572.	221.	213.	213.
		(INCHES) 4.831	7.463	7.463	7.463
		(AC-FT) 283.	438.	438.	438.

CUMULATIVE AREA = 1.10 SQ MI

1 STATION BASIN400

```
                    (O) OUTFLOW
        0.     200.     400.     600.     800.    1000.    1200.    1400.    1600.    1800.       0.       0.       0.
                                                                                                (L) PRECIP,  (X) EXCESS
         .0       .0       .0       .0       .0       .0       .0       .0       .0      1.2        .8        .4        .0
 DAHRMN PER
  11200  1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  11205  2O         .         .         .         .         .         .         .         .         .         .         .
  11210  3O         .         .         .         .         .         .         .         .         .         .         .
  11215  4O         .         .         .         .         .         .         .         .         .         .         .
  11220  5O         .         .         .         .         .         .         .         .         .         .         .
  11225  6O         .         .         .         .         .         .         .         .         .         .         .
  11230  7O         .         .         .         .         .         .         .         .         .         .         .
  11235  8O         .         .         .         .         .         .         .         .         .         .         .
  11240  9O         .         .         .         .         .         .         .         .         .         .         .
  11245  1OO        .         .         .         .         .         .         .         .         .         .         .
  11250  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11255  12O        .         .         .         .         .         .         .         .         .         .         .
  11300  13O        .         .         .         .         .         .         .         .         .         .         .
  11305  14O        .         .         .         .         .         .         .         .         .         .         .
  11310  15O        .         .         .         .         .         .         .         .         .         .         .
  11315  16O        .         .         .         .         .         .         .         .         .         .         .
  11320  17O        .         .         .         .         .         .         .         .         .         .         .
  11325  18O        .         .         .         .         .         .         .         .         .         .         .
  11330  19O        .         .         .         .         .         .         .         .         .         .         .
  11335  2OO        .         .         .         .         .         .         .         .         .         .         .
  11340  21O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11345  22O        .         .         .         .         .         .         .         .         .         .         .
  11350  23O        .         .         .         .         .         .         .         .         .         .         .
  11355  24O        .         .         .         .         .         .         .         .         .         .         .
  11400  25O        .         .         .         .         .         .         .         .         .         .         .
  11405  26O        .         .         .         .         .         .         .         .         .         .         .
  11410  27O        .         .         .         .         .         .         .         .         .         .         .
  11415  28O        .         .         .         .         .         .         .         .         .         .         .
  11420  29O        .         .         .         .         .         .         .         .         .         .         .
  11425  3O.O       .         .         .         .         .         .         .         .         .         .         .
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11430  31.O
11435  32.O
11440  33.O
11445  34.O
11450  35.O
11455  36.O
11500  37.O
11505  38.O
11510  39.O
11515  40. O
11520  41. O
11525  42. O
11530  43. O
11535  44. O
11540  45. O
11545  46. O
11550  47. O
11555  48. O
11600  49. O
11605  50. O
11610  51. O
11615  52.  O
11620  53.  O
11625  54.  O
11630  55.  O
11635  56.  O
11640  57.  O
11645  58.  O
11650  59.  O
11655  60.  O
11700  61. .O
11705  62.  O
11710  63.  O
11715  64.  O
11720  65.  O
11725  66.  O
11730  67.   O
11735  68.   O
11740  69.   O
11745  70.   O
11750  71. . O
11755  72.   O
11800  73.   O
11805  74.   O
11810  75.   O
11815  76.   O
11820  77.   O
11825  78.   O
11830  79.   O
11835  80.   O
11840  81. . O
11845  82.   O
11850  83.   O
11855  84.    O
11900  85.    O
11905  86.    O
11910  87.    O
11915  88.    O
11920  89.    O
11925  90.    O
11930  91. . .O
11935  92.    O
11940  93.    O
11945  94.    O
11950  95.    O
11955  96.    O
12000  97.    O
12005  98.    O
12010  99.    O
12015 100.    O
12020 101. . . O
12025 102.     O
12030 103.     O
12035 104.     O
12040 105.     O
12045 106.     O
12050 107.     O
12055 108.     O
12100 109.     O
12105 110.     O
12110 111. . . O
12115 112.     O
12120 113.     O
12125 114.     O
12130 115.     O
12135 116.     O
12140 117.      O
12145 118.      O
12150 119.      O                                                  L.
12155 120.      O                                                  L.
12200 121. . . .O                                                  L.
12205 122.      O                                                  L.
12210 123.      O                                                  L.
12215 124.      O                                                  L.
12220 125.      O                                                  L.
12225 126.      O                                                  L.
12230 127.      O                                                  L.
12235 128.      O                                                  L.
12240 129.      O                                                  L.
12245 130.       O                                                 L.
12250 131. . . . O                                                 X.
12255 132.       O                                                 X.
12300 133.       O                                                 X.
12305 134.       O                                                 X.
12310 135.       O                                                 X.
12315 136.       O                                                 X.
12320 137.       O                                                 X.
12325 138.       O                                                 X.
12330 139.       O                                                 X.
12335 140.       O                                                 X.
12340 141. . . . .O                                                X.
12345 142.        O.                                               X.
12350 143.        O.                                               X.
12355 144.        O.                                               X.
20000 145.        O.                                               X.
20005 146.        O.                                               X.
20010 147.        O.                                               X.
20015 148.        O.                                               X.
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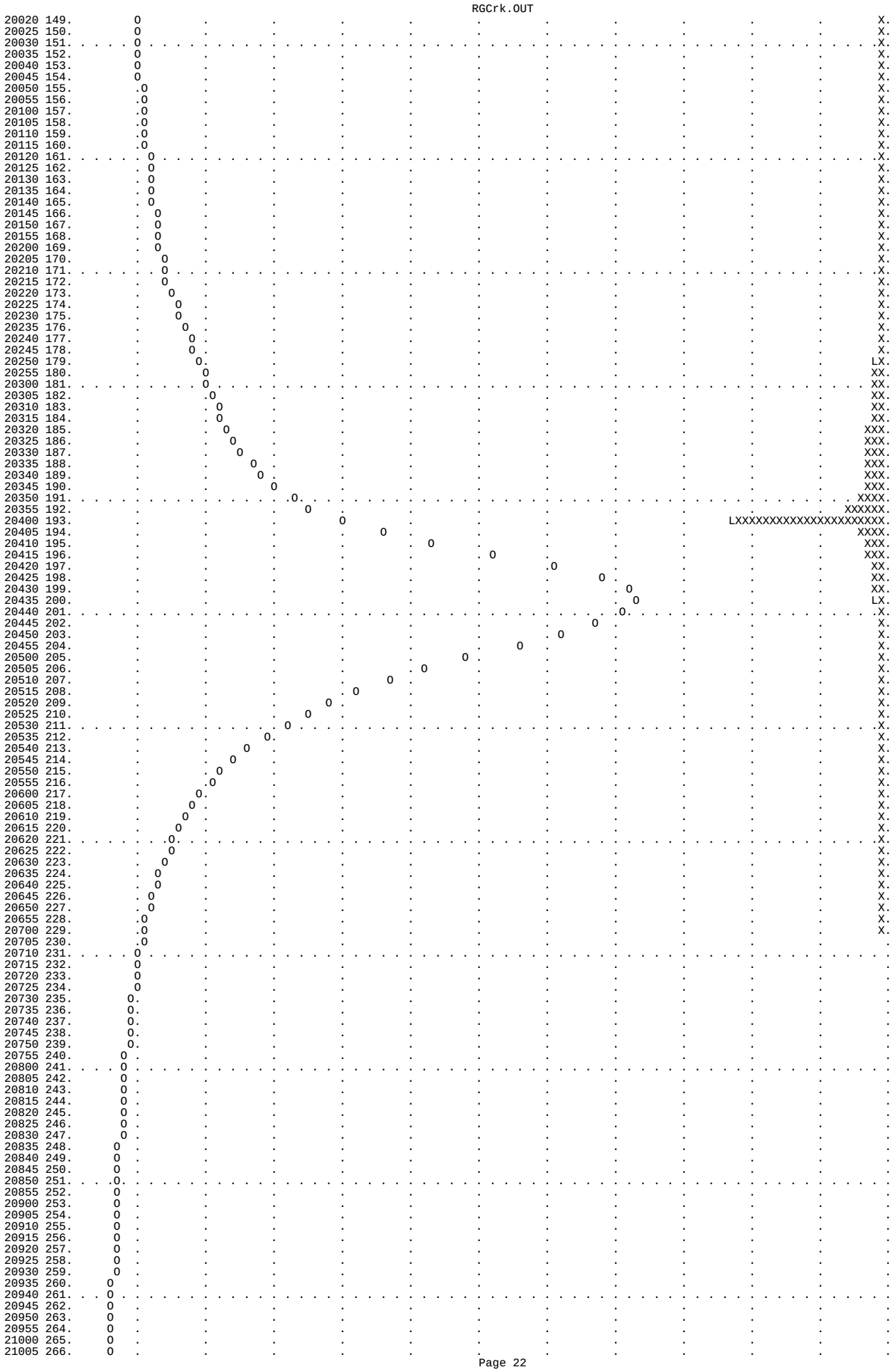

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21010 267.     O   .         .         .         .         .         .         .         .         .         .         .         .
21015 268.     O   .         .         .         .         .         .         .         .         .         .         .         .
21020 269.     O   .         .         .         .         .         .         .         .         .         .         .         .
21025 270.     O   .         .         .         .         .         .         .         .         .         .         .         .
21030 271. . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
21035 272.     O   .         .         .         .         .         .         .         .         .         .         .         .
21040 273.     O   .         .         .         .         .         .         .         .         .         .         .         .
21045 274.     O   .         .         .         .         .         .         .         .         .         .         .         .
21050 275.     O   .         .         .         .         .         .         .         .         .         .         .         .
21055 276.     O   .         .         .         .         .         .         .         .         .         .         .         .
21100 277.    O    .         .         .         .         .         .         .         .         .         .         .         .
21105 278.    O    .         .         .         .         .         .         .         .         .         .         .         .
21110 279.    O    .         .         .         .         .         .         .         .         .         .         .         .
21115 280.    O    .         .         .         .         .         .         .         .         .         .         .         .
21120 281. . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
21125 282.    O    .         .         .         .         .         .         .         .         .         .         .         .
21130 283.    O    .         .         .         .         .         .         .         .         .         .         .         .
21135 284.    O    .         .         .         .         .         .         .         .         .         .         .         .
21140 285.    O    .         .         .         .         .         .         .         .         .         .         .         .
21145 286.    O    .         .         .         .         .         .         .         .         .         .         .         .
21150 287.    O    .         .         .         .         .         .         .         .         .         .         .         .
21155 288.    O    .         .         .         .         .         .         .         .         .         .         .         .
21200 289.    O    .         .         .         .         .         .         .         .         .         .         .         .
21205 290.    O    .         .         .         .         .         .         .         .         .         .         .         .
21210 291. . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
21215 292.   O     .         .         .         .         .         .         .         .         .         .         .         .
21220 293.   O     .         .         .         .         .         .         .         .         .         .         .         .
21225 294.   O     .         .         .         .         .         .         .         .         .         .         .         .
21230 295.  O      .         .         .         .         .         .         .         .         .         .         .         .
21235 296.  O      .         .         .         .         .         .         .         .         .         .         .         .
21240 297. O       .         .         .         .         .         .         .         .         .         .         .         .
21245 298. O       .         .         .         .         .         .         .         .         .         .         .         .
21250 299. O       .         .         .         .         .         .         .         .         .         .         .         .
21255 300.O--------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1
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            **************
            *            *
 212 KK     *  CONFLUEN  *     CE_100_THROUGH_400
            *            *
            **************

 213 HC          HYDROGRAPH COMBINATION
                      ICOMP           4  NUMBER OF HYDROGRAPHS TO COMBINE
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HYDROGRAPH AT STATION CONFLUEN
SUM OF 4 HYDROGRAPHS

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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	JAN	1200	1	0.	1	JAN	1815	76	2817.	2	JAN	0030	151	5246.	2	JAN	0645	226	12340.
1	JAN	1205	2	0.	1	JAN	1820	77	2858.	2	JAN	0035	152	5263.	2	JAN	0650	227	11949.
1	JAN	1210	3	0.	1	JAN	1825	78	2898.	2	JAN	0040	153	5277.	2	JAN	0655	228	11557.
1	JAN	1215	4	0.	1	JAN	1830	79	2937.	2	JAN	0045	154	5289.	2	JAN	0700	229	11144.
1	JAN	1220	5	0.	1	JAN	1835	80	2976.	2	JAN	0050	155	5299.	2	JAN	0705	230	10738.
1	JAN	1225	6	0.	1	JAN	1840	81	3014.	2	JAN	0055	156	5308.	2	JAN	0710	231	10359.
1	JAN	1230	7	0.	1	JAN	1845	82	3051.	2	JAN	0100	157	5315.	2	JAN	0715	232	10001.
1	JAN	1235	8	0.	1	JAN	1850	83	3088.	2	JAN	0105	158	5320.	2	JAN	0720	233	9670.
1	JAN	1240	9	0.	1	JAN	1855	84	3124.	2	JAN	0110	159	5323.	2	JAN	0725	234	9380.
1	JAN	1245	10	0.	1	JAN	1900	85	3160.	2	JAN	0115	160	5325.	2	JAN	0730	235	9105.
1	JAN	1250	11	0.	1	JAN	1905	86	3196.	2	JAN	0120	161	5326.	2	JAN	0735	236	8852.
1	JAN	1255	12	0.	1	JAN	1910	87	3230.	2	JAN	0125	162	5326.	2	JAN	0740	237	8614.
1	JAN	1300	13	1.	1	JAN	1915	88	3265.	2	JAN	0130	163	5325.	2	JAN	0745	238	8390.
1	JAN	1305	14	1.	1	JAN	1920	89	3299.	2	JAN	0135	164	5325.	2	JAN	0750	239	8184.
1	JAN	1310	15	3.	1	JAN	1925	90	3333.	2	JAN	0140	165	5325.	2	JAN	0755	240	7988.
1	JAN	1315	16	5.	1	JAN	1930	91	3366.	2	JAN	0145	166	5326.	2	JAN	0800	241	7816.
1	JAN	1320	17	9.	1	JAN	1935	92	3399.	2	JAN	0150	167	5329.	2	JAN	0805	242	7650.
1	JAN	1325	18	14.	1	JAN	1940	93	3431.	2	JAN	0155	168	5334.	2	JAN	0810	243	7491.
1	JAN	1330	19	21.	1	JAN	1945	94	3464.	2	JAN	0200	169	5344.	2	JAN	0815	244	7338.
1	JAN	1335	20	31.	1	JAN	1950	95	3496.	2	JAN	0205	170	5359.	2	JAN	0820	245	7193.
1	JAN	1340	21	43.	1	JAN	1955	96	3527.	2	JAN	0210	171	5383.	2	JAN	0825	246	7057.
1	JAN	1345	22	59.	1	JAN	2000	97	3559.	2	JAN	0215	172	5419.	2	JAN	0830	247	6924.
1	JAN	1350	23	77.	1	JAN	2005	98	3590.	2	JAN	0220	173	5466.	2	JAN	0835	248	6796.
1	JAN	1355	24	99.	1	JAN	2010	99	3621.	2	JAN	0225	174	5524.	2	JAN	0840	249	6672.
1	JAN	1400	25	125.	1	JAN	2015	100	3651.	2	JAN	0230	175	5590.	2	JAN	0845	250	6558.
1	JAN	1405	26	153.	1	JAN	2020	101	3682.	2	JAN	0235	176	5663.	2	JAN	0850	251	6453.
1	JAN	1410	27	185.	1	JAN	2025	102	3712.	2	JAN	0240	177	5743.	2	JAN	0855	252	6350.
1	JAN	1415	28	220.	1	JAN	2030	103	3743.	2	JAN	0245	178	5827.	2	JAN	0900	253	6249.
1	JAN	1420	29	258.	1	JAN	2035	104	3773.	2	JAN	0250	179	5917.	2	JAN	0905	254	6150.
1	JAN	1425	30	299.	1	JAN	2040	105	3803.	2	JAN	0255	180	6013.	2	JAN	0910	255	6057.
1	JAN	1430	31	342.	1	JAN	2045	106	3832.	2	JAN	0300	181	6116.	2	JAN	0915	256	5967.
1	JAN	1435	32	388.	1	JAN	2050	107	3862.	2	JAN	0305	182	6228.	2	JAN	0920	257	5879.
1	JAN	1440	33	437.	1	JAN	2055	108	3892.	2	JAN	0310	183	6348.	2	JAN	0925	258	5792.
1	JAN	1445	34	488.	1	JAN	2100	109	3921.	2	JAN	0315	184	6480.	2	JAN	0930	259	5709.
1	JAN	1450	35	541.	1	JAN	2105	110	3951.	2	JAN	0320	185	6630.	2	JAN	0935	260	5631.
1	JAN	1455	36	596.	1	JAN	2110	111	3980.	2	JAN	0325	186	6805.	2	JAN	0940	261	5555.
1	JAN	1500	37	653.	1	JAN	2115	112	4010.	2	JAN	0330	187	7011.	2	JAN	0945	262	5482.
1	JAN	1505	38	711.	1	JAN	2120	113	4040.	2	JAN	0335	188	7255.	2	JAN	0950	263	5410.
1	JAN	1510	39	771.	1	JAN	2125	114	4069.	2	JAN	0340	189	7536.	2	JAN	0955	264	5340.
1	JAN	1515	40	832.	1	JAN	2130	115	4099.	2	JAN	0345	190	7850.	2	JAN	1000	265	5277.
1	JAN	1520	41	894.	1	JAN	2135	116	4128.	2	JAN	0350	191	8197.	2	JAN	1005	266	5214.
1	JAN	1525	42	957.	1	JAN	2140	117	4158.	2	JAN	0355	192	8593.	2	JAN	1010	267	5154.
1	JAN	1530	43	1021.	1	JAN	2145	118	4188.	2	JAN	0400	193	9189.	2	JAN	1015	268	5095.
1	JAN	1535	44	1085.	1	JAN	2150	119	4218.	2	JAN	0405	194	9956.	2	JAN	1020	269	5038.
1	JAN	1540	45	1150.	1	JAN	2155	120	4247.	2	JAN	0410	195	10901.	2	JAN	1025	270	4984.
1	JAN	1545	46	1214.	1	JAN	2200	121	4278.	2	JAN	0415	196	12008.	2	JAN	1030	271	4931.
1	JAN	1550	47	1279.	1	JAN	2205	122	4308.	2	JAN	0420	197	13129.	2	JAN	1035	272	4880.
1	JAN	1555	48	1343.	1	JAN	2210	123	4338.	2	JAN	0425	198	14091.	2	JAN	1040	273	4830.
1	JAN	1600	49	1407.	1	JAN	2215	124	4369.	2	JAN	0430	199	14790.	2	JAN	1045	274	4781.
1	JAN	1605	50	1470.	1	JAN	2220	125	4399.	2	JAN	0435	200	15264.	2	JAN	1050	275	4735.
1	JAN	1610	51	1533.	1	JAN	2225	126	4430.	2	JAN	0440	201	15549.	2	JAN	1055	276	4690.
1	JAN	1615	52	1595.	1	JAN	2230	127	4461.	2	JAN	0445	202	15685.	2	JAN	1100	277	4646.
1	JAN	1620	53	1656.	1	JAN	2235	128	4492.	2	JAN	0450	203	15734.	2	JAN	1105	278	4603.
1	JAN	1625	54	1717.	1	JAN	2240	129	4524.	2	JAN	0455	204	15758.	2	JAN	1110	279	4562.
1	JAN	1630	55	1776.	1	JAN	2245	130	4556.	2	JAN	0500	205	15778.	2	JAN	1115	280	4522.
1	JAN	1635	56	1835.	1	JAN	2250	131	4588.	2	JAN	0505	206	15788.	2	JAN	1120	281	4483.
1	JAN	1640	57	1893.	1	JAN	2255	132	4620.	2	JAN	0510	207	15828.	2	JAN	1125	282	4445.

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     1 JAN 1645   58     1949.   *    1 JAN 2300  133     4653.   *    2 JAN 0515  208    15890.   *    2 JAN 1130  283     4407.
     1 JAN 1650   59     2005.   *    1 JAN 2305  134     4686.   *    2 JAN 0520  209    15954.   *    2 JAN 1135  284     4372.
     1 JAN 1655   60     2060.   *    1 JAN 2310  135     4719.   *    2 JAN 0525  210    15976.   *    2 JAN 1140  285     4338.
     1 JAN 1700   61     2114.   *    1 JAN 2315  136     4753.   *    2 JAN 0530  211    15988.   *    2 JAN 1145  286     4304.
     1 JAN 1705   62     2167.   *    1 JAN 2320  137     4787.   *    2 JAN 0535  212    15940.   *    2 JAN 1150  287     4271.
     1 JAN 1710   63     2219.   *    1 JAN 2325  138     4822.   *    2 JAN 0540  213    15867.   *    2 JAN 1155  288     4239.
     1 JAN 1715   64     2270.   *    1 JAN 2330  139     4857.   *    2 JAN 0545  214    15760.   *    2 JAN 1200  289     4205.
     1 JAN 1720   65     2320.   *    1 JAN 2335  140     4893.   *    2 JAN 0550  215    15603.   *    2 JAN 1205  290     4166.
     1 JAN 1725   66     2370.   *    1 JAN 2340  141     4929.   *    2 JAN 0555  216    15433.   *    2 JAN 1210  291     4119.
     1 JAN 1730   67     2418.   *    1 JAN 2345  142     4965.   *    2 JAN 0600  217    15228.   *    2 JAN 1215  292     4060.
     1 JAN 1735   68     2466.   *    1 JAN 2350  143     5002.   *    2 JAN 0605  218    15006.   *    2 JAN 1220  293     3988.
     1 JAN 1740   69     2512.   *    1 JAN 2355  144     5040.   *    2 JAN 0610  219    14734.   *    2 JAN 1225  294     3905.
     1 JAN 1745   70     2558.   *    2 JAN 0000  145     5077.   *    2 JAN 0615  220    14428.   *    2 JAN 1230  295     3814.
     1 JAN 1750   71     2603.   *    2 JAN 0005  146     5113.   *    2 JAN 0620  221    14111.   *    2 JAN 1235  296     3718.
     1 JAN 1755   72     2648.   *    2 JAN 0010  147     5147.   *    2 JAN 0625  222    13775.   *    2 JAN 1240  297     3619.
     1 JAN 1800   73     2691.   *    2 JAN 0015  148     5177.   *    2 JAN 0630  223    13434.   *    2 JAN 1245  298     3519.
     1 JAN 1805   74     2734.   *    2 JAN 0020  149     5204.   *    2 JAN 0635  224    13078.   *    2 JAN 1250  299     3418.
     1 JAN 1810   75     2776.   *    2 JAN 0025  150     5227.   *    2 JAN 0640  225    12715.   *    2 JAN 1255  300     3317.
                                 *                                *                                *
 ***********************************************************************************************************************************

  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     24.92-HR
+   (CFS)       (HR)
                           (CFS)
+   15988.     17.50                11057.       5424.       5225.        5225.
                        (INCHES)     3.713       7.285       7.285        7.285
                         (AC-FT)     5483.      10759.      10759.       10759.

                         CUMULATIVE AREA =   27.69 SQ MI

1                                                          STATION CONFLUEN

                          (O) OUTFLOW
          0.      2000.     4000.     6000.     8000.    10000.    12000.    14000.    16000.        0.        0.        0.        0.
 DAHRMN PER
  11200   1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  11205   2O         .         .         .         .         .         .         .         .         .         .         .         .
  11210   3O         .         .         .         .         .         .         .         .         .         .         .         .
  11215   4O         .         .         .         .         .         .         .         .         .         .         .         .
  11220   5O         .         .         .         .         .         .         .         .         .         .         .         .
  11225   6O         .         .         .         .         .         .         .         .         .         .         .         .
  11230   7O         .         .         .         .         .         .         .         .         .         .         .         .
  11235   8O         .         .         .         .         .         .         .         .         .         .         .         .
  11240   9O         .         .         .         .         .         .         .         .         .         .         .         .
  11245  10O         .         .         .         .         .         .         .         .         .         .         .         .
  11250  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11255  12O         .         .         .         .         .         .         .         .         .         .         .         .
  11300  13O         .         .         .         .         .         .         .         .         .         .         .         .
  11305  14O         .         .         .         .         .         .         .         .         .         .         .         .
  11310  15O         .         .         .         .         .         .         .         .         .         .         .         .
  11315  16O         .         .         .         .         .         .         .         .         .         .         .         .
  11320  17O         .         .         .         .         .         .         .         .         .         .         .         .
  11325  18O         .         .         .         .         .         .         .         .         .         .         .         .
  11330  19O         .         .         .         .         .         .         .         .         .         .         .         .
  11335  20O         .         .         .         .         .         .         .         .         .         .         .         .
  11340  21O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11345  22O         .         .         .         .         .         .         .         .         .         .         .         .
  11350  23O         .         .         .         .         .         .         .         .         .         .         .         .
  11355  24O         .         .         .         .         .         .         .         .         .         .         .         .
  11400  25.O        .         .         .         .         .         .         .         .         .         .         .         .
  11405  26.O        .         .         .         .         .         .         .         .         .         .         .         .
  11410  27.O        .         .         .         .         .         .         .         .         .         .         .         .
  11415  28.O        .         .         .         .         .         .         .         .         .         .         .         .
  11420  29.O        .         .         .         .         .         .         .         .         .         .         .         .
  11425  30.O        .         .         .         .         .         .         .         .         .         .         .         .
  11430  31. O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11435  32. O       .         .         .         .         .         .         .         .         .         .         .         .
  11440  33. O       .         .         .         .         .         .         .         .         .         .         .         .
  11445  34. O       .         .         .         .         .         .         .         .         .         .         .         .
  11450  35.  O      .         .         .         .         .         .         .         .         .         .         .         .
  11455  36.  O      .         .         .         .         .         .         .         .         .         .         .         .
  11500  37.  O      .         .         .         .         .         .         .         .         .         .         .         .
  11505  38.   O     .         .         .         .         .         .         .         .         .         .         .         .
  11510  39.   O     .         .         .         .         .         .         .         .         .         .         .         .
  11515  40.   O     .         .         .         .         .         .         .         .         .         .         .         .
  11520  41. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11525  42.    O    .         .         .         .         .         .         .         .         .         .         .         .
  11530  43.    O    .         .         .         .         .         .         .         .         .         .         .         .
  11535  44.    O    .         .         .         .         .         .         .         .         .         .         .         .
  11540  45.     O   .         .         .         .         .         .         .         .         .         .         .         .
  11545  46.     O   .         .         .         .         .         .         .         .         .         .         .         .
  11550  47.     O   .         .         .         .         .         .         .         .         .         .         .         .
  11555  48.      O  .         .         .         .         .         .         .         .         .         .         .         .
  11600  49.      O  .         .         .         .         .         .         .         .         .         .         .         .
  11605  50.      O  .         .         .         .         .         .         .         .         .         .         .         .
  11610  51. . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11615  52.       O .         .         .         .         .         .         .         .         .         .         .         .
  11620  53.       O .         .         .         .         .         .         .         .         .         .         .         .
  11625  54.        O.         .         .         .         .         .         .         .         .         .         .         .
  11630  55.        O.         .         .         .         .         .         .         .         .         .         .         .
  11635  56.        O.         .         .         .         .         .         .         .         .         .         .         .
  11640  57.        O.         .         .         .         .         .         .         .         .         .         .         .
  11645  58.         O         .         .         .         .         .         .         .         .         .         .         .
  11650  59.         O         .         .         .         .         .         .         .         .         .         .         .
  11655  60.         O         .         .         .         .         .         .         .         .         .         .         .
  11700  61. . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11705  62.         .O        .         .         .         .         .         .         .         .         .         .         .
  11710  63.         .O        .         .         .         .         .         .         .         .         .         .         .
  11715  64.         .O        .         .         .         .         .         .         .         .         .         .         .
  11720  65.         . O       .         .         .         .         .         .         .         .         .         .         .
  11725  66.         . O       .         .         .         .         .         .         .         .         .         .         .
  11730  67.         . O       .         .         .         .         .         .         .         .         .         .         .
  11735  68.         . O       .         .         .         .         .         .         .         .         .         .         .
  11740  69.         .  O      .         .         .         .         .         .         .         .         .         .         .
  11745  70.         .  O      .         .         .         .         .         .         .         .         .         .         .
  11750  71. . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11755  72.         .  O      .         .         .         .         .         .         .         .         .         .         .
  11800  73.         .  O      .         .         .         .         .         .         .         .         .         .         .
  11805  74.         .   O     .         .         .         .         .         .         .         .         .         .         .
  11810  75.         .   O     .         .         .         .         .         .         .         .         .         .         .
  11815  76.         .   O     .         .         .         .         .         .         .         .         .         .         .
  11820  77.         .   O     .         .         .         .         .         .         .         .         .         .         .
  11825  78.         .   O     .         .         .         .         .         .         .         .         .         .         .
  11830  79.         .    O    .         .         .         .         .         .         .         .         .         .         .
  11835  80.         .    O    .         .         .         .         .         .         .         .         .         .         .
  11840  81. . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  11845  82.         .    O    .         .         .         .         .         .         .         .         .         .         .
```

```
11850  83.         .    O    .         .         .         .         .         .         .         .         .         .         .
11855  84.         .     O   .         .         .         .         .         .         .         .         .         .         .
11900  85.         .     O   .         .         .         .         .         .         .         .         .         .         .
11905  86.         .     O   .         .         .         .         .         .         .         .         .         .         .
11910  87.         .     O   .         .         .         .         .         .         .         .         .         .         .
11915  88.         .     O   .         .         .         .         .         .         .         .         .         .         .
11920  89.         .     O   .         .         .         .         .         .         .         .         .         .         .
11925  90.         .      O  .         .         .         .         .         .         .         .         .         .         .
11930  91. . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
11935  92.         .      O  .         .         .         .         .         .         .         .         .         .         .
11940  93.         .      O  .         .         .         .         .         .         .         .         .         .         .
11945  94.         .      O  .         .         .         .         .         .         .         .         .         .         .
11950  95.         .      O  .         .         .         .         .         .         .         .         .         .         .
11955  96.         .       O .         .         .         .         .         .         .         .         .         .         .
12000  97.         .       O .         .         .         .         .         .         .         .         .         .         .
12005  98.         .       O .         .         .         .         .         .         .         .         .         .         .
12010  99.         .       O .         .         .         .         .         .         .         .         .         .         .
12015 100.         .       O .         .         .         .         .         .         .         .         .         .         .
12020 101. . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12025 102.         .        O.         .         .         .         .         .         .         .         .         .         .
12030 103.         .        O.         .         .         .         .         .         .         .         .         .         .
12035 104.         .        O.         .         .         .         .         .         .         .         .         .         .
12040 105.         .        O.         .         .         .         .         .         .         .         .         .         .
12045 106.         .        O.         .         .         .         .         .         .         .         .         .         .
12050 107.         .        O.         .         .         .         .         .         .         .         .         .         .
12055 108.         .        O.         .         .         .         .         .         .         .         .         .         .
12100 109.         .         O         .         .         .         .         .         .         .         .         .         .
12105 110.         .         O         .         .         .         .         .         .         .         .         .         .
12110 111. . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12115 112.         .         O         .         .         .         .         .         .         .         .         .         .
12120 113.         .         O         .         .         .         .         .         .         .         .         .         .
12125 114.         .         O         .         .         .         .         .         .         .         .         .         .
12130 115.         .         O         .         .         .         .         .         .         .         .         .         .
12135 116.         .         .O        .         .         .         .         .         .         .         .         .         .
12140 117.         .         .O        .         .         .         .         .         .         .         .         .         .
12145 118.         .         .O        .         .         .         .         .         .         .         .         .         .
12150 119.         .         .O        .         .         .         .         .         .         .         .         .         .
12155 120.         .         .O        .         .         .         .         .         .         .         .         .         .
12200 121. . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12205 122.         .         . O       .         .         .         .         .         .         .         .         .         .
12210 123.         .         . O       .         .         .         .         .         .         .         .         .         .
12215 124.         .         . O       .         .         .         .         .         .         .         .         .         .
12220 125.         .         . O       .         .         .         .         .         .         .         .         .         .
12225 126.         .         . O       .         .         .         .         .         .         .         .         .         .
12230 127.         .         . O       .         .         .         .         .         .         .         .         .         .
12235 128.         .         . O       .         .         .         .         .         .         .         .         .         .
12240 129.         .         .  O      .         .         .         .         .         .         .         .         .         .
12245 130.         .         .  O      .         .         .         .         .         .         .         .         .         .
12250 131. . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12255 132.         .         .  O      .         .         .         .         .         .         .         .         .         .
12300 133.         .         .  O      .         .         .         .         .         .         .         .         .         .
12305 134.         .         .  O      .         .         .         .         .         .         .         .         .         .
12310 135.         .         .   O     .         .         .         .         .         .         .         .         .         .
12315 136.         .         .   O     .         .         .         .         .         .         .         .         .         .
12320 137.         .         .   O     .         .         .         .         .         .         .         .         .         .
12325 138.         .         .   O     .         .         .         .         .         .         .         .         .         .
12330 139.         .         .   O     .         .         .         .         .         .         .         .         .         .
12335 140.         .         .   O     .         .         .         .         .         .         .         .         .         .
12340 141. . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
12345 142.         .         .    O    .         .         .         .         .         .         .         .         .         .
12350 143.         .         .    O    .         .         .         .         .         .         .         .         .         .
12355 144.         .         .    O    .         .         .         .         .         .         .         .         .         .
20000 145.         .         .    O    .         .         .         .         .         .         .         .         .         .
20005 146.         .         .     O   .         .         .         .         .         .         .         .         .         .
20010 147.         .         .     O   .         .         .         .         .         .         .         .         .         .
20015 148.         .         .     O   .         .         .         .         .         .         .         .         .         .
20020 149.         .         .     O   .         .         .         .         .         .         .         .         .         .
20025 150.         .         .     O   .         .         .         .         .         .         .         .         .         .
20030 151. . . . . . . . . . . . . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20035 152.         .         .     O   .         .         .         .         .         .         .         .         .         .
20040 153.         .         .     O   .         .         .         .         .         .         .         .         .         .
20045 154.         .         .     O   .         .         .         .         .         .         .         .         .         .
20050 155.         .         .     O   .         .         .         .         .         .         .         .         .         .
20055 156.         .         .      O  .         .         .         .         .         .         .         .         .         .
20100 157.         .         .      O  .         .         .         .         .         .         .         .         .         .
20105 158.         .         .      O  .         .         .         .         .         .         .         .         .         .
20110 159.         .         .      O  .         .         .         .         .         .         .         .         .         .
20115 160.         .         .      O  .         .         .         .         .         .         .         .         .         .
20120 161. . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20125 162.         .         .      O  .         .         .         .         .         .         .         .         .         .
20130 163.         .         .      O  .         .         .         .         .         .         .         .         .         .
20135 164.         .         .      O  .         .         .         .         .         .         .         .         .         .
20140 165.         .         .      O  .         .         .         .         .         .         .         .         .         .
20145 166.         .         .      O  .         .         .         .         .         .         .         .         .         .
20150 167.         .         .      O  .         .         .         .         .         .         .         .         .         .
20155 168.         .         .      O  .         .         .         .         .         .         .         .         .         .
20200 169.         .         .      O  .         .         .         .         .         .         .         .         .         .
20205 170.         .         .      O  .         .         .         .         .         .         .         .         .         .
20210 171. . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20215 172.         .         .      O  .         .         .         .         .         .         .         .         .         .
20220 173.         .         .      O  .         .         .         .         .         .         .         .         .         .
20225 174.         .         .       O .         .         .         .         .         .         .         .         .         .
20230 175.         .         .       O .         .         .         .         .         .         .         .         .         .
20235 176.         .         .       O .         .         .         .         .         .         .         .         .         .
20240 177.         .         .        O.         .         .         .         .         .         .         .         .         .
20245 178.         .         .        O.         .         .         .         .         .         .         .         .         .
20250 179.         .         .         O         .         .         .         .         .         .         .         .         .
20255 180.         .         .         O         .         .         .         .         .         .         .         .         .
20300 181. . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20305 182.         .         .         .O        .         .         .         .         .         .         .         .         .
20310 183.         .         .         . O       .         .         .         .         .         .         .         .         .
20315 184.         .         .         . O       .         .         .         .         .         .         .         .         .
20320 185.         .         .         .  O      .         .         .         .         .         .         .         .         .
20325 186.         .         .         .   O     .         .         .         .         .         .         .         .         .
20330 187.         .         .         .    O    .         .         .         .         .         .         .         .         .
20335 188.         .         .         .     O   .         .         .         .         .         .         .         .         .
20340 189.         .         .         .       O .         .         .         .         .         .         .         .         .
20345 190.         .         .         .        O.         .         .         .         .         .         .         .         .
20350 191. . . . . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
20355 192.         .         .         .         .  O      .         .         .         .         .         .         .         .
20400 193.         .         .         .         .     O   .         .         .         .         .         .         .         .
20405 194.         .         .         .         .         O         .         .         .         .         .         .         .
20410 195.         .         .         .         .         .    O    .         .         .         .         .         .         .
20415 196.         .         .         .         .         .         O         .         .         .         .         .         .
20420 197.         .         .         .         .         .         .     O   .         .         .         .         .         .
20425 198.         .         .         .         .         .         .         O         .         .         .         .         .
20430 199.         .         .         .         .         .         .         .   O     .         .         .         .         .
20435 200.         .         .         .         .         .         .         .     O   .         .         .         .         .
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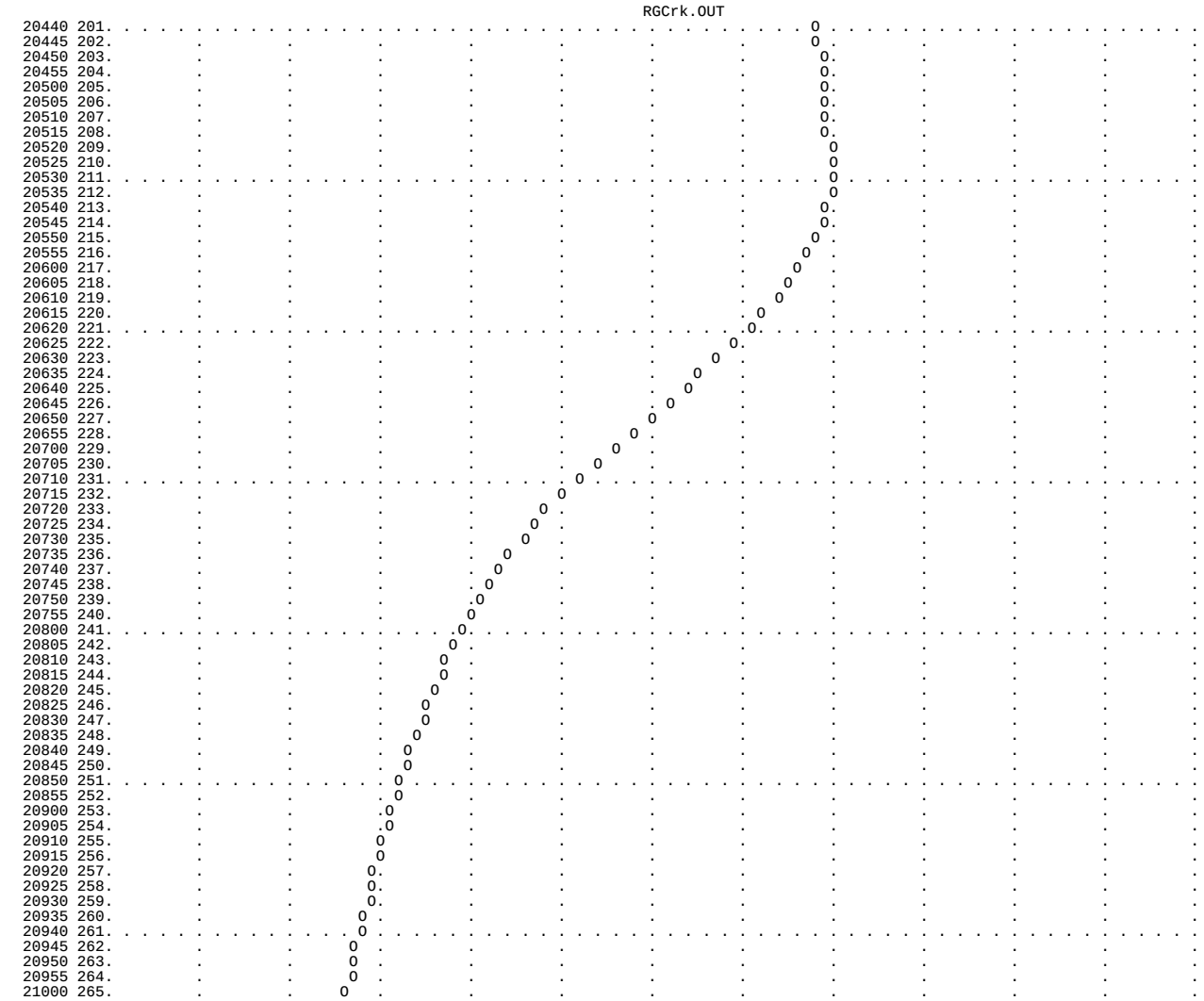


1
1

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	BASIN100	13740.	17.75	8799.	4383.	4222.	22.50		
+	HYDROGRAPH AT	BASIN200	3577.	16.58	1303.	607.	585.	3.03		
+	HYDROGRAPH AT	BASIN300	1780.	16.42	552.	213.	205.	1.06		

```
+          HYDROGRAPH AT
                        BASIN400      1656.   16.58         572.        221.        213.       1.10
+          4 COMBINED AT
                        CONFLUEN     15988.   17.50       11057.       5424.       5225.      27.69

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

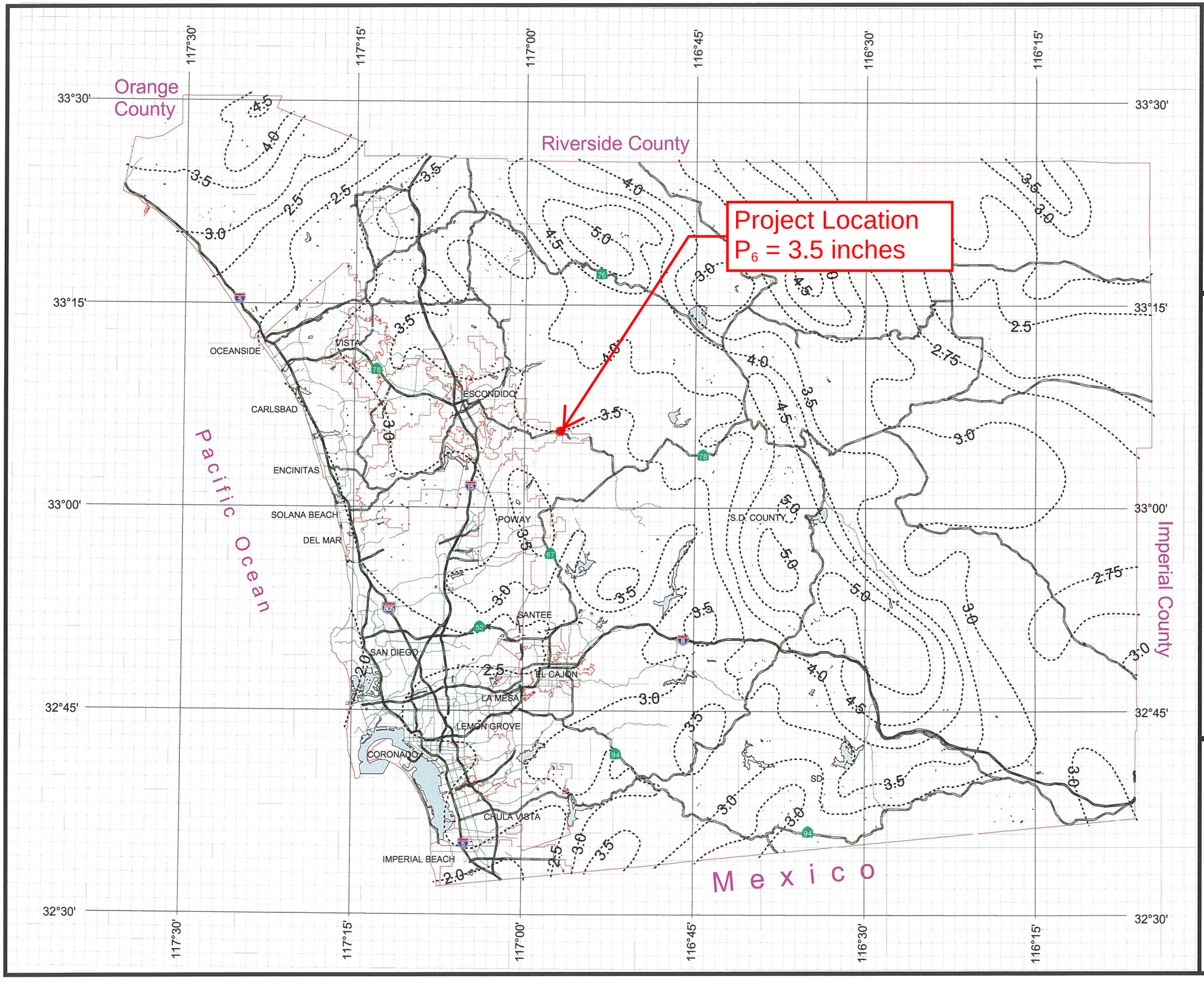
Appendix C

AES Program Output and Support Material – Local Drainage Basin

County of San Diego Isopluvial Maps
(100-Year, 6-Hour and 24-Hour)

County of San Diego Hydrology Manual

Rainfall Isopluvials



100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

P6 = 3.5 inches

Rancho Guejito Tasting Room & Event Center

DPW GIS
Department of Public Works Geographic Information Services

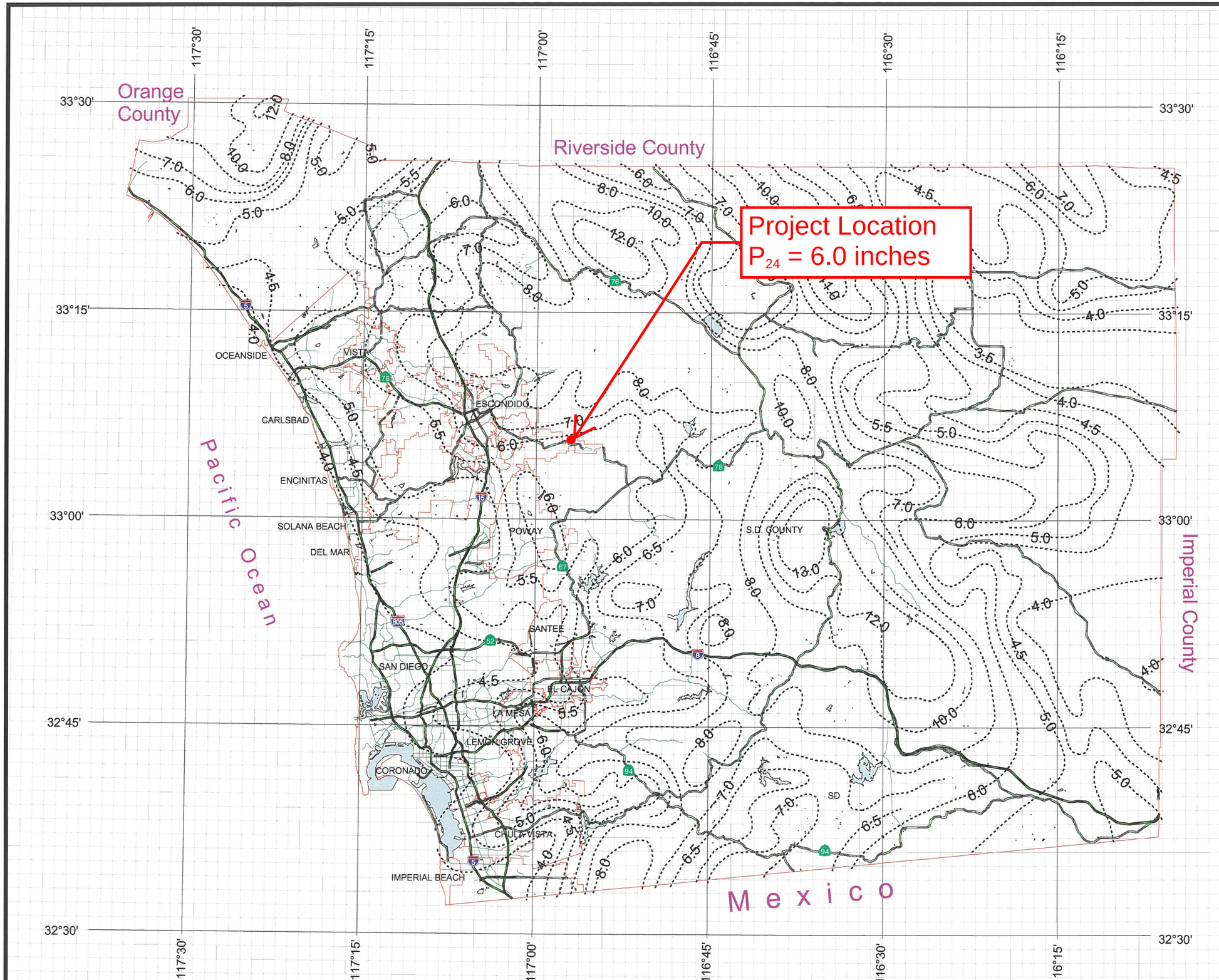
SanGIS
We Have San Diego Covered!

N W E S

3 0 3 Miles

County of San Diego Hydrology Manual

Rainfall Isopluvials



100 Year Rainfall Event - 24 Hours

Isopluvial (inches)

P_{24} = 6 inches

Rancho Guejito Tasting Room & Event Center

DPW GIS
Department of Public Works
Geographic Information Services

SanGIS
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N
W E
S

3 0 3 Miles

AES Output and Results
(Pre-Project Conditions)

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2014 Advanced Engineering Software (aes)
             Ver. 21.0 Release Date: 06/01/2014  License ID 1261

                           Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                         San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************* DESCRIPTION OF STUDY *************************
* RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER - LOCAL HYDROLOGY ANALY *
* EXISTING CONDITIONS (100-YEAR STORM EVENT)                               *
* RICK ENGINEERING COMPANY, 2019                                           *
 ************************************************************************

  FILE NAME: RGW_E00.DAT
  TIME/DATE OF STUDY: 18:46 10/23/2019
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =   1520.00
  DOWNSTREAM ELEVATION(FEET) =   1480.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =    450.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.3121
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.743
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.38
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   4.44
  Tc(MIN.) =   10.42
  SUBAREA AREA(ACRES) =    74.00       SUBAREA RUNOFF(CFS) =  127.48
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       74.1         PEAK FLOW RATE(CFS) =     127.66
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.05   FLOW VELOCITY(FEET/SEC.) =  14.96
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    3380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    450.00  DOWNSTREAM(FEET) =    442.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0089
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.233
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.38
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   6.30
  Tc(MIN.) =   16.72
  SUBAREA AREA(ACRES) =    38.40       SUBAREA RUNOFF(CFS) =   40.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.283
  TOTAL AREA(ACRES) =      112.5         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOW VELOCITY(FEET/SEC.) =   2.32
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =    4280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    442.00  DOWNSTREAM(FEET) =    428.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2200.00   CHANNEL SLOPE =  0.0060
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.646
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2300
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.05
  AVERAGE FLOW DEPTH(FEET) =   1.11   TRAVEL TIME(MIN.) =  17.92
  Tc(MIN.) =   34.64
  SUBAREA AREA(ACRES) =    46.50       SUBAREA RUNOFF(CFS) =   28.30
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.267
  TOTAL AREA(ACRES) =      159.0         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   2.00
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =    6480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    428.80  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   620.00   CHANNEL SLOPE =  0.0053
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.411
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2290
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     139.44
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.92
  AVERAGE FLOW DEPTH(FEET) =   1.11   TRAVEL TIME(MIN.) =   5.38
  Tc(MIN.) =   40.02
  SUBAREA AREA(ACRES) =    17.00       SUBAREA RUNOFF(CFS) =    9.39
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.264
  TOTAL AREA(ACRES) =      176.0         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.09   FLOW VELOCITY(FEET/SEC.) =   1.90
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    7100.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
============================================================================
```

```
****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =   1010.00
  DOWNSTREAM ELEVATION(FEET) =    970.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    970.00  DOWNSTREAM(FEET) =    450.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1500.00   CHANNEL SLOPE =  0.3467
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.144
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.34
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   3.40
  Tc(MIN.) =    9.38
  SUBAREA AREA(ACRES) =    11.70       SUBAREA RUNOFF(CFS) =   21.57
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       11.8         PEAK FLOW RATE(CFS) =      21.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   9.14
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    450.00  DOWNSTREAM(FEET) =    429.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2350.00   CHANNEL SLOPE =  0.0087
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.767
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2750
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.71
  AVERAGE FLOW DEPTH(FEET) =   0.61   TRAVEL TIME(MIN.) =  22.94
  Tc(MIN.) =   32.32
  SUBAREA AREA(ACRES) =    50.00       SUBAREA RUNOFF(CFS) =   38.05
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.280
  TOTAL AREA(ACRES) =       61.8         PEAK FLOW RATE(CFS) =      47.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3930.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.32
  RAINFALL INTENSITY(INCH/HR) =   2.77
  TOTAL STREAM AREA(ACRES) =    61.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.84

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
```

```
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    707.00
  DOWNSTREAM ELEVATION(FEET) =    657.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1040.00   CHANNEL SLOPE =  0.2163
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.053
  *USER SPECIFIED(SUBAREA):
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.78
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   3.63
  Tc(MIN.) =    9.60
  SUBAREA AREA(ACRES) =     5.00       SUBAREA RUNOFF(CFS) =    8.78
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.291
  TOTAL AREA(ACRES) =        5.3         PEAK FLOW RATE(CFS) =       9.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.27   FLOW VELOCITY(FEET/SEC.) =   5.90
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1120.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    429.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0100
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.003
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2250
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.26
  AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   3.30
  Tc(MIN.) =   12.91
  SUBAREA AREA(ACRES) =     2.40       SUBAREA RUNOFF(CFS) =    2.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.270
  TOTAL AREA(ACRES) =        7.7         PEAK FLOW RATE(CFS) =      10.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   1.27
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    203.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.91
  RAINFALL INTENSITY(INCH/HR) =   5.00
  TOTAL STREAM AREA(ACRES) =     7.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.84    32.32        2.767         61.80
      2       10.41    12.91        5.003          7.70

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

  ** PEAK FLOW RATE TABLE **
```

```
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       29.51    12.91       5.003
      2       53.60    32.32       2.767

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.60   Tc(MIN.) =   32.32
  TOTAL AREA(ACRES) =       69.5
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3930.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    429.50  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   760.00   CHANNEL SLOPE =  0.0053
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.386
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2470
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      55.37
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.52
  AVERAGE FLOW DEPTH(FEET) =   0.76   TRAVEL TIME(MIN.) =   8.35
  Tc(MIN.) =   40.67
  SUBAREA AREA(ACRES) =     6.00       SUBAREA RUNOFF(CFS) =    3.54
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.276
  TOTAL AREA(ACRES) =       75.5         PEAK FLOW RATE(CFS) =      53.60

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.75   FLOW VELOCITY(FEET/SEC.) =   1.50
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   40.67
  RAINFALL INTENSITY(INCH/HR) =   2.39
  TOTAL STREAM AREA(ACRES) =    75.50
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.60

****************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    575.00
  DOWNSTREAM ELEVATION(FEET) =    548.00
  ELEVATION DIFFERENCE(FEET) =     27.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    548.00  DOWNSTREAM(FEET) =    432.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =   820.00   CHANNEL SLOPE =  0.1405
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.200
  *USER SPECIFIED(SUBAREA):
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.17
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   3.27
  Tc(MIN.) =    9.25
  SUBAREA AREA(ACRES) =     5.50       SUBAREA RUNOFF(CFS) =    9.89
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.290
  TOTAL AREA(ACRES) =        5.6         PEAK FLOW RATE(CFS) =      10.07
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   5.22
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.80  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   780.00   CHANNEL SLOPE =  0.0094
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.880
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2620
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.32
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   9.88
  Tc(MIN.) =   19.14
  SUBAREA AREA(ACRES) =     5.70       SUBAREA RUNOFF(CFS) =    5.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.276
  TOTAL AREA(ACRES) =       11.3         PEAK FLOW RATE(CFS) =      12.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    110.00 =    1680.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.14
  RAINFALL INTENSITY(INCH/HR) =   3.88
  TOTAL STREAM AREA(ACRES) =    11.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       53.60    40.67        2.386         75.50
      2       12.10    19.14        3.880         11.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       45.06    19.14       3.880
      2       61.04    40.67       2.386

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.04   Tc(MIN.) =   40.67
  TOTAL AREA(ACRES) =       86.8
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4690.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       61.04    40.67       2.386       86.80
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4690.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      134.75    40.02       2.411      176.00
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    7100.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     194.81      40.02        2.411
      2     194.40      40.67        2.386

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
```

```
  PEAK FLOW RATE(CFS) =     194.81   Tc(MIN.) =   40.02
  TOTAL AREA(ACRES) =      262.8
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      262.8  TC(MIN.) =     40.02
  PEAK FLOW RATE(CFS)   =     194.81
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

♀

AES Output and Results
(Post-Project Conditions)

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

            RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
            Reference: SAN DIEGO COUNTY FLOOD CONTROL DISTRICT
                         2003,1985,1981 HYDROLOGY MANUAL
         (c) Copyright 1982-2014 Advanced Engineering Software (aes)
             Ver. 21.0 Release Date: 06/01/2014  License ID 1261

                           Analysis prepared by:

                          RICK ENGINEERING COMPANY
                              5620 Friars Road
                         San Diego, California 92110
                       619-291-0707   Fax 619-291-4165

 ************************* DESCRIPTION OF STUDY *************************
* RANCHO GUEJITO TASTING FACILITY AND EVENT CENTER - LOCAL HYDROLOGY ANALY *
* PROPOSED CONDITIONS (100-YEAR STROM EVENT)                               *
* RICK ENGINEERING COMPANY, 2019                                           *
 ************************************************************************

  FILE NAME: RGW_P00.DAT
  TIME/DATE OF STUDY: 05:19 10/24/2019
----------------------------------------------------------------------------
  USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:
----------------------------------------------------------------------------
  2003 SAN DIEGO MANUAL CRITERIA

  USER SPECIFIED STORM EVENT(YEAR) = 100.00
  6-HOUR DURATION PRECIPITATION (INCHES) =   3.500
  SPECIFIED MINIMUM PIPE SIZE(INCH) =   6.00
  SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.90
  SAN DIEGO HYDROLOGY MANUAL "C"-VALUES USED FOR RATIONAL METHOD
  NOTE: USE MODIFIED RATIONAL METHOD PROCEDURES FOR CONFLUENCE ANALYSIS
  *USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL*
     HALF-  CROWN TO   STREET-CROSSFALL:   CURB  GUTTER-GEOMETRIES:  MANNING
     WIDTH  CROSSFALL  IN-  / OUT-/PARK-  HEIGHT  WIDTH  LIP   HIKE  FACTOR
NO.   (FT)     (FT)    SIDE / SIDE/ WAY    (FT)    (FT)  (FT)  (FT)    (n)
===  =====  =========  ================  ======  ===== ====== ===== =======
  1   30.0     20.0    0.018/0.018/0.020   0.67    2.00 0.0313 0.167 0.0150

  GLOBAL STREET FLOW-DEPTH CONSTRAINTS:
    1. Relative Flow-Depth =  0.00 FEET
       as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
    2. (Depth)*(Velocity) Constraint =  6.0 (FT*FT/S)
  *SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
   OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

****************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =   1520.00
  DOWNSTREAM ELEVATION(FEET) =   1480.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =   1480.00  DOWNSTREAM(FEET) =    450.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  3300.00   CHANNEL SLOPE =  0.3121
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.743
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      65.61
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =  12.38
  AVERAGE FLOW DEPTH(FEET) =   0.74   TRAVEL TIME(MIN.) =   4.44
  Tc(MIN.) =   10.42
  SUBAREA AREA(ACRES) =    74.00       SUBAREA RUNOFF(CFS) =  127.48
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       74.1         PEAK FLOW RATE(CFS) =     127.66
```

```
  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.05   FLOW VELOCITY(FEET/SEC.) =  14.96
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    102.00 =    3380.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    102.00 TO NODE    103.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    450.00  DOWNSTREAM(FEET) =    442.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =   900.00   CHANNEL SLOPE =  0.0089
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  4.233
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2500
  SOIL CLASSIFICATION IS "B"
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     148.05
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.38
  AVERAGE FLOW DEPTH(FEET) =   1.02   TRAVEL TIME(MIN.) =   6.30
  Tc(MIN.) =   16.72
  SUBAREA AREA(ACRES) =    38.40       SUBAREA RUNOFF(CFS) =   40.64
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.283
  TOTAL AREA(ACRES) =      112.5         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.98   FLOW VELOCITY(FEET/SEC.) =   2.32
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    103.00 =    4280.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    103.00 TO NODE    104.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    442.00  DOWNSTREAM(FEET) =    428.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2200.00   CHANNEL SLOPE =  0.0060
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.646
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2300
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     149.01
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.05
  AVERAGE FLOW DEPTH(FEET) =   1.11   TRAVEL TIME(MIN.) =  17.92
  Tc(MIN.) =   34.64
  SUBAREA AREA(ACRES) =    46.50       SUBAREA RUNOFF(CFS) =   28.30
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.267
  TOTAL AREA(ACRES) =      159.0         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.07   FLOW VELOCITY(FEET/SEC.) =   2.00
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    104.00 =    6480.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    104.00 TO NODE    105.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    428.80  DOWNSTREAM(FEET) =    427.90
  CHANNEL LENGTH THRU SUBAREA(FEET) =   330.00   CHANNEL SLOPE =  0.0027
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.479
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2620
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.60
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.49
  AVERAGE FLOW DEPTH(FEET) =   1.26   TRAVEL TIME(MIN.) =   3.68
  Tc(MIN.) =   38.32
  SUBAREA AREA(ACRES) =     5.70       SUBAREA RUNOFF(CFS) =    3.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.267
  TOTAL AREA(ACRES) =      164.7         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.25   FLOW VELOCITY(FEET/SEC.) =   1.49
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    105.00 =    6810.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    105.00 TO NODE    106.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
```

```
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    427.90  DOWNSTREAM(FEET) =    426.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   225.00   CHANNEL SLOPE =  0.0062
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.429
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .3180
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.87
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   3.04
  AVERAGE FLOW DEPTH(FEET) =   2.06   TRAVEL TIME(MIN.) =   1.23
  Tc(MIN.) =   39.55
  SUBAREA AREA(ACRES) =     2.90       SUBAREA RUNOFF(CFS) =    2.24
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.268
  TOTAL AREA(ACRES) =      167.6         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.06   FLOW VELOCITY(FEET/SEC.) =   3.02
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    106.00 =    7035.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    106.00 TO NODE    107.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    426.50  DOWNSTREAM(FEET) =    425.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =   270.00   CHANNEL SLOPE =  0.0026
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.351
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2500
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     135.42
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.18
  AVERAGE FLOW DEPTH(FEET) =   2.44   TRAVEL TIME(MIN.) =   2.07
  Tc(MIN.) =   41.62
  SUBAREA AREA(ACRES) =     2.30       SUBAREA RUNOFF(CFS) =    1.35
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.268
  TOTAL AREA(ACRES) =      169.9         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.44   FLOW VELOCITY(FEET/SEC.) =   2.18
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    107.00 =    7305.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    107.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
==============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    425.80  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   340.00   CHANNEL SLOPE =  0.0009
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.219
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .3970
  S.C.S. CURVE NUMBER (AMC II) =  85
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =     136.02
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.46
  AVERAGE FLOW DEPTH(FEET) =   3.00   TRAVEL TIME(MIN.) =   3.88
  Tc(MIN.) =   45.50
  SUBAREA AREA(ACRES) =     2.90       SUBAREA RUNOFF(CFS) =    2.56
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.270
  TOTAL AREA(ACRES) =      172.8         PEAK FLOW RATE(CFS) =     134.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  2.99   FLOW VELOCITY(FEET/SEC.) =   1.45
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    7645.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  10
----------------------------------------------------------------------------
  >>>>>MAIN-STREAM MEMORY COPIED ONTO MEMORY BANK # 1 <<<<<
==============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
==============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
```

```
  UPSTREAM ELEVATION(FEET) =   1010.00
  DOWNSTREAM ELEVATION(FEET) =    970.00
  ELEVATION DIFFERENCE(FEET) =     40.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    201.00 TO NODE    202.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    970.00  DOWNSTREAM(FEET) =    450.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1500.00   CHANNEL SLOPE =  0.3467
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.144
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      11.24
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   7.34
  AVERAGE FLOW DEPTH(FEET) =   0.26   TRAVEL TIME(MIN.) =   3.40
  Tc(MIN.) =    9.38
  SUBAREA AREA(ACRES) =    11.70       SUBAREA RUNOFF(CFS) =   21.57
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.300
  TOTAL AREA(ACRES) =       11.8         PEAK FLOW RATE(CFS) =      21.75

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.39   FLOW VELOCITY(FEET/SEC.) =   9.14
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    202.00 =    1580.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    202.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    450.00  DOWNSTREAM(FEET) =    429.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =  2350.00   CHANNEL SLOPE =  0.0087
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.767
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2750
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      41.88
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.71
  AVERAGE FLOW DEPTH(FEET) =   0.61   TRAVEL TIME(MIN.) =  22.94
  Tc(MIN.) =   32.32
  SUBAREA AREA(ACRES) =    50.00       SUBAREA RUNOFF(CFS) =   38.05
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.280
  TOTAL AREA(ACRES) =       61.8         PEAK FLOW RATE(CFS) =      47.84

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.64   FLOW VELOCITY(FEET/SEC.) =   1.76
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3930.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   32.32
  RAINFALL INTENSITY(INCH/HR) =   2.77
  TOTAL STREAM AREA(ACRES) =    61.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     47.84

****************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    707.00
  DOWNSTREAM ELEVATION(FEET) =    657.00
  ELEVATION DIFFERENCE(FEET) =     50.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
```

```
  SUBAREA RUNOFF(CFS) =      0.74
  TOTAL AREA(ACRES) =      0.30   TOTAL RUNOFF(CFS) =      0.74

****************************************************************************
  FLOW PROCESS FROM NODE    301.00 TO NODE    302.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    657.00  DOWNSTREAM(FEET) =    432.00
  CHANNEL LENGTH THRU SUBAREA(FEET) =  1040.00   CHANNEL SLOPE =  0.2163
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.053
  *USER SPECIFIED(SUBAREA):
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.22
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.78
  AVERAGE FLOW DEPTH(FEET) =   0.20   TRAVEL TIME(MIN.) =   3.63
  Tc(MIN.) =    9.60
  SUBAREA AREA(ACRES) =     5.00       SUBAREA RUNOFF(CFS) =    8.78
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.291
  TOTAL AREA(ACRES) =        5.3         PEAK FLOW RATE(CFS) =       9.32

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.27   FLOW VELOCITY(FEET/SEC.) =   5.90
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    302.00 =    1120.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    302.00 TO NODE    203.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    432.00  DOWNSTREAM(FEET) =    429.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   250.00   CHANNEL SLOPE =  0.0100
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  5.003
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2250
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      10.68
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.26
  AVERAGE FLOW DEPTH(FEET) =   0.32   TRAVEL TIME(MIN.) =   3.30
  Tc(MIN.) =   12.91
  SUBAREA AREA(ACRES) =     2.40       SUBAREA RUNOFF(CFS) =    2.70
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.270
  TOTAL AREA(ACRES) =        7.7         PEAK FLOW RATE(CFS) =      10.41

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   1.27
  LONGEST FLOWPATH FROM NODE    300.00 TO NODE    203.00 =    1370.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    203.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   12.91
  RAINFALL INTENSITY(INCH/HR) =   5.00
  TOTAL STREAM AREA(ACRES) =     7.70
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     10.41

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       47.84    32.32        2.767         61.80
      2       10.41    12.91        5.003          7.70

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF       Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       29.51    12.91       5.003
      2       53.60    32.32       2.767

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      53.60   Tc(MIN.) =   32.32
  TOTAL AREA(ACRES) =       69.5
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    203.00 =    3930.00 FEET.
```

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****************************************************************************
  FLOW PROCESS FROM NODE    203.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    429.50  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   982.00   CHANNEL SLOPE =  0.0041
  CHANNEL BASE(FEET) =    1.00   "Z" FACTOR =  10.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   2.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  2.405
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .3150
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      57.12
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   2.08
  AVERAGE FLOW DEPTH(FEET) =   1.61   TRAVEL TIME(MIN.) =   7.86
  Tc(MIN.) =   40.18
  SUBAREA AREA(ACRES) =     9.30       SUBAREA RUNOFF(CFS) =    7.04
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.283
  TOTAL AREA(ACRES) =       78.8         PEAK FLOW RATE(CFS) =      53.62

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  1.57   FLOW VELOCITY(FEET/SEC.) =   2.05
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4912.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  1 ARE:
  TIME OF CONCENTRATION(MIN.) =   40.18
  RAINFALL INTENSITY(INCH/HR) =   2.40
  TOTAL STREAM AREA(ACRES) =    78.80
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     53.62

****************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =  21
----------------------------------------------------------------------------
  >>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
============================================================================
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .3000
  SOIL CLASSIFICATION IS "C"
  S.C.S. CURVE NUMBER (AMC II) =  63
  INITIAL SUBAREA FLOW-LENGTH(FEET) =    80.00
  UPSTREAM ELEVATION(FEET) =    575.00
  DOWNSTREAM ELEVATION(FEET) =    548.00
  ELEVATION DIFFERENCE(FEET) =     27.00
  SUBAREA OVERLAND TIME OF FLOW(MIN.) =    5.979
  WARNING: THE MAXIMUM OVERLAND FLOW SLOPE, 10.%, IS USED IN Tc CALCULATION!
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  8.217
  SUBAREA RUNOFF(CFS) =      0.25
  TOTAL AREA(ACRES) =      0.10   TOTAL RUNOFF(CFS) =      0.25

****************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
  ELEVATION DATA: UPSTREAM(FEET) =    548.00  DOWNSTREAM(FEET) =    432.80
  CHANNEL LENGTH THRU SUBAREA(FEET) =   820.00   CHANNEL SLOPE =  0.1405
  CHANNEL BASE(FEET) =    5.00   "Z" FACTOR =   3.000
  MANNING'S FACTOR = 0.045   MAXIMUM DEPTH(FEET) =   5.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  6.200
  *USER SPECIFIED(SUBAREA):
  SAGEBRUSH FAIR COVER RUNOFF COEFFICIENT = .2900
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =       5.31
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   4.17
  AVERAGE FLOW DEPTH(FEET) =   0.22   TRAVEL TIME(MIN.) =   3.27
  Tc(MIN.) =    9.25
  SUBAREA AREA(ACRES) =     5.50       SUBAREA RUNOFF(CFS) =    9.89
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.290
  TOTAL AREA(ACRES) =        5.6         PEAK FLOW RATE(CFS) =      10.07

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.32   FLOW VELOCITY(FEET/SEC.) =   5.22
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    402.00 =     900.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    110.00 IS CODE =  51
----------------------------------------------------------------------------
  >>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<
  >>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<
============================================================================
```

```
  ELEVATION DATA: UPSTREAM(FEET) =    432.80  DOWNSTREAM(FEET) =    425.50
  CHANNEL LENGTH THRU SUBAREA(FEET) =   780.00   CHANNEL SLOPE =  0.0094
  CHANNEL BASE(FEET) =   10.00   "Z" FACTOR =  50.000
  MANNING'S FACTOR = 0.040   MAXIMUM DEPTH(FEET) =   3.00
   100 YEAR RAINFALL INTENSITY(INCH/HOUR) =  3.880
  *USER SPECIFIED(SUBAREA):
  VINEYARDS(DISKED) COVER RUNOFF COEFFICIENT = .2620
  S.C.S. CURVE NUMBER (AMC II) =  63
  TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) =      13.00
  TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) =   1.32
  AVERAGE FLOW DEPTH(FEET) =   0.36   TRAVEL TIME(MIN.) =   9.88
  Tc(MIN.) =   19.14
  SUBAREA AREA(ACRES) =     5.70       SUBAREA RUNOFF(CFS) =    5.79
  AREA-AVERAGE RUNOFF COEFFICIENT =  0.276
  TOTAL AREA(ACRES) =       11.3         PEAK FLOW RATE(CFS) =      12.10

  END OF SUBAREA CHANNEL FLOW HYDRAULICS:
  DEPTH(FEET) =  0.35   FLOW VELOCITY(FEET/SEC.) =   1.28
  LONGEST FLOWPATH FROM NODE    400.00 TO NODE    110.00 =    1680.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
  >>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
============================================================================
  TOTAL NUMBER OF STREAMS =  2
  CONFLUENCE VALUES USED FOR INDEPENDENT STREAM  2 ARE:
  TIME OF CONCENTRATION(MIN.) =   19.14
  RAINFALL INTENSITY(INCH/HR) =   3.88
  TOTAL STREAM AREA(ACRES) =    11.30
  PEAK FLOW RATE(CFS) AT CONFLUENCE =     12.10

  ** CONFLUENCE DATA **
  STREAM     RUNOFF       Tc      INTENSITY      AREA
  NUMBER      (CFS)     (MIN.)   (INCH/HOUR)    (ACRE)
      1       53.62    40.18        2.405         78.80
      2       12.10    19.14        3.880         11.30

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

  ** PEAK FLOW RATE TABLE **
  STREAM     RUNOFF      Tc      INTENSITY
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)
      1       45.33    19.14       3.880
      2       61.12    40.18       2.405

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =      61.12   Tc(MIN.) =   40.18
  TOTAL AREA(ACRES) =       90.1
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4912.00 FEET.

****************************************************************************
  FLOW PROCESS FROM NODE    110.00 TO NODE    110.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>CONFLUENCE MEMORY BANK # 1 WITH THE MAIN-STREAM MEMORY<<<<<
============================================================================

  ** MAIN STREAM CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1       61.12    40.18       2.405       90.10
  LONGEST FLOWPATH FROM NODE    200.00 TO NODE    110.00 =    4912.00 FEET.

  ** MEMORY BANK #  1 CONFLUENCE DATA **
  STREAM     RUNOFF      Tc      INTENSITY     AREA
  NUMBER      (CFS)    (MIN.)   (INCH/HOUR)   (ACRE)
      1      134.75    45.50       2.219      172.80
  LONGEST FLOWPATH FROM NODE    100.00 TO NODE    110.00 =    7645.00 FEET.

  ** PEAK FLOW RATE TABLE **
  STREAM    RUNOFF       Tc      INTENSITY
  NUMBER     (CFS)     (MIN.)   (INCH/HOUR)
      1     180.10      40.18        2.405
      2     191.15      45.50        2.219

  COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:
  PEAK FLOW RATE(CFS) =     191.15   Tc(MIN.) =   45.50
  TOTAL AREA(ACRES) =      262.9
============================================================================
  END OF STUDY SUMMARY:
  TOTAL AREA(ACRES)     =      262.9  TC(MIN.) =     45.50
  PEAK FLOW RATE(CFS)   =     191.15
============================================================================
============================================================================
  END OF RATIONAL METHOD ANALYSIS
```

♀

Appendix D

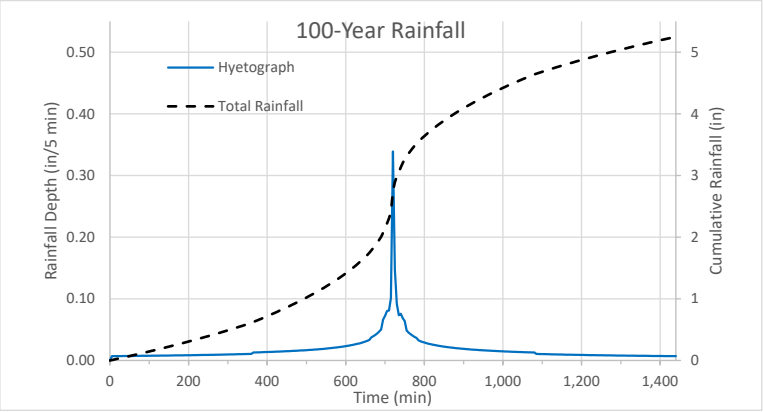
HEC-HMS Hydrologic Analysis Support Material and Results

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
30	0.833
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
-	0	0	0	0
287	0.007	0.007	0.219	5
285	0.014	0.007	0.220	10
283	0.021	0.007	0.221	15
281	0.028	0.0071	0.222	20
279	0.035	0.0071	0.223	25
277	0.042	0.0071	0.224	30
275	0.050	0.0072	0.225	35
273	0.057	0.0072	0.226	40
271	0.064	0.0072	0.227	45
269	0.071	0.0073	0.228	50
267	0.079	0.0073	0.229	55
265	0.086	0.0073	0.230	60
263	0.093	0.0074	0.231	65
261	0.101	0.0074	0.232	70
259	0.108	0.0074	0.234	75
257	0.116	0.0075	0.235	80
255	0.123	0.0075	0.236	85
253	0.131	0.0075	0.237	90
251	0.138	0.0076	0.238	95
249	0.146	0.0076	0.239	100
247	0.153	0.0077	0.241	105
245	0.161	0.0077	0.242	110
243	0.169	0.0077	0.243	115
241	0.177	0.0078	0.244	120
239	0.184	0.0078	0.245	125
237	0.192	0.0079	0.247	130
235	0.200	0.0079	0.248	135
233	0.208	0.0079	0.249	140
231	0.216	0.008	0.251	145
229	0.224	0.008	0.252	150
227	0.232	0.0081	0.253	155
225	0.240	0.0081	0.255	160
223	0.249	0.0082	0.256	165
221	0.257	0.0082	0.258	170
219	0.265	0.0083	0.259	175
217	0.273	0.0083	0.261	180
215	0.282	0.0083	0.262	185
213	0.290	0.0084	0.26	190
211	0.298	0.0084	0.27	195
209	0.307	0.0085	0.27	200
207	0.315	0.0085	0.27	205
205	0.324	0.0086	0.27	210
203	0.333	0.0086	0.27	215
201	0.341	0.0087	0.27	220
199	0.350	0.0088	0.28	225
197	0.359	0.0088	0.28	230
195	0.368	0.0089	0.28	235
193	0.377	0.0089	0.28	240
191	0.386	0.009	0.28	245
189	0.395	0.009	0.28	250

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
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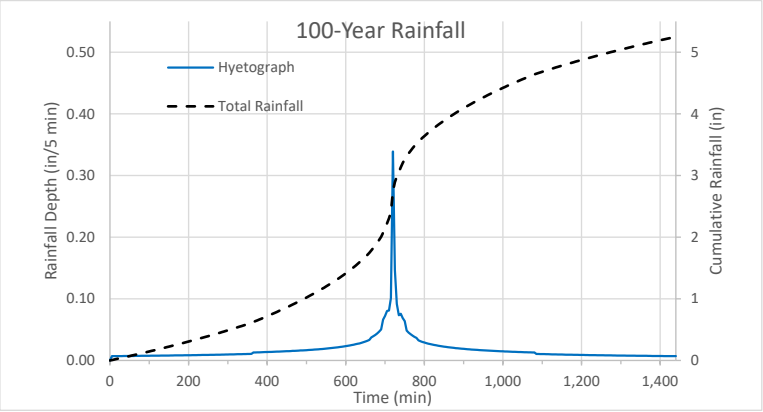
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



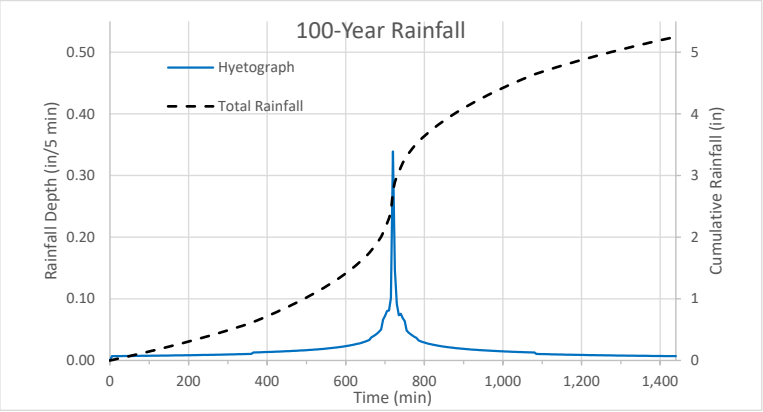
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
187	0.404	0.0091	0.29	255
185	0.413	0.0092	0.29	260
183	0.422	0.0092	0.29	265
181	0.432	0.0093	0.29	270
179	0.441	0.0093	0.29	275
177	0.450	0.0094	0.30	280
175	0.460	0.0095	0.30	285
173	0.469	0.0095	0.30	290
171	0.479	0.0096	0.30	295
169	0.489	0.0097	0.30	300
167	0.498	0.0098	0.31	305
165	0.508	0.0098	0.31	310
163	0.518	0.0099	0.31	315
161	0.528	0.01	0.31	320
159	0.538	0.0101	0.32	325
157	0.548	0.0101	0.32	330
155	0.559	0.0102	0.32	335
153	0.569	0.0103	0.32	340
151	0.579	0.0104	0.33	345
149	0.590	0.0105	0.33	350
147	0.600	0.0106	0.33	355
145	0.611	0.0107	0.33	360
143	0.624	0.0129	0.34	365
141	0.637	0.013	0.34	370
139	0.650	0.0131	0.34	375
137	0.663	0.0132	0.35	380
135	0.677	0.0134	0.35	385
133	0.690	0.0135	0.35	390
131	0.704	0.0136	0.35	395
129	0.717	0.0137	0.36	400
127	0.731	0.0138	0.36	405
125	0.745	0.0139	0.36	410
123	0.759	0.014	0.37	415
121	0.773	0.0142	0.37	420
119	0.788	0.0143	0.37	425
117	0.802	0.0144	0.38	430
115	0.817	0.0146	0.38	435
113	0.831	0.0147	0.38	440
111	0.846	0.0148	0.39	445
109	0.861	0.015	0.39	450
107	0.876	0.0151	0.39	455
105	0.892	0.0153	0.40	460
103	0.907	0.0155	0.40	465
101	0.923	0.0156	0.41	470
99	0.939	0.0158	0.41	475
97	0.955	0.016	0.42	480
95	0.971	0.0162	0.42	485
93	0.987	0.0163	0.43	490
91	1.004	0.0165	0.43	495
89	1.020	0.0167	0.44	500
87	1.037	0.0169	0.44	505

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
30	0.833
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



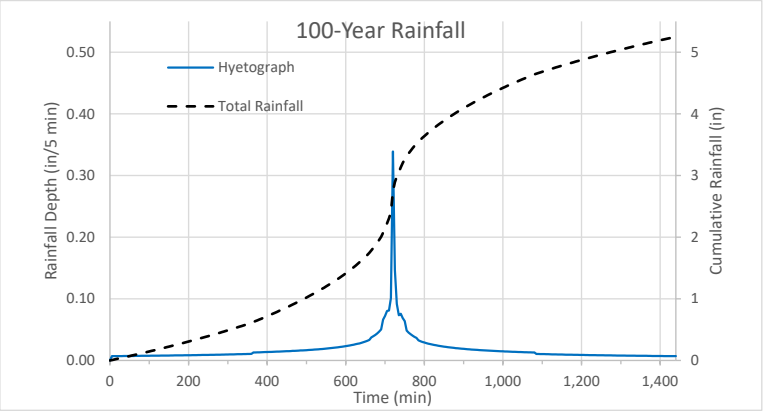
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
85	1.054	0.0172	0.45	510
83	1.072	0.0174	0.45	515
81	1.089	0.0176	0.46	520
79	1.107	0.0179	0.46	525
77	1.125	0.0181	0.47	530
75	1.144	0.0184	0.48	535
73	1.162	0.0186	0.49	540
71	1.181	0.0189	0.49	545
69	1.201	0.0192	0.50	550
67	1.220	0.0195	0.51	555
65	1.240	0.0199	0.52	560
63	1.260	0.0202	0.53	565
61	1.281	0.0206	0.53	570
59	1.302	0.0209	0.54	575
57	1.323	0.0213	0.55	580
55	1.345	0.0218	0.57	585
53	1.367	0.0222	0.58	590
51	1.390	0.0227	0.59	595
49	1.413	0.0232	0.60	600
47	1.437	0.0237	0.62	605
45	1.461	0.0243	0.63	610
43	1.486	0.0249	0.65	615
41	1.511	0.0255	0.66	620
39	1.538	0.0263	0.68	625
37	1.565	0.027	0.70	630
35	1.592	0.0276	0.72	635
33	1.621	0.0286	0.74	640
31	1.650	0.0296	0.77	645
29	1.681	0.0307	0.80	650
27	1.713	0.0319	0.83	655
25	1.746	0.0333	0.87	660
23	1.784	0.0374	0.90	665
21	1.823	0.0392	0.95	670
19	1.864	0.0413	1.00	675
17	1.908	0.0438	1.06	680
15	1.955	0.0468	1.13	685
13	2.005	0.0504	1.21	690
11	2.071	0.0662	1.31	695
9	2.143	0.0721	1.42	700
7	2.224	0.0803	1.57	705
5	2.305	0.081	1.82	710
3	2.406	0.101	2.35	715
1	2.745	0.339	4.07	720
2	2.892	0.147	2.92	725
4	2.983	0.0918	2.04	730
6	3.057	0.0733	1.67	735
8	3.132	0.0758	1.48	740
10	3.201	0.0689	1.36	745
12	3.265	0.0638	1.26	750
14	3.314	0.0485	1.17	755
16	3.359	0.0452	1.09	760

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
30	0.833
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



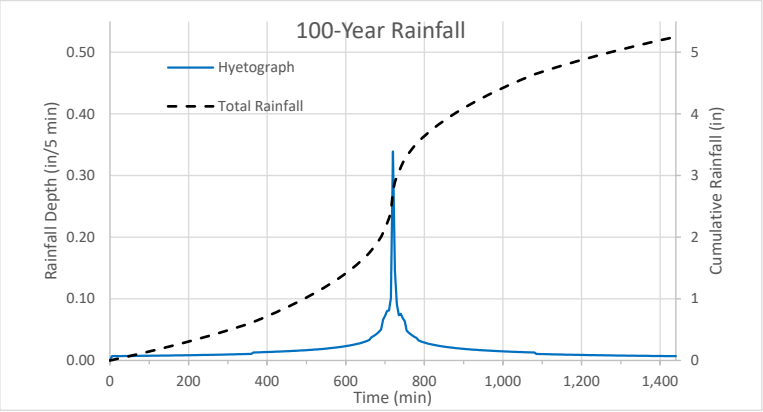
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
18	3.401	0.0425	1.03	765
20	3.441	0.0402	0.97	770
22	3.480	0.0382	0.93	775
24	3.516	0.0366	0.89	780
26	3.549	0.0326	0.85	785
28	3.580	0.0313	0.81	790
30	3.610	0.0301	0.78	795
32	3.639	0.0291	0.76	800
34	3.667	0.0281	0.73	805
36	3.695	0.0272	0.71	810
38	3.721	0.0266	0.69	815
40	3.747	0.0259	0.67	820
42	3.772	0.0252	0.65	825
44	3.797	0.0246	0.64	830
46	3.821	0.024	0.62	835
48	3.844	0.0234	0.61	840
50	3.867	0.0229	0.60	845
52	3.890	0.0224	0.58	850
54	3.912	0.022	0.57	855
56	3.933	0.0215	0.56	860
58	3.954	0.0211	0.55	865
60	3.975	0.0208	0.54	870
62	3.995	0.0204	0.53	875
64	4.015	0.02	0.52	880
66	4.035	0.0197	0.51	885
68	4.055	0.0194	0.50	890
70	4.074	0.0191	0.50	895
72	4.092	0.0188	0.49	900
74	4.111	0.0185	0.48	905
76	4.129	0.0182	0.47	910
78	4.147	0.018	0.47	915
80	4.165	0.0177	0.46	920
82	4.182	0.0175	0.46	925
84	4.200	0.0173	0.45	930
86	4.217	0.0171	0.44	935
88	4.234	0.0168	0.44	940
90	4.250	0.0166	0.43	945
92	4.267	0.0164	0.43	950
94	4.283	0.0163	0.42	955
96	4.299	0.0161	0.42	960
98	4.315	0.0159	0.41	965
100	4.331	0.0157	0.41	970
102	4.346	0.0155	0.41	975
104	4.362	0.0154	0.40	980
106	4.377	0.0152	0.40	985
108	4.392	0.0151	0.39	990
110	4.407	0.0149	0.39	995
112	4.422	0.0148	0.39	1,000
114	4.436	0.0146	0.38	1,005
116	4.451	0.0145	0.38	1,010
118	4.465	0.0144	0.37	1,015

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
30	0.833
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



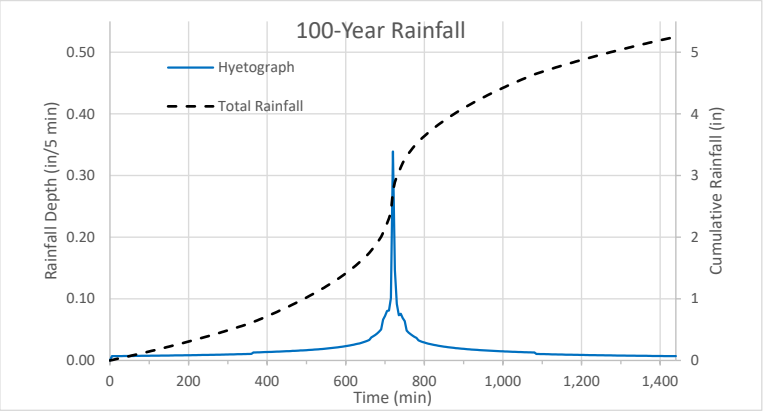
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
120	4.479	0.0142	0.37	1,020
122	4.493	0.0141	0.37	1,025
124	4.507	0.014	0.36	1,030
126	4.521	0.0139	0.36	1,035
128	4.535	0.0137	0.36	1,040
130	4.549	0.0136	0.36	1,045
132	4.562	0.0135	0.35	1,050
134	4.576	0.0134	0.35	1,055
136	4.589	0.0133	0.35	1,060
138	4.602	0.0132	0.34	1,065
140	4.615	0.0131	0.34	1,070
142	4.628	0.013	0.34	1,075
144	4.641	0.0129	0.34	1,080
146	4.652	0.0106	0.33	1,085
148	4.662	0.0105	0.33	1,090
150	4.673	0.0104	0.33	1,095
152	4.683	0.0103	0.33	1,100
154	4.693	0.0103	0.32	1,105
156	4.703	0.0102	0.32	1,110
158	4.713	0.0101	0.32	1,115
160	4.723	0.01	0.32	1,120
162	4.733	0.0099	0.31	1,125
164	4.743	0.0099	0.31	1,130
166	4.753	0.0098	0.31	1,135
168	4.763	0.0097	0.31	1,140
170	4.772	0.0097	0.30	1,145
172	4.782	0.0096	0.30	1,150
174	4.792	0.0095	0.30	1,155
176	4.801	0.0094	0.30	1,160
178	4.810	0.0094	0.30	1,165
180	4.820	0.0093	0.29	1,170
182	4.829	0.0093	0.29	1,175
184	4.838	0.0092	0.29	1,180
186	4.847	0.0091	0.29	1,185
188	4.856	0.0091	0.29	1,190
190	4.865	0.009	0.28	1,195
192	4.874	0.009	0.28	1,200
194	4.883	0.0089	0.28	1,205
196	4.892	0.0088	0.28	1,210
198	4.901	0.0088	0.28	1,215
200	4.910	0.0087	0.27	1,220
202	4.918	0.0087	0.27	1,225
204	4.927	0.0086	0.27	1,230
206	4.935	0.0086	0.27	1,235
208	4.944	0.0085	0.27	1,240
210	4.952	0.0085	0.27	1,245
212	4.961	0.0084	0.26	1,250
214	4.969	0.0084	0.26	1,255
216	4.978	0.0083	0.26	1,260
218	4.986	0.0083	0.26	1,265
220	4.994	0.0082	0.26	1,270

100-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.339
10	0.486
15	0.587
30	0.833
60	1.26
120	1.77
180	2.13
360	2.93
720	4.03
1440	5.25

Time Step = **5** min

Rainfall Sum Check = 5.250 in



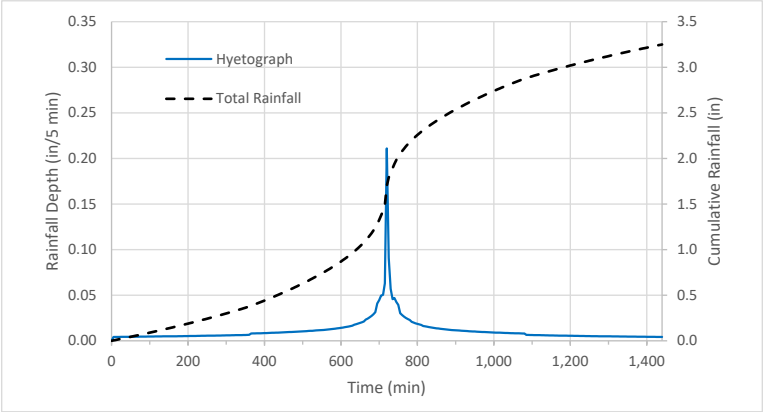
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
222	5.002	0.0082	0.26	1,275
224	5.010	0.0081	0.26	1,280
226	5.018	0.0081	0.25	1,285
228	5.026	0.008	0.25	1,290
230	5.034	0.008	0.25	1,295
232	5.042	0.008	0.25	1,300
234	5.050	0.0079	0.25	1,305
236	5.058	0.0079	0.25	1,310
238	5.066	0.0078	0.25	1,315
240	5.074	0.0078	0.25	1,320
242	5.082	0.0078	0.24	1,325
244	5.089	0.0077	0.24	1,330
246	5.097	0.0077	0.24	1,335
248	5.105	0.0076	0.24	1,340
250	5.112	0.0076	0.24	1,345
252	5.120	0.0076	0.24	1,350
254	5.127	0.0075	0.24	1,355
256	5.135	0.0075	0.24	1,360
258	5.142	0.0075	0.23	1,365
260	5.150	0.0074	0.23	1,370
262	5.157	0.0074	0.23	1,375
264	5.164	0.0073	0.23	1,380
266	5.172	0.0073	0.23	1,385
268	5.179	0.0073	0.23	1,390
270	5.186	0.0072	0.23	1,395
272	5.193	0.0072	0.23	1,400
274	5.201	0.0072	0.23	1,405
276	5.208	0.0071	0.23	1,410
278	5.215	0.0071	0.22	1,415
280	5.222	0.0071	0.22	1,420
282	5.229	0.0071	0.22	1,425
284	5.236	0.007	0.22	1,430
286	5.243	0.007	0.22	1,435
288	5.250	0.007	0.22	1,440

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



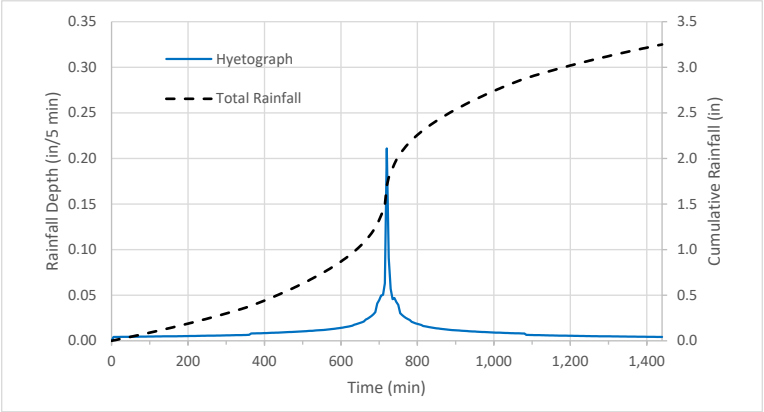
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
-	0	0	0	0
287	0.004	0.0043	0.136	5
285	0.009	0.0043	0.136	10
283	0.013	0.0043	0.137	15
281	0.017	0.0043	0.138	20
279	0.022	0.0044	0.138	25
277	0.026	0.0044	0.139	30
275	0.030	0.0044	0.139	35
273	0.035	0.0044	0.140	40
271	0.039	0.0044	0.141	45
269	0.044	0.0045	0.141	50
267	0.048	0.0045	0.142	55
265	0.053	0.0045	0.143	60
263	0.057	0.0045	0.143	65
261	0.062	0.0045	0.144	70
259	0.066	0.0046	0.145	75
257	0.071	0.0046	0.145	80
255	0.076	0.0046	0.146	85
253	0.080	0.0046	0.147	90
251	0.085	0.0047	0.147	95
249	0.090	0.0047	0.148	100
247	0.094	0.0047	0.149	105
245	0.099	0.0047	0.150	110
243	0.104	0.0048	0.150	115
241	0.109	0.0048	0.151	120
239	0.113	0.0048	0.152	125
237	0.118	0.0048	0.153	130
235	0.123	0.0049	0.154	135
233	0.128	0.0049	0.154	140
231	0.133	0.0049	0.155	145
229	0.138	0.0049	0.156	150
227	0.143	0.005	0.157	155
225	0.148	0.005	0.158	160
223	0.153	0.005	0.159	165
221	0.158	0.005	0.160	170
219	0.163	0.0051	0.161	175
217	0.168	0.0051	0.161	180
215	0.173	0.0051	0.162	185
213	0.178	0.0052	0.16	190
211	0.183	0.0052	0.16	195
209	0.189	0.0052	0.17	200
207	0.194	0.0053	0.17	205
205	0.199	0.0053	0.17	210
203	0.204	0.0053	0.17	215
201	0.210	0.0053	0.17	220
199	0.215	0.0054	0.17	225
197	0.221	0.0054	0.17	230
195	0.226	0.0055	0.17	235
193	0.232	0.0055	0.17	240
191	0.237	0.0055	0.18	245
189	0.243	0.0056	0.18	250

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



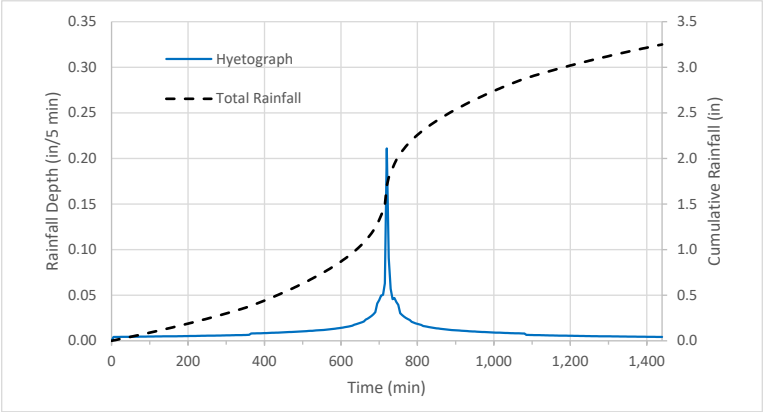
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
187	0.248	0.0056	0.18	255
185	0.254	0.0056	0.18	260
183	0.260	0.0057	0.18	265
181	0.265	0.0057	0.18	270
179	0.271	0.0058	0.18	275
177	0.277	0.0058	0.18	280
175	0.283	0.0058	0.19	285
173	0.288	0.0059	0.19	290
171	0.294	0.0059	0.19	295
169	0.300	0.006	0.19	300
167	0.306	0.006	0.19	305
165	0.312	0.006	0.19	310
163	0.319	0.0061	0.19	315
161	0.325	0.0061	0.19	320
159	0.331	0.0062	0.20	325
157	0.337	0.0062	0.20	330
155	0.343	0.0063	0.20	335
153	0.350	0.0063	0.20	340
151	0.356	0.0064	0.20	345
149	0.363	0.0064	0.20	350
147	0.369	0.0065	0.21	355
145	0.376	0.0066	0.21	360
143	0.384	0.008	0.21	365
141	0.392	0.0081	0.21	370
139	0.400	0.0081	0.21	375
137	0.408	0.0082	0.21	380
135	0.416	0.0083	0.22	385
133	0.425	0.0083	0.22	390
131	0.433	0.0084	0.22	395
129	0.441	0.0085	0.22	400
127	0.450	0.0085	0.22	405
125	0.459	0.0086	0.23	410
123	0.467	0.0087	0.23	415
121	0.476	0.0088	0.23	420
119	0.485	0.0088	0.23	425
117	0.494	0.0089	0.23	430
115	0.503	0.009	0.24	435
113	0.512	0.0091	0.24	440
111	0.521	0.0092	0.24	445
109	0.530	0.0093	0.24	450
107	0.540	0.0094	0.25	455
105	0.549	0.0095	0.25	460
103	0.559	0.0096	0.25	465
101	0.568	0.0097	0.25	470
99	0.578	0.0098	0.26	475
97	0.588	0.0099	0.26	480
95	0.598	0.01	0.26	485
93	0.608	0.0101	0.26	490
91	0.618	0.0102	0.27	495
89	0.629	0.0104	0.27	500
87	0.639	0.0105	0.27	505

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



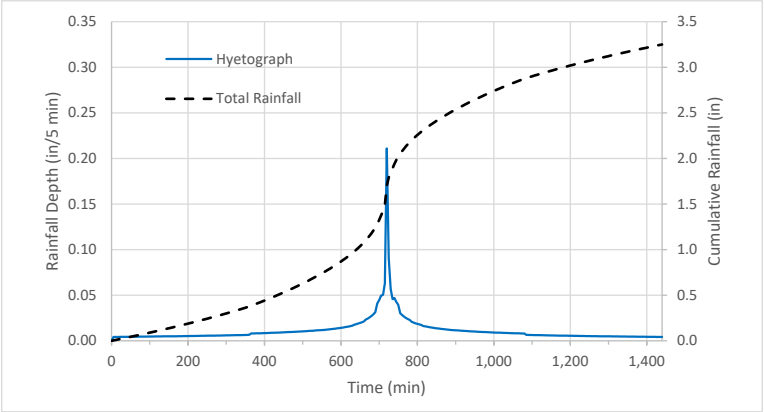
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
85	0.650	0.0106	0.28	510
83	0.660	0.0108	0.28	515
81	0.671	0.0109	0.29	520
79	0.682	0.011	0.29	525
77	0.694	0.0112	0.29	530
75	0.705	0.0114	0.30	535
73	0.717	0.0115	0.30	540
71	0.728	0.0116	0.31	545
69	0.740	0.0118	0.31	550
67	0.752	0.0119	0.32	555
65	0.764	0.0121	0.32	560
63	0.776	0.0124	0.33	565
61	0.789	0.0126	0.33	570
59	0.802	0.0128	0.34	575
57	0.815	0.0131	0.35	580
55	0.828	0.0133	0.35	585
53	0.842	0.0136	0.36	590
51	0.856	0.0139	0.37	595
49	0.870	0.0142	0.37	600
47	0.884	0.0145	0.38	605
45	0.899	0.0149	0.39	610
43	0.914	0.0153	0.40	615
41	0.930	0.0157	0.41	620
39	0.946	0.0161	0.42	625
37	0.963	0.0166	0.44	630
35	0.981	0.0177	0.45	635
33	0.999	0.0183	0.46	640
31	1.018	0.0189	0.48	645
29	1.037	0.0196	0.50	650
27	1.058	0.0204	0.52	655
25	1.079	0.0212	0.54	660
23	1.102	0.0233	0.56	665
21	1.127	0.0244	0.59	670
19	1.152	0.0258	0.62	675
17	1.180	0.0273	0.66	680
15	1.209	0.0291	0.70	685
13	1.240	0.0314	0.75	690
11	1.281	0.0409	0.81	695
9	1.326	0.0446	0.88	700
7	1.375	0.0497	0.97	705
5	1.426	0.0504	1.13	710
3	1.489	0.063	1.46	715
1	1.700	0.211	2.53	720
2	1.791	0.091	1.81	725
4	1.848	0.0571	1.27	730
6	1.893	0.0456	1.04	735
8	1.940	0.0469	0.92	740
10	1.983	0.0426	0.84	745
12	2.022	0.0394	0.78	750
14	2.052	0.0302	0.72	755
16	2.081	0.0282	0.68	760

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



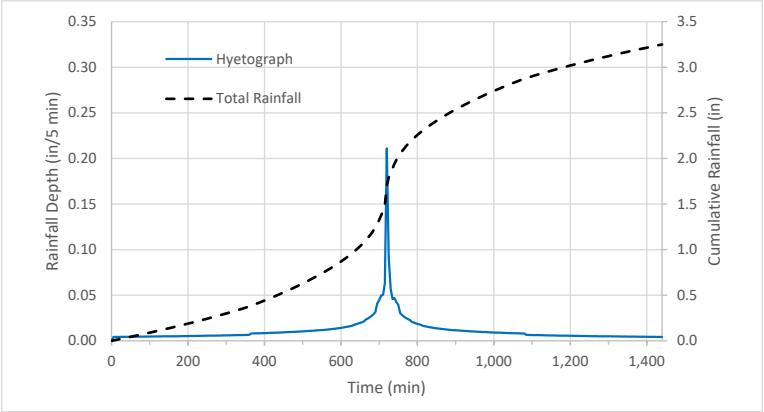
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
18	2.107	0.0265	0.64	765
20	2.132	0.0251	0.60	770
22	2.156	0.0239	0.58	775
24	2.179	0.0228	0.55	780
26	2.200	0.0208	0.53	785
28	2.220	0.02	0.51	790
30	2.239	0.0192	0.49	795
32	2.257	0.0186	0.47	800
34	2.275	0.018	0.46	805
36	2.293	0.0174	0.44	810
38	2.309	0.0163	0.43	815
40	2.325	0.0159	0.42	820
42	2.341	0.0155	0.41	825
44	2.356	0.0151	0.40	830
46	2.370	0.0147	0.39	835
48	2.385	0.0144	0.38	840
50	2.399	0.014	0.37	845
52	2.412	0.0137	0.36	850
54	2.426	0.0135	0.36	855
56	2.439	0.0132	0.35	860
58	2.452	0.0129	0.34	865
60	2.465	0.0127	0.34	870
62	2.477	0.0125	0.33	875
64	2.489	0.0123	0.32	880
66	2.502	0.012	0.32	885
68	2.513	0.0118	0.31	890
70	2.525	0.0117	0.31	895
72	2.537	0.0115	0.30	900
74	2.548	0.0114	0.30	905
76	2.559	0.0113	0.30	910
78	2.570	0.0111	0.29	915
80	2.581	0.011	0.29	920
82	2.592	0.0108	0.28	925
84	2.603	0.0107	0.28	930
86	2.613	0.0105	0.28	935
88	2.624	0.0104	0.27	940
90	2.634	0.0103	0.27	945
92	2.644	0.0102	0.27	950
94	2.654	0.01	0.26	955
96	2.664	0.0099	0.26	960
98	2.674	0.0098	0.26	965
100	2.684	0.0097	0.25	970
102	2.693	0.0096	0.25	975
104	2.703	0.0095	0.25	980
106	2.712	0.0094	0.25	985
108	2.722	0.0093	0.24	990
110	2.731	0.0092	0.24	995
112	2.740	0.0091	0.24	1,000
114	2.749	0.009	0.24	1,005
116	2.758	0.009	0.23	1,010
118	2.767	0.0089	0.23	1,015

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



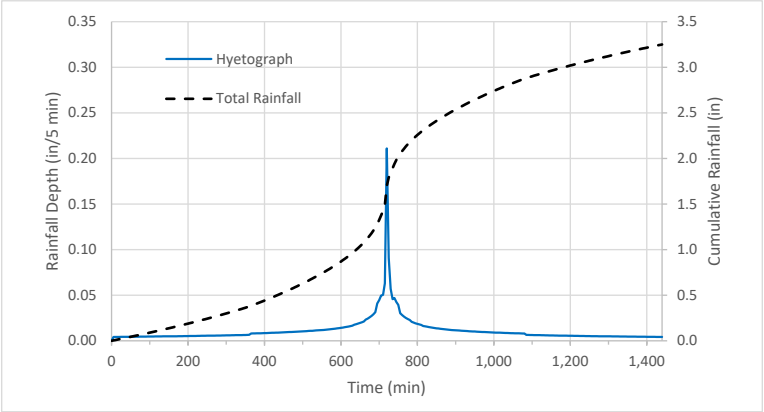
N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
120	2.776	0.0088	0.23	1,020
122	2.784	0.0087	0.23	1,025
124	2.793	0.0086	0.23	1,030
126	2.802	0.0086	0.22	1,035
128	2.810	0.0085	0.22	1,040
130	2.819	0.0084	0.22	1,045
132	2.827	0.0084	0.22	1,050
134	2.835	0.0083	0.22	1,055
136	2.843	0.0082	0.22	1,060
138	2.852	0.0082	0.21	1,065
140	2.860	0.0081	0.21	1,070
142	2.868	0.008	0.21	1,075
144	2.876	0.008	0.21	1,080
146	2.882	0.0065	0.21	1,085
148	2.889	0.0065	0.21	1,090
150	2.895	0.0064	0.20	1,095
152	2.901	0.0064	0.20	1,100
154	2.908	0.0063	0.20	1,105
156	2.914	0.0063	0.20	1,110
158	2.920	0.0062	0.20	1,115
160	2.926	0.0062	0.20	1,120
162	2.932	0.0061	0.19	1,125
164	2.939	0.0061	0.19	1,130
166	2.945	0.006	0.19	1,135
168	2.951	0.006	0.19	1,140
170	2.957	0.0059	0.19	1,145
172	2.962	0.0059	0.19	1,150
174	2.968	0.0059	0.19	1,155
176	2.974	0.0058	0.18	1,160
178	2.980	0.0058	0.18	1,165
180	2.986	0.0057	0.18	1,170
182	2.991	0.0057	0.18	1,175
184	2.997	0.0057	0.18	1,180
186	3.003	0.0056	0.18	1,185
188	3.008	0.0056	0.18	1,190
190	3.014	0.0055	0.18	1,195
192	3.019	0.0055	0.17	1,200
194	3.025	0.0055	0.17	1,205
196	3.030	0.0054	0.17	1,210
198	3.035	0.0054	0.17	1,215
200	3.041	0.0054	0.17	1,220
202	3.046	0.0053	0.17	1,225
204	3.051	0.0053	0.17	1,230
206	3.057	0.0053	0.17	1,235
208	3.062	0.0052	0.17	1,240
210	3.067	0.0052	0.17	1,245
212	3.072	0.0052	0.16	1,250
214	3.077	0.0051	0.16	1,255
216	3.083	0.0051	0.16	1,260
218	3.088	0.0051	0.16	1,265
220	3.093	0.0051	0.16	1,270

10-Year NOAA Atlas 14 Hyetograph Generation

Duration (min)	Rain Depth (in)
5	0.211
10	0.302
15	0.365
30	0.518
60	0.782
120	1.1
180	1.33
360	1.82
720	2.5
1440	3.25

Time Step = **5** min

Rainfall Sum Check = 3.251 in



N	PN (inches)	Incr. P (in)	I (in/hr)	Time (min)
222	3.098	0.005	0.16	1,275
224	3.103	0.005	0.16	1,280
226	3.108	0.005	0.16	1,285
228	3.113	0.0049	0.16	1,290
230	3.118	0.0049	0.16	1,295
232	3.123	0.0049	0.16	1,300
234	3.127	0.0049	0.15	1,305
236	3.132	0.0048	0.15	1,310
238	3.137	0.0048	0.15	1,315
240	3.142	0.0048	0.15	1,320
242	3.147	0.0048	0.15	1,325
244	3.151	0.0047	0.15	1,330
246	3.156	0.0047	0.15	1,335
248	3.161	0.0047	0.15	1,340
250	3.165	0.0047	0.15	1,345
252	3.170	0.0046	0.15	1,350
254	3.175	0.0046	0.15	1,355
256	3.179	0.0046	0.15	1,360
258	3.184	0.0046	0.15	1,365
260	3.188	0.0046	0.14	1,370
262	3.193	0.0045	0.14	1,375
264	3.197	0.0045	0.14	1,380
266	3.202	0.0045	0.14	1,385
268	3.206	0.0045	0.14	1,390
270	3.211	0.0045	0.14	1,395
272	3.215	0.0044	0.14	1,400
274	3.220	0.0044	0.14	1,405
276	3.224	0.0044	0.14	1,410
278	3.228	0.0044	0.14	1,415
280	3.233	0.0044	0.14	1,420
282	3.237	0.0043	0.14	1,425
284	3.241	0.0043	0.14	1,430
286	3.246	0.0043	0.14	1,435
288	3.250	0.0043	0.14	1,440

United States Department of Agriculture

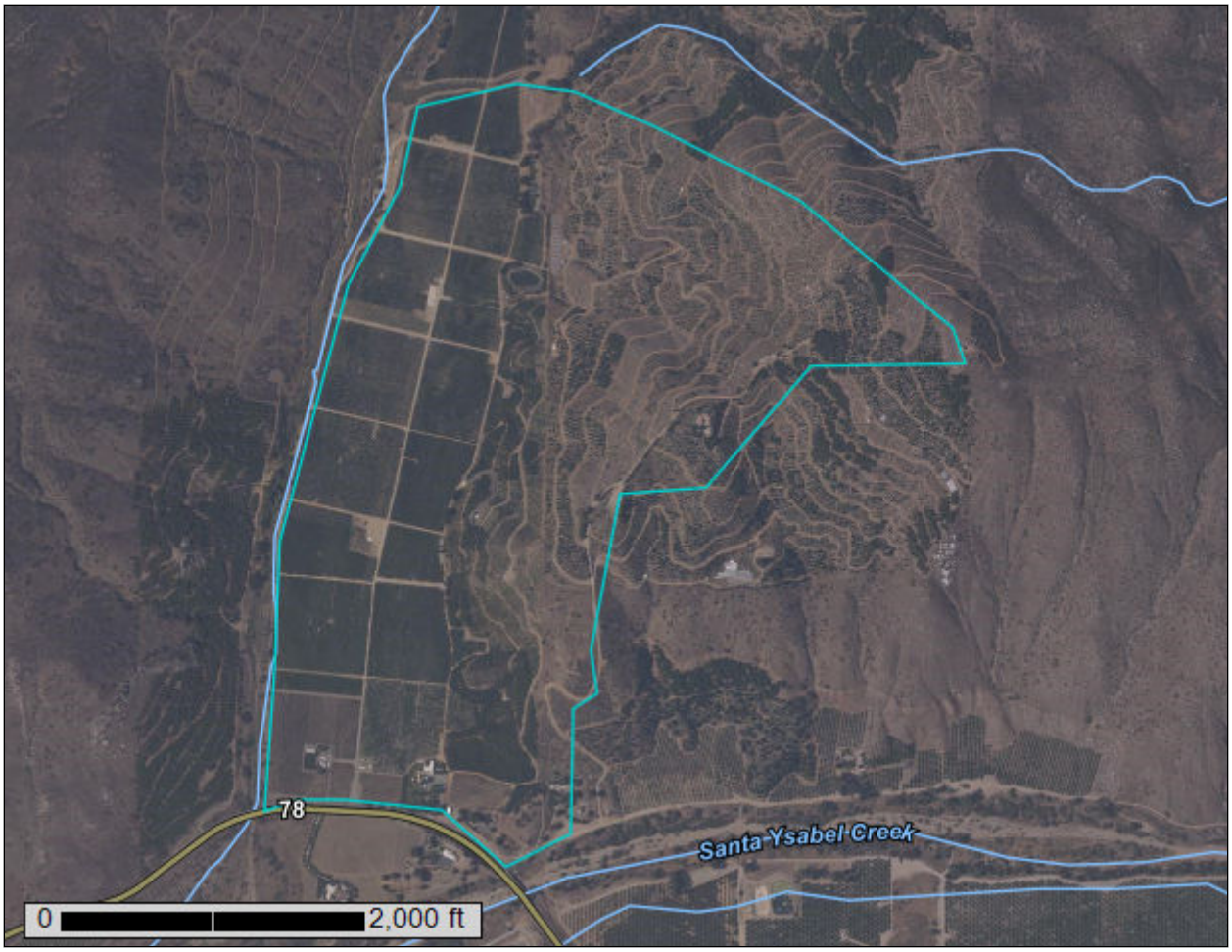
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for San Diego County Area, California

Rancho Guejito Winery Hydrologic Soils



October 2, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

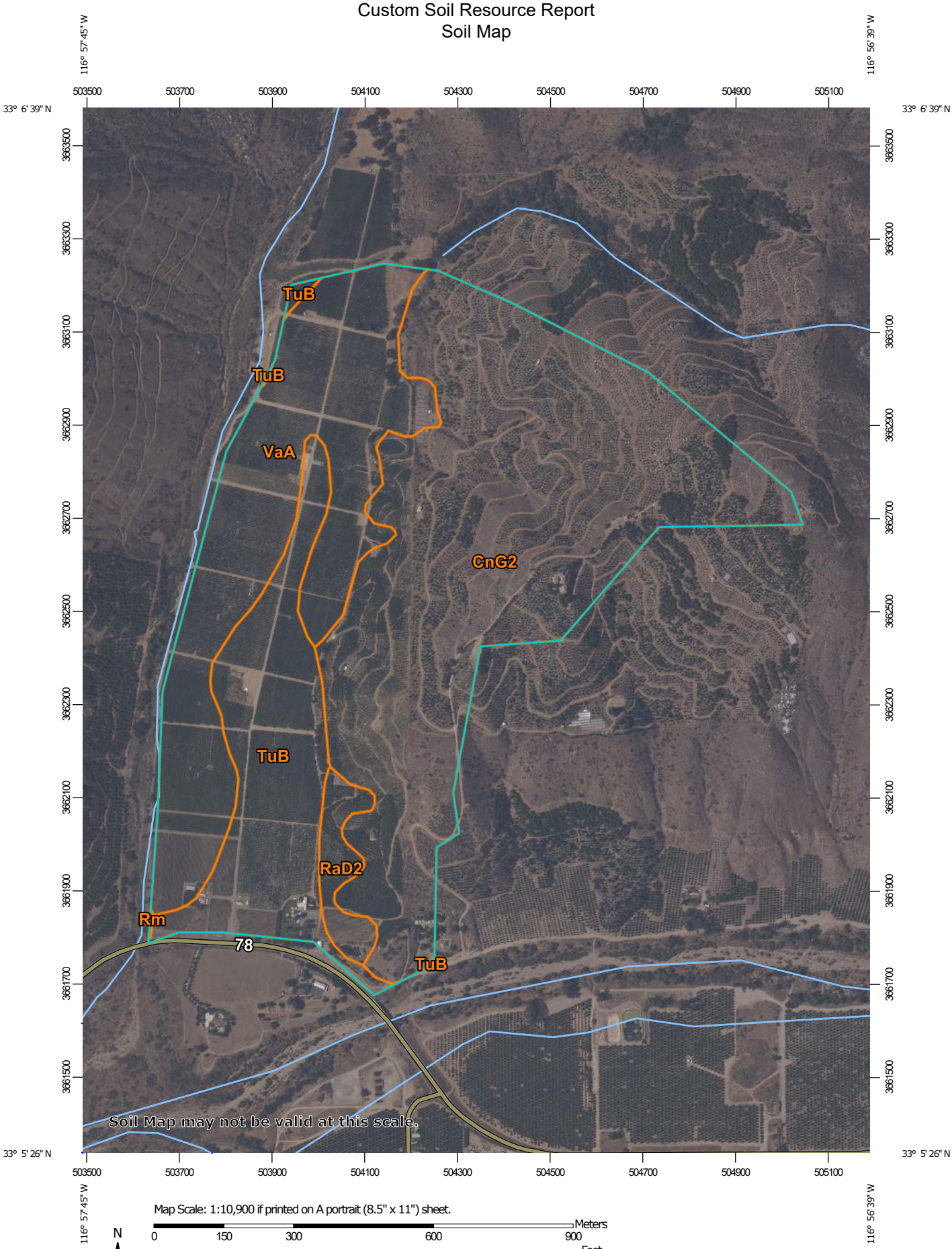
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:10,900 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Diego County Area, California
Survey Area Data: Version 15, May 27, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 18, 2018—Aug 22, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CnG2	Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded	151.8	54.0%
RaD2	Ramona sandy loam, 9 to 15 percent slopes, eroded	7.2	2.6%
Rm	Riverwash	0.1	0.0%
TuB	Tujunga sand, 0 to 5 percent slopes	46.5	16.5%
VaA	Visalia sandy loam, 0 to 2 percent slopes	75.5	26.9%
Totals for Area of Interest		**281.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Diego County Area, California

CnG2—Cieneba-Fallbrook rocky sandy loams, 30 to 65 percent slopes, eroded

Map Unit Setting

National map unit symbol: hb9x
Elevation: 300 to 4,000 feet
Mean annual precipitation: 12 to 35 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Cieneba and similar soils: 40 percent
Fallbrook and similar soils: 35 percent
Rock outcrop: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cieneba

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granite and granodiorite

Typical profile

H1 - 0 to 10 inches: coarse sandy loam
H2 - 10 to 14 inches: weathered bedrock

Properties and qualities

Slope: 30 to 65 percent
Depth to restrictive feature: 4 to 20 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very low (about 1.0 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R019XD060CA - SHALLOW LOAMY (1975)
Hydric soil rating: No

Description of Fallbrook

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from granodiorite

Typical profile

H1 - 0 to 6 inches: sandy loam
H2 - 6 to 24 inches: sandy clay loam, loam
H2 - 6 to 24 inches: weathered bedrock
H3 - 24 to 28 inches:

Properties and qualities

Slope: 30 to 65 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R019XD029CA
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Vista

Percent of map unit: 5 percent
Hydric soil rating: No

RaD2—Ramona sandy loam, 9 to 15 percent slopes, eroded

Map Unit Setting

National map unit symbol: hbfv
Elevation: 250 to 3,500 feet
Mean annual precipitation: 10 to 20 inches
Mean annual air temperature: 63 degrees F
Frost-free period: 230 to 320 days
Farmland classification: Not prime farmland

Map Unit Composition

Ramona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ramona

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, rise
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 10 inches: sandy loam
H2 - 10 to 60 inches: sandy clay loam, clay loam
H2 - 10 to 60 inches: sandy clay loam, sandy loam
H3 - 60 to 74 inches:
H3 - 60 to 74 inches:

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Very high (about 16.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C
Ecological site: R019XD029CA
Hydric soil rating: No

Minor Components

Greenfield
Percent of map unit: 5 percent
Hydric soil rating: No

Fallbrook
Percent of map unit: 5 percent
Hydric soil rating: No

Placentia
Percent of map unit: 5 percent
Hydric soil rating: No

Rm—Riverwash

Map Unit Setting
National map unit symbol: hbg6
Elevation: 700 to 2,900 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 110 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Riverwash: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Riverwash

Setting
Landform: Drainageways
Parent material: Sandy, gravelly, or cobbly alluvium derived from mixed sources

Typical profile
H1 - 0 to 6 inches: gravelly coarse sand
H2 - 6 to 60 inches: stratified extremely gravelly coarse sand to gravelly sand

Properties and qualities
Slope: 0 to 4 percent
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 60 to 72 inches
Frequency of flooding: OccasionalNone
Available water capacity: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydrologic Soil Group: D
Hydric soil rating: Yes

TuB—Tujunga sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: hbh0
Elevation: 10 to 2,500 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 280 to 350 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tujunga and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tujunga

Setting

Landform: Flood plains
Landform position (three-dimensional): Riser, flat
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 14 inches: sand
H2 - 14 to 34 inches: loamy sand, fine sand, sand
H2 - 14 to 34 inches: stratified gravelly sand to gravelly loamy sand
H2 - 14 to 34 inches:
H3 - 34 to 60 inches:

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: A
Ecological site: R019XD035CA
Hydric soil rating: No

Minor Components

Grangeville
Percent of map unit: 5 percent
Hydric soil rating: No

Ramona
Percent of map unit: 5 percent
Hydric soil rating: No

Visalia
Percent of map unit: 2 percent
Hydric soil rating: No

Riverwash
Percent of map unit: 2 percent
Landform: Drainageways
Hydric soil rating: Yes

Unnamed
Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

VaA—Visalia sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hbh2
Elevation: 600 to 1,200 feet
Mean annual precipitation: 15 inches
Mean annual air temperature: 57 degrees F
Frost-free period: 200 to 350 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Visalia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Visalia

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Riser, flat
Down-slope shape: Linear
Across-slope shape: Convex

Parent material: Alluvium derived from granite

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 40 inches: sandy loam, fine sandy loam
H2 - 12 to 40 inches: very fine sandy loam, loam
H3 - 40 to 60 inches:
H3 - 40 to 60 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Available water capacity: Very high (about 14.1 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 2c
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Greenfield

Percent of map unit: 5 percent
Hydric soil rating: No

Grangeville

Percent of map unit: 5 percent
Hydric soil rating: No

Tujunga

Percent of map unit: 2 percent
Hydric soil rating: No

Placentia

Percent of map unit: 2 percent
Hydric soil rating: No

Unnamed

Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

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HEC-HMS Output Table

Pre-Project 100-Year

Subbasin	Area (mi2)	Q (cfs)	Peak Time	Vol. (in)
Subbasin-1A	0.0186	37.8	15Jan2020, 11:59	0.38
Subbasin-1B	0.115	233.4	15Jan2020, 12:00	0.38
Subbasin-2	0.127	216.7	15Jan2020, 12:08	0.38
Subbasin-3	0.0478	10.1	15Jan2020, 12:19	0.17
Subbasin-4	0.24855	146.3	15Jan2020, 12:35	0.24
Subbasin-5B	0.2601125	117.6	15Jan2020, 12:44	0.23
Subbasin-5A	0.0139063	4.9	15Jan2020, 12:11	0.22
Subbasin-6	0.01859	37.8	15Jan2020, 11:59	0.38
Subbasin-7	0.051715	85.1	15Jan2020, 12:02	0.38
Subbasin-8	0.054684	0	15Jan2020, 00:00	0
Subbasin-9	0.010625	21.6	15Jan2020, 11:59	0.38
Subbasin-10	0.073589	0	15Jan2020, 00:00	0
Subbasin-11	0.0202	43.4	15Jan2020, 11:59	0.52
Subbasin-12	0.097689	0	15Jan2020, 00:00	0
Subbasin-13	0.01047	22.5	15Jan2020, 11:59	0.52
Subbasin-14	0.117534	22.7	15Jan2020, 12:12	0.08
Subbasin-15	0.00875	19.9	15Jan2020, 11:59	0.72
Subbasin-16	0.0176562	24.6	15Jan2020, 12:08	0.61
J-110	0.409209	121	15Jan2020, 12:44	0.2
Subbasin-ST1	0.0017188	2.7	15Jan2020, 12:01	3.41
J-111	0.4109278	121.3	15Jan2020, 12:44	0.22
Subbasin-ST2	0.00125	1.2	15Jan2020, 12:01	2.09
J-112	0.4121778	121.5	15Jan2020, 12:44	0.22

Post-Project 100-Year

Subbasin	Area (mi2)	Q (cfs)	Peak Time	Vol. (in)
Subbasin-1A	0.0186	37.8	15Jan2020, 11:59	0.38
Subbasin-1B	0.115	233.4	15Jan2020, 12:00	0.38
Subbasin-2	0.127	216.7	15Jan2020, 12:08	0.38
Subbasin-3	0.0478	10.1	15Jan2020, 12:19	0.17
Subbasin-4	0.24855	146.3	15Jan2020, 12:35	0.24
Subbasin-5A	0.2618312	133.6	15Jan2020, 12:39	0.25
Subbasin-5B	0.2685499	102.7	15Jan2020, 12:49	0.25
Subbasin-6	0.01859	37.8	15Jan2020, 11:59	0.38
Subbasin-7	0.051715	85.1	15Jan2020, 12:02	0.38
Subbasin-8	0.054684	0	15Jan2020, 00:00	0
Subbasin-9	0.010625	21.6	15Jan2020, 11:59	0.38
Subbasin-10	0.073589	0	15Jan2020, 00:00	0
Subbasin-11	0.0202	43.4	15Jan2020, 11:59	0.52
Subbasin-12	0.097689	0	15Jan2020, 00:00	0
Subbasin-13	0.01047	22.5	15Jan2020, 11:59	0.52
Subbasin-14A	0.1147215	23	15Jan2020, 12:03	0.07
Swale_1	0.1147215	22.4	15Jan2020, 12:05	0.07
Subbasin-14B	0.1226903	23.5	15Jan2020, 12:11	0.14
Subbasin-15	0.00875	19.9	15Jan2020, 11:59	0.72
Subbasin-16	0.0175	24.4	15Jan2020, 12:08	0.62
J-110	0.4087402	105.7	15Jan2020, 12:49	0.23
Subbasin-ST1	0.0021875	3.9	15Jan2020, 12:00	3.67
J-111	0.4109277	106.2	15Jan2020, 12:49	0.25
Subbasin-ST2	0.00125	1.5	15Jan2020, 12:01	2.62
J-112	0.4121777	106.4	15Jan2020, 12:49	0.26

HEC-HMS Output Table

Pre-Project 10-Year

Subbasin	Area (mi2)	Q (cfs)	Peak Time	Vol. (in)
Subbasin-1A	0.0186	19.4	15Jan2020, 11:59	0.15
Subbasin-1B	0.115	117.3	15Jan2020, 12:00	0.15
Subbasin-2	0.127	0	15Jan2020, 00:00	0
Subbasin-3	0.0478	1.7	15Jan2020, 12:33	0.04
Subbasin-4	0.24855	0	15Jan2020, 00:00	0
Subbasin-5B	0.2601125	0.1	15Jan2020, 12:28	0
Subbasin-5A	0.0139063	0.9	15Jan2020, 12:18	0.08
Subbasin-6	0.01859	19.3	15Jan2020, 11:59	0.15
Subbasin-7	0.051715	37.3	15Jan2020, 12:03	0.15
Subbasin-8	0.054684	0	15Jan2020, 00:00	0
Subbasin-9	0.010625	11.1	15Jan2020, 11:58	0.15
Subbasin-10	0.073589	0	15Jan2020, 00:00	0
Subbasin-11	0.0202	23.3	15Jan2020, 11:59	0.18
Subbasin-12	0.097689	0	15Jan2020, 00:00	0
Subbasin-13	0.01047	12.1	15Jan2020, 12:00	0.18
Subbasin-14	0.117534	12.3	15Jan2020, 12:14	0.04
Subbasin-15	0.00875	11.2	15Jan2020, 11:59	0.25
Subbasin-16	0.0176562	12	15Jan2020, 12:11	0.27
J-110	0.409209	20.1	15Jan2020, 12:14	0.03
Subbasin-ST1	0.0017188	1.7	15Jan2020, 12:01	2.11
J-111	0.4109278	20.6	15Jan2020, 12:14	0.04
Subbasin-ST2	0.00125	0.7	15Jan2020, 12:01	1.3
J-112	0.4121778	20.8	15Jan2020, 12:14	0.04

Post-Project 100-Year

Subbasin	Area (mi2)	Q (cfs)	Peak Time	Vol. (in)
Subbasin-1A	0.0186	19.4	15Jan2020, 11:59	0.15
Subbasin-1B	0.115	117.3	15Jan2020, 12:00	0.15
Subbasin-2	0.127	0	15Jan2020, 00:00	0
Subbasin-3	0.0478	1.7	15Jan2020, 12:33	0.04
Subbasin-4	0.24855	0	15Jan2020, 00:00	0
Subbasin-5A	0.2618312	2.4	15Jan2020, 12:07	0.01
Subbasin-5B	0.2685499	2.7	15Jan2020, 12:24	0.02
Subbasin-6	0.01859	19.3	15Jan2020, 11:59	0.15
Subbasin-7	0.051715	37.3	15Jan2020, 12:03	0.15
Subbasin-8	0.054684	0	15Jan2020, 00:00	0
Subbasin-9	0.010625	11.1	15Jan2020, 11:58	0.15
Subbasin-10	0.073589	0	15Jan2020, 00:00	0
Subbasin-11	0.0202	23.3	15Jan2020, 11:59	0.18
Subbasin-12	0.097689	0	15Jan2020, 00:00	0
Subbasin-13	0.01047	12.1	15Jan2020, 12:00	0.18
Subbasin-14A	0.1147215	12.2	15Jan2020, 12:04	0.03
Swale_1	0.1147215	11.7	15Jan2020, 12:06	0.03
Subbasin-14B	0.1226903	12.1	15Jan2020, 12:14	0.08
Subbasin-15	0.00875	11.2	15Jan2020, 11:59	0.25
Subbasin-16	0.0175	12.6	15Jan2020, 12:10	0.28
J-110	0.4087402	20.4	15Jan2020, 12:14	0.05
Subbasin-ST1	0.0021875	2.3	15Jan2020, 12:01	2.27
J-111	0.4109277	21	15Jan2020, 12:14	0.06
Subbasin-ST2	0.00125	0.9	15Jan2020, 12:01	1.62
J-112	0.4121777	21.3	15Jan2020, 12:14	0.07

Appendix E

HEC-RAS Hydraulic Analysis Results

HEC-RAS Existing Condition Model Printouts

HEC-RAS Proposed Condition Model Printouts

HEC-RAS Results Summary Table

Appendix F

CALTRANS As-Built Plans for Guejito Creek Bridge

Appendix H

Project Plan

Map Pocket 1

Drainage Study Map for Guejito Creek Watershed

Map Pocket 2

Drainage Study Map for Rancho Guejito Tasting Facility and Event Center (Pre-Project)

Map Pocket 3

Drainage Study Map for Rancho Guejito Tasting Facility and Event Center (Post-Project)

Map Pocket 4

Caltrans Drainage Study Map for Rancho Guejito Tasting Facility and Event Center (Pre-Project)

Map Pocket 5

Caltrans Drainage Study Map for Rancho Guejito Tasting Facility and Event Center (Post-Project)

Map Pocket 6

HEC-RAS Hydraulic Workmap