# Appendix J

Preliminary Hydrology Report

# PRELIMINARY HYDROLOGY REPORT

## Lockhart Solar PV II

## San Bernardino County, CA
## September 2021

**Prepared For: Lockhart Solar PV II, LLC**

**Prepared By: Fuscoe Engineering, Inc.**

**Job Number: 1859-003**

FUSCOE ENGINEERING

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# PRELIMINARY HYDROLOGY REPORT

## Lockhart Solar PV II

## San Bernardino County, California


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September 2021

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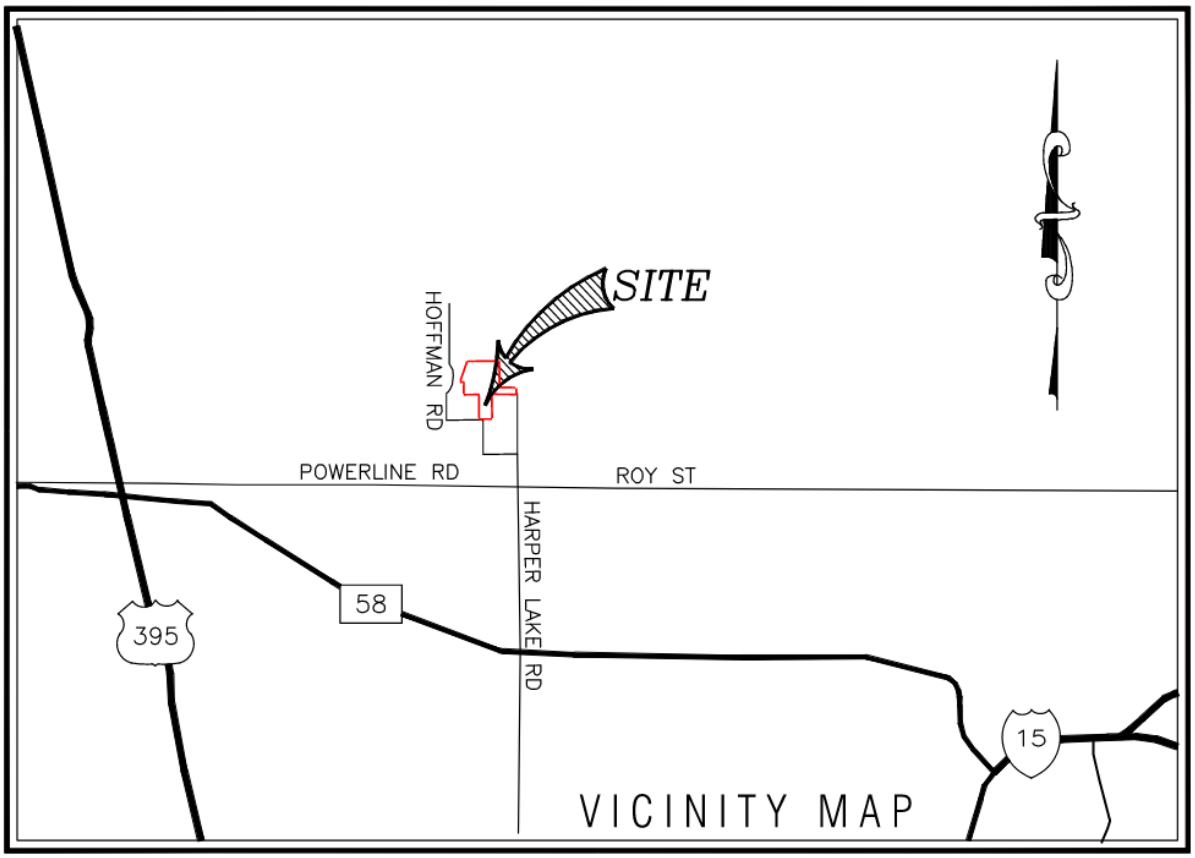

SITE
HOFFMAN RD
POWERLINE RD
ROY ST
HARPER LAKE RD
58
395
15
VICINITY MAP

# 1. INTRODUCTION

## 1.1 Purpose

The purpose of this preliminary report is to provide an assessment of the hydrologic conditions of the land which will be used for the Lockhart Solar PV II Project (or Project). This study discusses the retention requirements for the Project and provides an overview of the off-site runoff contribution from adjacent/upstream areas and associated flow depth and velocity determination. Estimations of these numbers are required to properly position Project structures, to size flow mitigation structures, routing channels, and detention structures to ensure the Project can be adequately protected, and to route flow to its original locations so that downstream effects will be negligible.

## 1.2 Project Overview

The Project proposes to develop solar photovoltaic (PV) facilities, battery energy storage system (BESS), and associated infrastructure. The Project Site is in unincorporated Hinkley, CA, approximately 7 miles north of the intersection of Harper Lake Road and Mojave-Barstow Highway 58. The Project Site, as depicted in Figure 1, is made up of areas within three parcels, which consist of vacant, previously disturbed land, miscellaneous concrete foundations, various electrical lines and poles, as well as existing shared facilities within the Shared Facilities Area. The Project site is bordered on the south by the existing Solar Energy Generating System (SEGS) VIII and IX Solar Thermal Power Plants, which the County approved for repowering to PV solar and battery storage in 2019 as part of the Lockhart Solar Facility (CUP Project #2019001245 approved in 2019); Harper Lake Road to the east; Hoffman Road to the west; and vacant land to the north.

While the Project's development footprint includes up to approximately 690 acres of land, for the purposes of this report, the Project Site/study area is defined as the SEGS X facility site boundary (approximately 600-acres) and the approximately 110-acre Shared Facilities Area, and excludes any areas outside the existing SEGS X property fence line.

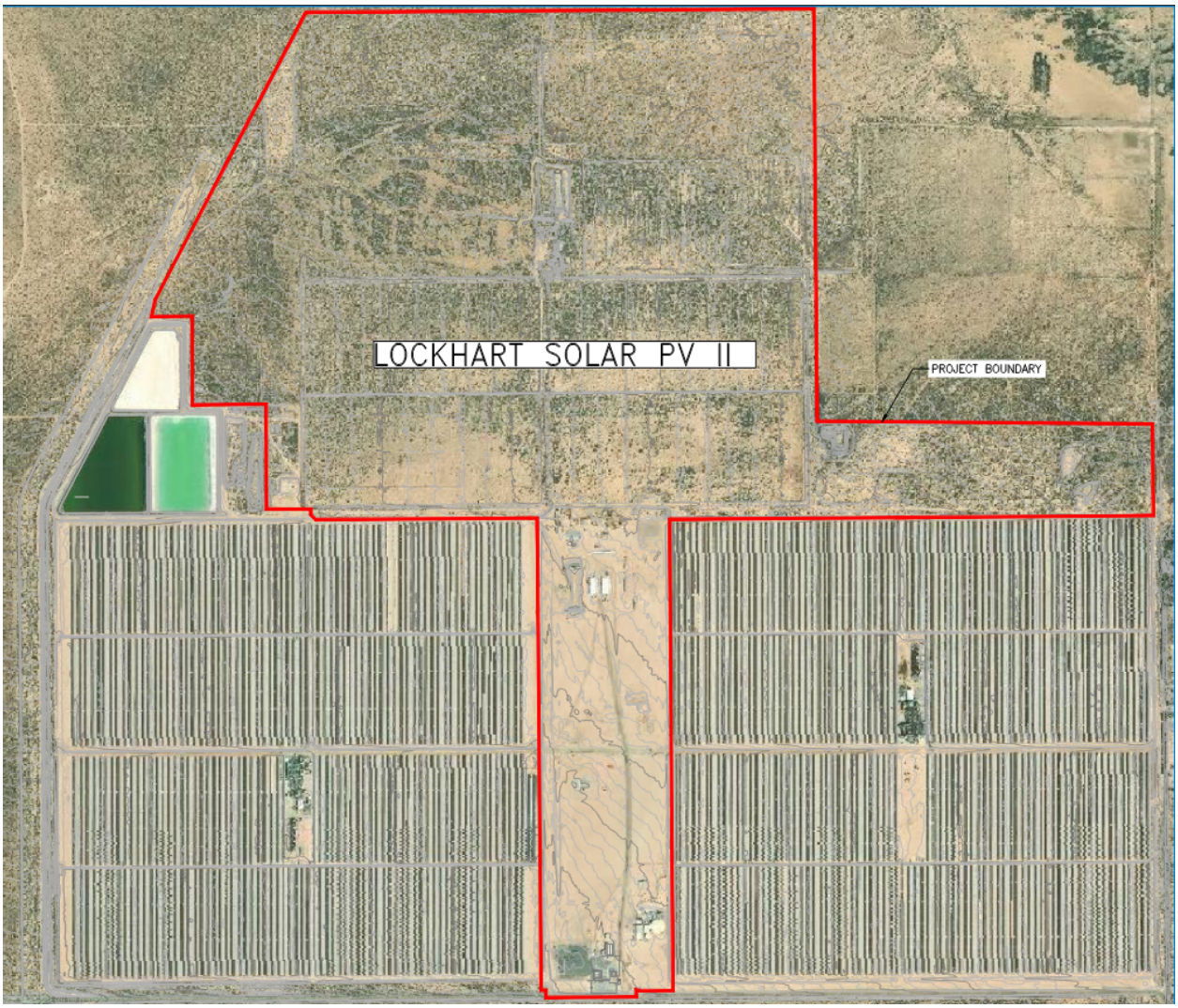
The Project Site, as depicted in Figure 1, will be considered as the study area for this report (approximately 710 acres).

According to the Federal Emergency Management Agency (FEMA) Panel Number 06071C3250H, dated 8/28/2008 the study area resides within a designation of FEMA Flood Zone D. Zone D is defined as "undetermined Flood Hazard" per the Flood Insurance Rate Map (FIRM) panel. This indicates that a formal hydrologic and hydraulic study for the area has not been completed. The area has not been mapped and approved by FEMA with floodplains or floodways.

Flood hazards are undermined in this area. Base Flood Elevations (BFEs) are not provided in D Zones. Flood insurance for properties is not required at the Federal level in Zone D areas. Refer to Appendix 1 for FEMA FIRMette.

The potential hydrologic issues in this general landscape are flooding and erosive velocities. This study will discuss the results of analyzing pre-construction hydraulic conditions associated with flow depth, and flow velocity across the study area.

Figure 1. Project Site/Study Area




## 1.3 Study Area Description

The majority of the study area is located on rural, undeveloped land. Stormwater runoff enters the study area from southern and western boundary and exits the study area along the northern and eastern boundary. There is an existing earthen berm outside the western boundary of the study area that protects a major portion of the study area by diverting the offsite flow to the northwest corner. The existing berm does not currently extend along the full length of the western boundary of the study area. Flow from the berm confluences with offsite flow coming from the north and begins to pond just outside the northeast corner of the site within the dry lake bed of Harper Lake. The flow from the south crosses the southerly portion of the study area and concentrates at the eastern boundary within Harper Lake.

As seen in Google Earth, there is some evidence of channelization, but most flow is expected to be via shallow overland flow.

# 2. METHODOLOGY

## 2.1 Flow Analysis Methodology

Due to the complex and distributary nature of flow paths upstream and through the study area, a FLO-2D model is utilized to determine flow depth and velocities through the study area.

FLO-2D (FLO-2D Software, Inc.) is a dynamic flood routing model that simulates channel flow, unconfined overland flow, and street flow. It can simulate a flood over complex topography and roughness while reporting on volume conservation – the key to accurate flood distribution.

The FLO-2D Grid Developer System (GDS) is a GIS integrated software tool used to facilitate the creation of all required data to run the FLO-2D model. GDS simplifies construction of the finite difference grid system and allows graphical editing of its attributes and components. The GDS will overlay the grid system on a digital terrain map or a Digital Terrain Model (DTM) set of points and will interpolate and assign elevations to the grid elements. It will establish geographical boundaries, import background images and photos, and it will automatically generate the data files required to run the model.

In this study, the offsite hydrology was modeled with Advanced Engineering Software (AES-2016). Runoff hydrographs from AES were used as boundary conditions for FLO-2D Pro. Hydrographs were developed for the 100-year 24-hour rainfall event in accordance with the San Bernardino County Hydrology Manual (SBCHM). Computational flow modeling occurred for a return period rainfall event and results can be seen in Appendix 2 and in Appendix 4.

United States Geological Survey (USGS) StreamStats analysis has been utilized to define the watershed and offsite sub-watershed delineation. The watershed extent and flow channels were compared to Google Earth images for verification. See Offsite Hydrology Map in Appendix 4 for sub-watershed delineation. AES software was used to produce the rainfall hydrographs for each inflow location shown in Appendix 4.

For Flood Routing Analysis the Link-Node Runoff Hydrograph Model for San Bernardino County has been utilized. To construct the synthetic critical storm pattern, area-averaged watershed rainfall values from National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 precipitation data for each sub basin was entered into AES. Lag value was computed per Corps of Engineering LAG formula. Basin factor (Manning's coefficient) n=0.05, adjusted loss rate 0.4 in/hr and low loss fraction coefficient 0.9 have been used as an average value for all sub basins.

Two rainfall hydrograph tables have been extracted from AES output files and utilized as inflow points in FLO-2D software.

## 2.2 Hydrology Study Standards

The requirements and recommendations found in the SBCHM (August 1986) was used as the basis for the methodology and proposed retention storage volume calculations.

The Project will include compacted native on-site access roads, PV arrays, electrical equipment areas, upgrade of substation and switchyard, battery storage and other miscellaneous improvements. These proposed improvements are expected to cause an increase in runoff leaving the study area.

Retention design elements such as retention basins are proposed to attenuate the outgoing flow. The proposed retention basins will satisfy the following conditions:

- Each basin has adequate tributary area to ensure the basin will completely fill during the 100-year, 24-hour storm event.
- Each retention basin will have capacity to retain the calculated proportionate volume increase of the subarea tributary to the basin.
- Each basin will decrease the calculated on-site post-developed outgoing flow compared with pre-developed flow.
- Each basin will completely draw-down within a 72-hour period.

To determine the increase in 100-year, 24-hour runoff volume, the study area was divided into 3 Drainage Management Areas (DMA's). These DMA's were analyzed just for on-site flows. Hydrograph calculations were performed for existing and proposed conditions for the 3 DMA's. Unit hydrograph calculation results have been used to determine the peak flow and rain flow volumes.

Advanced Engineering Software (AES-2016) software has been used to produce the rainfall hydrographs for each DMA.

For Flood Routing Analysis the Single Area Unit-Hydrograph Model for San Bernardino County has been utilized. To construct the synthetic critical storm pattern, area-averaged watershed rainfall values from NOAA Atlas 14 precipitation data for each sub basin was entered to AES. Lag value was computed per Corps of Engineering LAG formula. Basin factor (Manning's coefficient) n=0.035 has been used as an average value for all sub basins. An adjusted loss rate and low loss fraction coefficients have been calculated for each drainage area per Section C of the SBCHM. Refer to Appendix 6 for reference pages from the SBCHM. Refer to Appendix 3 for Onsite AES Calculation Results and Appendix 5 for Onsite Hydrology Map.

## 2.3 Grid Elements

The FLO-2D model's computational area was determined by inclusion of the study area and the tributary areas upstream that are considered alluvial in nature. The simulation was modeled utilizing 40-ft x 40-ft grid. The results of the downstream model are presented in Appendix 7, Flow Depth Results and Appendix 8, Flow Velocity Results.

## 2.4 Rainfall Intensity

Design storms were developed using NOAA Atlas 14 grids. Precipitation was added to the model using a rainfall value of 2.91" for the 100-year, 24-hour storm event. These depths were used to develop custom storm hydrographs, based on the SCS 24-hours Type II rainfall distribution. The depth area reduction factors were not applied. FLO-2D calculates runoff for each cell of a finite element grid based on a given rainfall distribution. Refer to Appendix 9 for Precipitation Frequency Data.

Precipitation values used in AES study were based on 100-year, 5-min, 30-min, 1-hour, 3-hour, 6-hour, 24-hour storm event.

## 2.5 Terrain

A Digital Terrain Model from USGS for outside the study area and an aerial topographic map for inside the study area were incorporated into text points files. These XYZ files are read directly into FLO-2D as DTM (elevation data) files.

## 2.6 Curve Numbers

The combination of United States Department of Agriculture Natural Resources Conservation Service (USDA-NRCS) Soil Survey Geographic Database (SSURGO) soil data and USDA-NRCS State Soil Geographic (STATSGO) soil data provides soil types within the study area and full coverage of the contributing watershed. SSURGO data was used for study area and areas of the contributing watershed where it was available, STATSCO data was supplemented in the contributing watershed where SSURGO data was unavailable.

Soils in the area are primarily classified as Hydrologic Soil Groups A, B and C within the study area. Land cover was obtained from USDA 2013 Crop Data Layer. Based on Soils Group numbers and Land cover data the average soils Curve Number has been determined from SBCHM, Figure C-3. See Appendix 6 for Curve Number tables and Appendix 10 for Hydrologic Soil Group data.

Curve Numbers were applied to each grid cell in the FLO-2D model based on intersection the grid with the curve numbers.

# 3. CALCULATIONS/RESULTS

The FLO-2D model was run for the pre-construction scenarios, analyzing the 100-year, 24-hour storm event. Exhibits of outputs are provided in the appendices. Below, the results are discussed for analysis of flow depth and flow velocity.

It shall be noted that the results of the FLO-2D model are estimates of velocity and depth resulting from one possible scenario of flooding across the study area. The model shows that for the vast majority of the study area, flow depths are less than 0.5'. In such situations, the actual characteristics of runoff across the study area will vary for each storm event and the results of the model shall be taken to provide an overall estimate of potential flow characteristics that may occur.

Due to the variability discussed above, the model does not provide results with precision adequate enough to enable recommendations for precise placement of maximum flow depth mitigation measures.

## 3.1 Flow Depth

See Appendix 7 for outputs from the FLO-2D model for flow depth. A maximum flow depth within the study area ranges from 0 to 3.7 feet. The maximum flow depth of 6.3' occurs outside of the study area. Note that two outputs are provided for each scenario, one with maximum flow depth outside of study area and another for the study area with a full flow depth range from 0.1 to 6 feet to better represent the maximum flow depth across the study area.

Within the study area, flows can reach greater depths primarily at locations of flow paths which enter the study area from northwest to northeast directions. A significant portion of runoff from the offsite flow approaches the study area from the southwest. There is an existing earthen berm outside of the study area along the western boundary with a channel on the upstream side of the berm that was constructed for the existing SEGS VIII and IX facilities. A portion of the offsite flow is captured by this channel and is diverted north along the western boundary. The berm does not run the entire length of the western boundary and as the berm terminates, the offsite flow crosses into the study area where flood depths exceed 3 feet. The remaining flow coming from the southwest enters into the study area along the southern boundary generally having flow depths of 2 feet or less within the study area. The offsite flow from the southwest eventually collects in Harper Lake located immediately east of the study area after crossing through the study area.

To address the concern of the flood depths exceeding 3 feet in the northwest corner of the study area, there will need to be mitigation measures proposed during the final design. The offsite run-on will need to be captured and diverted upstream of the solar modules either within or outside of the study area. Once a design has been completed, it is recommended that a post-developed Flo2D analysis be performed to model the mitigation measure and confirm flood depths have been reduced adequately in the area of concern.

## 3.2 Flow Velocity

See Appendix 8 for outputs from FLO-2D model for flow velocity. The velocity of flow across the study area range from 0 ft/sec to 9 ft/sec. The notable areas of increased velocity are at the locations where the flow enters the study area and along the channels outside of the study area.

## 3.3 Required Storage

As discussed in Section 2.2, the study area was divided into 3 DMA's. Hydrograph calculations were performed for existing and proposed conditions for these areas, based on input values summarized in Table 1 and Table 2. As described in Section 1.2, for the purposes of this analysis, the acreage reflected in the Tables below includes the 600-acre SEGS X property and the entire 110-acre Shared Facilities Area bringing the study area acreage total to approximately 710 acres (rounded down to 709 acres for technical accuracy).

Based on Soils Group information and Soils Coverage the Soil Conservation Service (SCS) Curve Numbers (Antecedent Moisture Content II) for existing and proposed conditions for all DMA's was determined to be 62. The number was derived from the Curve Number tables in the SBCHM in Appendix 6 and assumes the study area falls within Soil Group 'A' and will be considered poor quality Open Brush for the existing and proposed conditions. The Curve Number is then used in the following equations found within the SBCHM in Appendix 6 and results are shown in the tables below.

Pervious percentages were used to account for future development. While the study area contains miscellaneous concrete foundations, various electrical lines and poles, as well as existing facilities within the Shared Facilities Area, the study area is otherwise largely vacant. Therefore, for the purposes of preparing a conservative analysis, the percentage of impervious area for the existing condition was assumed to be 0%. For the proposed condition, the study area would continue to be almost entirely pervious, with the only new impervious areas being the inverters, battery storage units, and the posts under the arrays. The percentage of impervious area for the proposed condition is determined to be 0.5%.

Table 1. EXISTING CONDITION Input Data

| DMA | Area[1] (AC) | Max Loss Rate | Soil Capacity (S) | Initial Abstraction (Ia) | Storm Runoff Yield (Yj) | Low Loss Rate | Length (ft) | Lca (ft) | Runoff Volume (AF) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 315 | 0.35 | 2.407 | 0.481 | 0.380 | 0.620 | 5,357 | 3,838 | 36.93 |
| 2 | 219 | 0.35 | 2.407 | 0.481 | 0.380 | 0.620 | 5,520 | 2,488 | 25.65 |
| 3 | 175 | 0.35 | 2.407 | 0.481 | 0.380 | 0.620 | 8,570 | 4,508 | 20.76 |

(1) Acreage reflected 709 acres

Table 2. PROPOSED CONDITION Input Data

| DMA | Area[1] (AC) | Max Loss Rate | Soil Capacity (S) | Initial Abstraction (Ia) | Storm Runoff Yield (Yj) | Low Loss Rate | Length (ft) | Lca (ft) | Runoff Volume (AF) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 315 | 0.348 | 2.407 | 0.481 | 0.380 | 0.620 | 5,357 | 3,838 | 36.97 |
| 2 | 219 | 0.348 | 2.407 | 0.481 | 0.380 | 0.620 | 5,520 | 2,488 | 25.67 |
| 3 | 175 | 0.348 | 2.407 | 0.481 | 0.380 | 0.620 | 8,570 | 4,508 | 20.78 |

(1) Acreage reflected 709 acres

As shown in these tables, because the improvements under the Project would increase the imperviousness of the study area by 0.5%, the runoff volumes in the proposed condition is slightly greater than in existing conditions.

Table 3 below shows the required retention storage for the proposed retention basins calculated as the difference between the existing and proposed runoff volumes.

Table 3. Required Storage for Retention Basins

| DMA | Area (AC)[1] | Required Storage (af) | Required Storage (cf) |
|---|---|---|---|
| 1 | 315 | 0.04 | 1,742 |
| 2 | 219 | 0.02 | 871 |
| 3 | 175 | 0.02 | 871 |

(1) Acreage reflected 709 acres

# 4. CONCLUSION

As described within this study, the Lockhart Solar PV II Project study area is largely located in a rural, undeveloped area and slopes from southwest to northeast. The Project will collect flows originating south, west, and north of the study area and convey them easterly through the site via overland sheet flow.

The Project is not anticipated to construct traditional storm drain infrastructure and the means of providing the storage required to meet County retention standards will be shallow ponding outside and/or under the arrays. Based on the 100-year, 24-hour design storm, the required storage volume for retention basins has been determined for each DMA.

It is reiterated that the results of the FLO-2D model are estimates of velocity and maximum flow depth resulting from one possible scenario of flooding across the study area. The model shows that for the vast majority of the study area, flow depths are less than 0.5'. In such situations, the actual characteristics of runoff across the study area will vary for each storm event and the results of the model shall be taken to provide an overall estimate of potential flow that may occur.

Due to the variability discussed above, the model does not provide results with a precision adequate enough to enable recommendations for precise placement of scour mitigation measures.

The following statements address the CEQA guidelines for determining whether a significant impact to hydrology will occurs as a result of project implementation. Would the project:

- *Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?*

  The Project proposes the use of retention basins for the minor increases in impervious surface due to the development of the Project Site. There are no proposed waste discharges from the Project and California water quality standards are being met with the provided basins. Therefore there is no substantial degrading of the surface or groundwater quality.

- *Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impeded sustainable groundwater management of the basin?*

  The Project will maintain a majority of the native soils in the proposed conditions with only slight increases in new impervious surface due to inverters, battery storage units, and posts under the arrays. The impervious increase is assumed to be 0.5%, therefore 99.5% of the study area is assumed to remain native material and infiltration will occur as it did in the existing condition for groundwater recharge.

- *Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:*

  - *Result in substantial erosion or siltation on- or off-site;*
    As part of the existing SEGS VIII and IX facilities, a berm and channel were constructed to divert off-site flows around the SEGS Facilities. The berm does not extend along the full length of the western boundary of the Lockhart Solar PV II Project study area and further diversion elements will need to be constructed as part of the Project to protect the Project from the concentrated off-site flows. The diversion element will be designed to capture and divert the off-site flows from the existing channel and continue on their path around the Project boundary. To match the existing condition, the flows will then spread from the concentrated path in a sheet flow manor to minimize erosion. The proposed diversion of off-site flow will not substantially alter the existing drainage pattern.

On-site flows are anticipated to sheet flow across the Project Site with only minor increases in imperviousness and therefore are not expected to result in substantial erosion.

- *Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;*
  The impervious increase is assumed to be 0.5% for the developed site with retention basins being sized to capture the difference in the pre- vs. post-developed conditions to mitigate the impervious increase so no substantial increases are anticipated for the rate or amount of surface runoff.

- *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;*
  Additional runoff generated from increased imperviousness due to the development of the Project will be managed by retention basins. Runoff that leaves the project boundary will collect in Harper Lake directly east of the Project Site, so no stormwater drainage systems will be impacted.

- *Or impeded or redirect flood flows?*
  The overall drainage patterns of off-site flow are maintained in the developed condition with runoff ultimately getting to the dry lake bed Harper Lake directly east of the Project Site.

- *In flood hazard, tsunami, or seich zones, risk release of pollutants due to project inundation?*

  The study area resides within a designation of FEMA Flood Zone D, which is defined as "undetermined Flood Hazard". This indicates that area has not been mapped and approved by FEMA with floodplains or floodways and flood hazards are undermined in this area.

- *Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

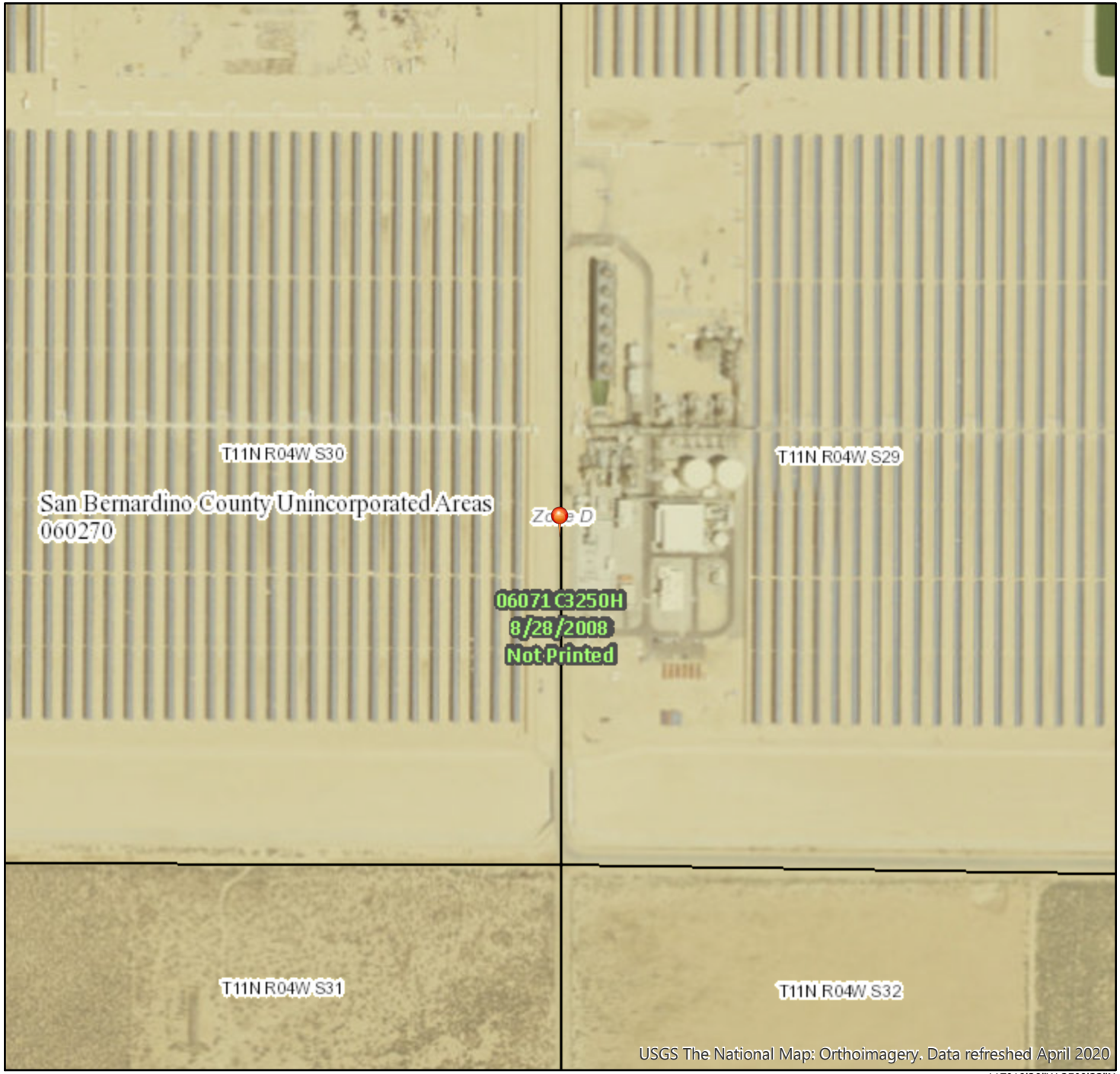
  The Project is expected to maintain existing overall drainage patterns with only an assumed 0.5% impervious increase which will be sufficiently managed utilizing retention basins. It is anticipated that existing infiltration of runoff will be maintained in the developed condition and no conflicts or obstructions of a water quality control plan or sustainable groundwater management plan will occur.

# APPENDIX 1
# FEMA FIRMette

# National Flood Hazard Layer FIRMette

FEMA

117°20'8"W 35°1'2"N




117°19'30"W 35°0'33"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

**SPECIAL FLOOD HAZARD AREAS**
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

**OTHER AREAS OF FLOOD HAZARD**
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

**OTHER AREAS**
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

**GENERAL STRUCTURES**
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

**OTHER FEATURES**
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

**MAP PANELS**
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/18/2020 at 7:15 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

# APPENDIX 2
# Offsite AES Calculation Results

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

            F L O O D    R O U T I N G    A N A L Y S I S
         USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
        (c) Copyright 1989-2016 Advanced Engineering Software (aes)
            Ver. 23.0  Release Date: 07/01/2016  License ID 1355

                        Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* INFLOW 1                                                              *
 ************************************************************************

  FILE NAME: LOCEA.DAT
  TIME/DATE OF STUDY: 14:37 09/13/2021


                          ** INPUT SUMMARY **


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
==========================================================================
  WATERCOURSE LENGTH =   61196.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   28978.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     870.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   19853.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.530; 30-MINUTE = 0.555;  1-HOUR = 0.569
    3-HOUR = 0.890;    6-HOUR = 0.951; 24-HOUR = 0.969


**************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    101.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
========================================================================
  WATERCOURSE LENGTH =   67843.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   44169.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     870.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   14192.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.601; 30-MINUTE = 0.620;  1-HOUR = 0.627
    3-HOUR = 0.919;    6-HOUR = 0.962; 24-HOUR = 0.976


************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =   7
------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
========================================================================


************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    101.00 IS CODE =  11
------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
========================================================================


************************************************************************
  FLOW PROCESS FROM NODE    101.00 TO NODE    102.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
========================================================================
  WATERCOURSE LENGTH =   64738.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   44541.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =    1790.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   13056.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.620; 30-MINUTE = 0.635;  1-HOUR = 0.641
    3-HOUR = 0.925;    6-HOUR = 0.964; 24-HOUR = 0.977
```

```
 ****************************************************************************
   FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =   7
 ----------------------------------------------------------------------------
   >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
 ============================================================================


 ****************************************************************************
   FLOW PROCESS FROM NODE    102.00 TO NODE    102.00 IS CODE =  11
 ----------------------------------------------------------------------------
   >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
 ============================================================================
 ============================================================================
```

```
+-----------------------------------------------------------------------------------------
-------------------------------+
 |                                      * AES FLOODSCx PROGRAM RESULTS SUMMARY *
                                |
 |INPUT FILENAME: [LOCEA.DAT      ]
                Page:   1 of    |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |UPSTREAM  DOWNSTREAM|                                | UPSTREAM   DOWNSTREAM|
TIME(2) TO | MAX. STORAGE|           |
 | NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS   |PEAK (CFS)  PEAK (CFS)| PEAK
(HR)  | MODELED (AF)| FOOTNOTES |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |   100.00     101.00| Subarea (UH) Added to Stream #1|       0.0      1674.8|
17.417 |             |           |
 |   200.00     101.00| Subarea (UH) Added to Stream #2|       0.0      1099.4|
17.583 |             |           |
 |   101.00     101.00| Stream #2 Added to:   Stream #1|    1674.8      2774.2|
17.583 |             |           |
 |   101.00     101.00| View:                 Stream #1|                2774.2|
17.583 |      1361.08|     3     |
 |   101.00     102.00| Subarea (UH) Added to Stream #3|       0.0      1293.5|
17.417 |             |           |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |   102.00     102.00| Stream #3 Added to:   Stream #1|    2774.2      4067.7|
17.583 |             |           |
 |   102.00     102.00| View:                 Stream #1|                4067.7|
17.583 |      1934.37|     3     |
```

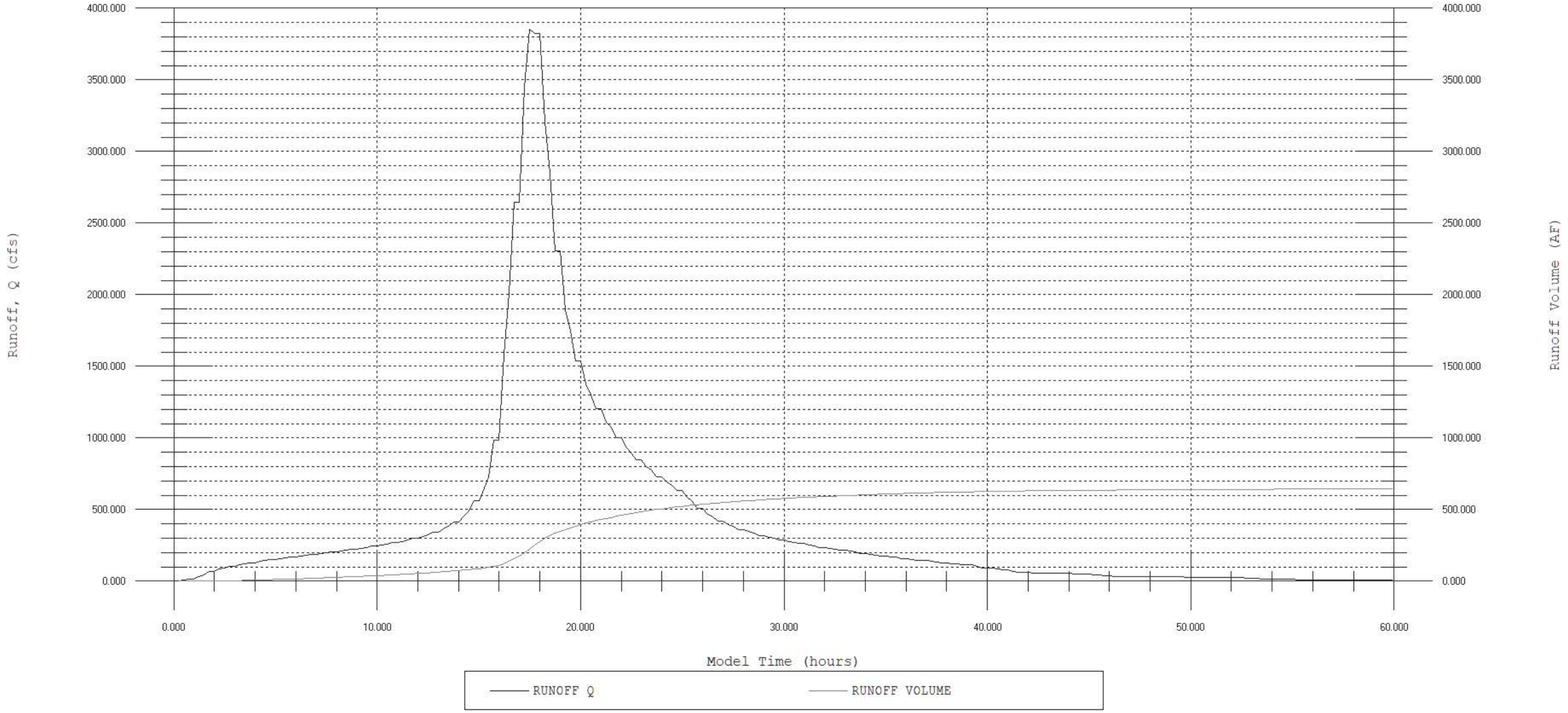
```
+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT
INTERVAL                                |
 |       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE
DESIGN STORM                          |

+-----------------------------------------------------------------------------------
--------------------------------+

   END OF FLOODSCx ROUTING ANALYSIS
```

View Stream # 1

From Node 102.00 to Node 102.00



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

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                          Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* INFLOW 2                                                              *
 ************************************************************************

  FILE NAME: LOCEH.DAT
  TIME/DATE OF STUDY: 14:37 09/13/2021


                         ** INPUT SUMMARY **


**************************************************************************
  FLOW PROCESS FROM NODE    400.00 TO NODE    401.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #1<<<<<
==========================================================================
  WATERCOURSE LENGTH =   64426.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   48310.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     625.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   30610.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.440; 30-MINUTE = 0.477;  1-HOUR = 0.500
    3-HOUR = 0.845;    6-HOUR = 0.931; 24-HOUR = 0.958


**************************************************************************
  FLOW PROCESS FROM NODE    401.00 TO NODE    402.00 IS CODE =   1
```

```
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #2<<<<<
========================================================================
  WATERCOURSE LENGTH =   56381.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   32787.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     460.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   18575.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.543; 30-MINUTE = 0.568;  1-HOUR = 0.581
    3-HOUR = 0.897;    6-HOUR = 0.953; 24-HOUR = 0.971


************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    402.00 IS CODE =   7
------------------------------------------------------------------------
  >>>>>STREAM NUMBER 2 ADDED TO STREAM NUMBER 1<<<<<
========================================================================


************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    402.00 IS CODE =  11
------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
========================================================================


************************************************************************
  FLOW PROCESS FROM NODE    600.00 TO NODE    402.00 IS CODE =   1
------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #3<<<<<
========================================================================
  WATERCOURSE LENGTH =   41497.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   21606.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     360.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =    6040.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.759; 30-MINUTE = 0.759;  1-HOUR = 0.759
    3-HOUR = 0.962;    6-HOUR = 0.980; 24-HOUR = 0.988
```

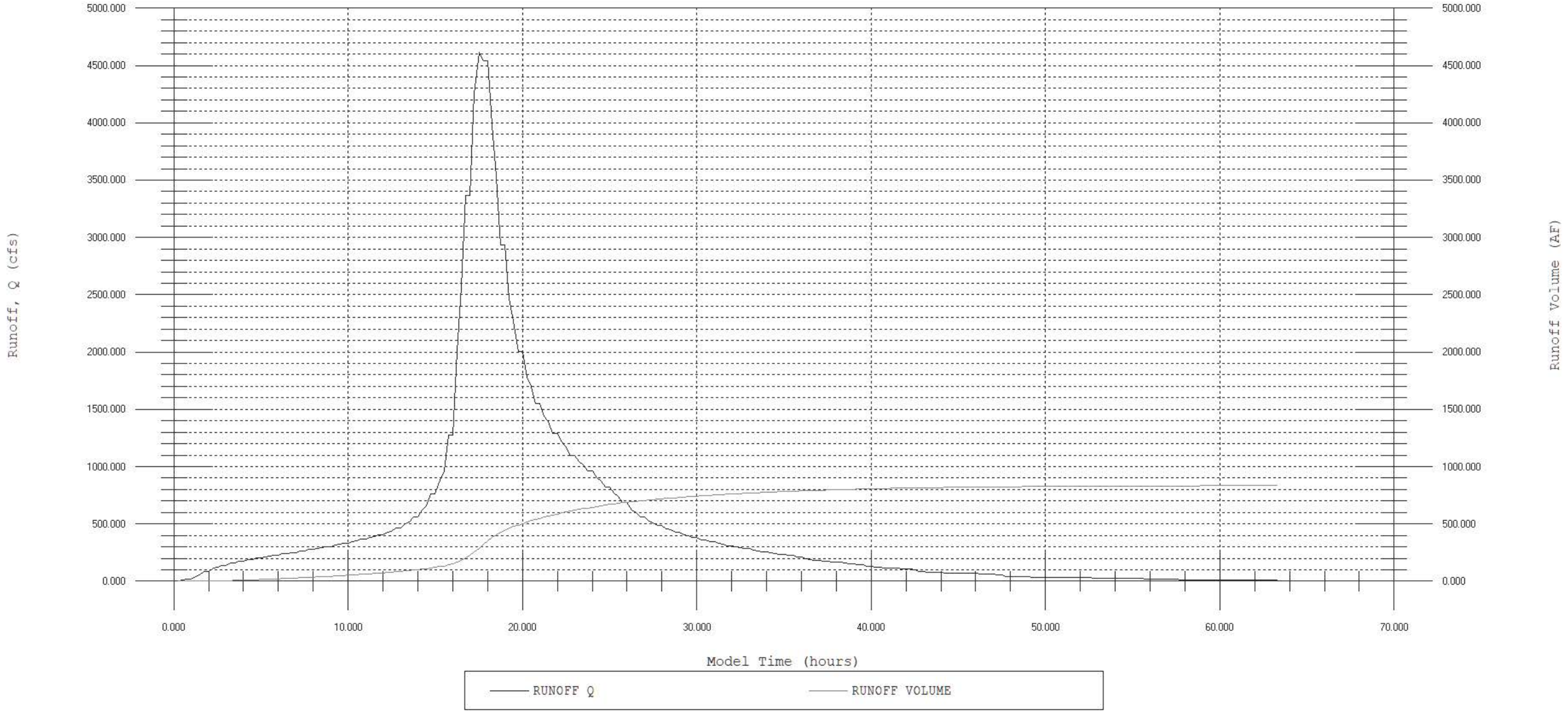
```
****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    402.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 3 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    402.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    402.00 TO NODE    403.00 IS CODE =   1
----------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS) ADDED TO STREAM #4<<<<<
============================================================================
  WATERCOURSE LENGTH =   55496.000 FEET
  LENGTH FROM CONCENTRATION POINT TO CENTROID =   34693.000 FEET
  ELEVATION VARIATION ALONG WATERCOURSE =     890.000 FEET
  BASIN FACTOR = 0.050
  WATERSHED AREA =   10574.000 ACRES; BASEFLOW =   0.000 CFS/SQUARE-MILE
  MOUNTAIN S-GRAPH SELECTED
  MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.400; LOW LOSS FRACTION = 0.900
  SPECIFIED PEAK RAINFALL DEPTHS(INCH):
  5-MINUTE =  0.32; 30-MINUTE =  0.77;  1-HOUR =  1.05
    3-HOUR =  1.51;    6-HOUR =  1.88; 24-HOUR =  3.00
  PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE = 0.662; 30-MINUTE = 0.669;  1-HOUR = 0.672
    3-HOUR = 0.938;    6-HOUR = 0.969; 24-HOUR = 0.980

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    403.00 IS CODE =   7
----------------------------------------------------------------------------
  >>>>>STREAM NUMBER 4 ADDED TO STREAM NUMBER 1<<<<<
============================================================================

****************************************************************************
  FLOW PROCESS FROM NODE    403.00 TO NODE    403.00 IS CODE =  11
----------------------------------------------------------------------------
  >>>>>VIEW STREAM NUMBER 1 HYDROGRAPH<<<<<
============================================================================
============================================================================
```

```
+-------------------------------------------------------------------------------
------------------------------+
 |                                    * AES FLOODSCx PROGRAM RESULTS SUMMARY *
                              |
 |INPUT FILENAME: [LOCEH.DAT      ]
               Page:   1 of    |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |UPSTREAM  DOWNSTREAM|                                | UPSTREAM   DOWNSTREAM|
TIME(2) TO | MAX. STORAGE|           |
 | NODE #     NODE #  | HYDROLOGIC/HYDRAULIC PROCESS   |PEAK (CFS)  PEAK (CFS)| PEAK
(HR)  | MODELED (AF)| FOOTNOTES |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |   400.00     401.00| Subarea (UH) Added to Stream #1|       0.0      1431.1|
18.083 |             |           |
 |   401.00     402.00| Subarea (UH) Added to Stream #2|       0.0      1477.0|
17.750 |             |           |
 |   402.00     402.00| Stream #2 Added to:   Stream #1|    1431.1      2840.3|
17.750 |             |           |
 |   402.00     402.00| View:                 Stream #1|                2840.3|
17.750 |      1703.88|     3     |
 |   600.00     402.00| Subarea (UH) Added to Stream #3|       0.0       906.5|
17.083 |             |           |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |   402.00     402.00| Stream #3 Added to:   Stream #1|    2840.3      3670.0|
17.583 |             |           |
 |   402.00     402.00| View:                 Stream #1|                3670.0|
17.583 |      2018.67|     3     |
 |   402.00     403.00| Subarea (UH) Added to Stream #4|       0.0      1185.7|
17.417 |             |           |
 |   403.00     403.00| Stream #4 Added to:   Stream #1|    3670.0      4855.7|
17.583 |             |           |
 |   403.00     403.00| View:                 Stream #1|                4855.7|
17.583 |      2506.29|     3     |

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+

+--------------------+--------------------------------+----------------------+------
------+-------------+-----------+
 |Notes: 1 = BASIN MODEL VOLUME EXCEEDED; 2 = TIME IS AT END OF 5-MINUTE UNIT
INTERVAL                                  |
 |       3 = RUNOFF ESTIMATES DO NOT EXTEND PAST 2 DAYS AFTER THE PEAK DAY OF THE
DESIGN STORM                           |
```

```
+-------------------------------------------------------------------------------
--------------------------------+

   END OF FLOODSCx ROUTING ANALYSIS
```

View Stream # 1

From Node 403.00 to Node 403.00



# APPENDIX 3
# Onsite AES Calculation Results

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

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                          Analysis prepared by:




 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 1 EXISTING CONDITION                                             *
 ************************************************************************

  FILE NAME: LOEX1.DAT
  TIME/DATE OF STUDY: 10:09 07/08/2021


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    5357.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    3838.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      29.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     314.560 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.396 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.350
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
```

SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.05
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.50
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.986
 30-MINUTE FACTOR = 0.986
  1-HOUR FACTOR = 0.986
  3-HOUR FACTOR = 0.998
  6-HOUR FACTOR = 0.999
 24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  21.060

UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 1.066 | 40.545 |
| 2 | 4.908 | 146.176 |
| 3 | 12.648 | 294.434 |
| 4 | 29.637 | 646.317 |
| 5 | 46.517 | 642.147 |
| 6 | 57.607 | 421.890 |
| 7 | 64.897 | 277.307 |
| 8 | 70.370 | 208.196 |
| 9 | 74.680 | 163.982 |
| 10 | 78.215 | 134.478 |
| 11 | 81.063 | 108.352 |
| 12 | 83.454 | 90.942 |
| 13 | 85.572 | 80.557 |
| 14 | 87.444 | 71.224 |
| 15 | 89.009 | 59.551 |
| 16 | 90.272 | 48.035 |
| 17 | 91.447 | 44.701 |
| 18 | 92.488 | 39.621 |
| 19 | 93.443 | 36.297 |
| 20 | 94.263 | 31.192 |
| 21 | 94.979 | 27.241 |
| 22 | 95.661 | 25.956 |
| 23 | 96.220 | 21.264 |
| 24 | 96.762 | 20.622 |
| 25 | 97.187 | 16.180 |

| | | |
|---|---|---|
| 26 | 97.566 | 14.423 |
| 27 | 97.880 | 11.918 |
| 28 | 98.091 | 8.051 |
| 29 | 98.307 | 8.220 |
| 30 | 98.555 | 9.427 |
| 31 | 98.808 | 9.611 |
| 32 | 99.060 | 9.610 |
| 33 | 99.313 | 9.610 |
| 34 | 99.566 | 9.610 |
| 35 | 99.818 | 9.610 |
| 36 | 100.000 | 6.910 |

---

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 39.2829
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 36.9306

---

↟

==========

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

==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

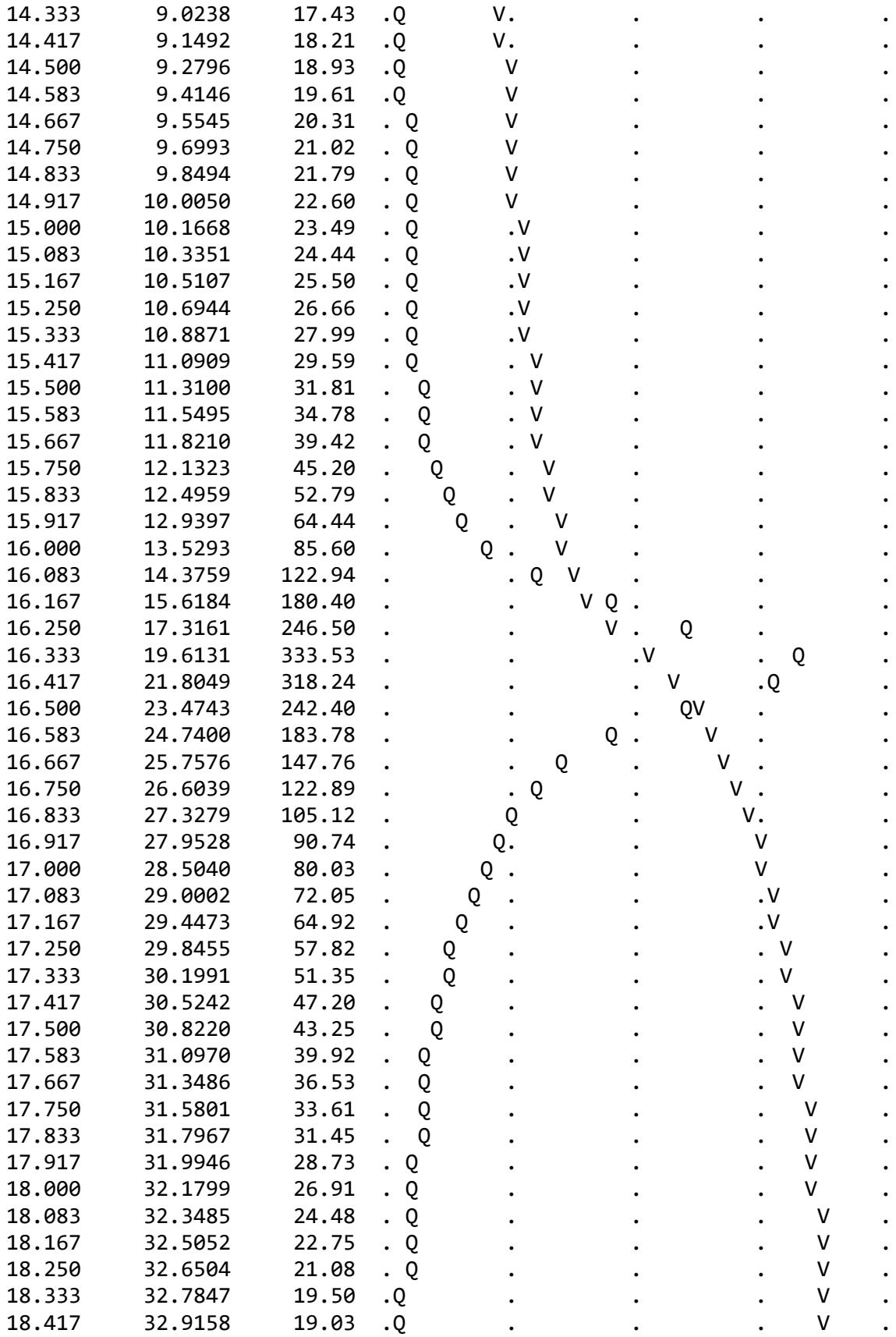
---

| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 100.0 | 200.0 | 300.0 | 400.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0004 | 0.05 | Q | . | . | . | . |
| 0.167 | 0.0020 | 0.23 | Q | . | . | . | . |
| 0.250 | 0.0061 | 0.61 | Q | . | . | . | . |
| 0.333 | 0.0159 | 1.42 | Q | . | . | . | . |
| 0.417 | 0.0313 | 2.23 | Q | . | . | . | . |
| 0.500 | 0.0503 | 2.77 | Q | . | . | . | . |
| 0.583 | 0.0719 | 3.13 | Q | . | . | . | . |
| 0.667 | 0.0953 | 3.40 | Q | . | . | . | . |
| 0.750 | 0.1202 | 3.62 | Q | . | . | . | . |
| 0.833 | 0.1463 | 3.80 | Q | . | . | . | . |
| 0.917 | 0.1735 | 3.95 | Q | . | . | . | . |
| 1.000 | 0.2016 | 4.08 | Q | . | . | . | . |
| 1.083 | 0.2305 | 4.19 | Q | . | . | . | . |
| 1.167 | 0.2601 | 4.30 | Q | . | . | . | . |
| 1.250 | 0.2903 | 4.39 | Q | . | . | . | . |
| 1.333 | 0.3211 | 4.46 | Q | . | . | . | . |
| 1.417 | 0.3523 | 4.54 | Q | . | . | . | . |
| 1.500 | 0.3840 | 4.60 | Q | . | . | . | . |
| 1.583 | 0.4161 | 4.67 | Q | . | . | . | . |
| 1.667 | 0.4487 | 4.72 | Q | . | . | . | . |
| 1.750 | 0.4816 | 4.78 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.833 | 0.5148 | 4.83 | Q | . | . | . | . |
| 1.917 | 0.5484 | 4.87 | Q | . | . | . | . |
| 2.000 | 0.5822 | 4.92 | Q | . | . | . | . |
| 2.083 | 0.6164 | 4.96 | Q | . | . | . | . |
| 2.167 | 0.6507 | 4.99 | Q | . | . | . | . |
| 2.250 | 0.6854 | 5.03 | Q | . | . | . | . |
| 2.333 | 0.7202 | 5.06 | Q | . | . | . | . |
| 2.417 | 0.7552 | 5.09 | Q | . | . | . | . |
| 2.500 | 0.7905 | 5.12 | Q | . | . | . | . |
| 2.583 | 0.8260 | 5.15 | Q | . | . | . | . |
| 2.667 | 0.8617 | 5.19 | Q | . | . | . | . |
| 2.750 | 0.8976 | 5.22 | Q | . | . | . | . |
| 2.833 | 0.9338 | 5.25 | QV | . | . | . | . |
| 2.917 | 0.9702 | 5.28 | QV | . | . | . | . |
| 3.000 | 1.0068 | 5.32 | QV | . | . | . | . |
| 3.083 | 1.0435 | 5.34 | QV | . | . | . | . |
| 3.167 | 1.0805 | 5.36 | QV | . | . | . | . |
| 3.250 | 1.1175 | 5.38 | QV | . | . | . | . |
| 3.333 | 1.1547 | 5.40 | QV | . | . | . | . |
| 3.417 | 1.1921 | 5.43 | QV | . | . | . | . |
| 3.500 | 1.2297 | 5.45 | QV | . | . | . | . |
| 3.583 | 1.2674 | 5.47 | QV | . | . | . | . |
| 3.667 | 1.3052 | 5.50 | QV | . | . | . | . |
| 3.750 | 1.3433 | 5.52 | QV | . | . | . | . |
| 3.833 | 1.3815 | 5.55 | QV | . | . | . | . |
| 3.917 | 1.4198 | 5.57 | QV | . | . | . | . |
| 4.000 | 1.4583 | 5.60 | QV | . | . | . | . |
| 4.083 | 1.4971 | 5.62 | QV | . | . | . | . |
| 4.167 | 1.5359 | 5.65 | QV | . | . | . | . |
| 4.250 | 1.5750 | 5.67 | QV | . | . | . | . |
| 4.333 | 1.6142 | 5.70 | QV | . | . | . | . |
| 4.417 | 1.6536 | 5.72 | QV | . | . | . | . |
| 4.500 | 1.6932 | 5.75 | QV | . | . | . | . |
| 4.583 | 1.7330 | 5.78 | QV | . | . | . | . |
| 4.667 | 1.7730 | 5.80 | QV | . | . | . | . |
| 4.750 | 1.8131 | 5.83 | QV | . | . | . | . |
| 4.833 | 1.8535 | 5.86 | Q V | . | . | . | . |
| 4.917 | 1.8940 | 5.89 | Q V | . | . | . | . |
| 5.000 | 1.9348 | 5.91 | Q V | . | . | . | . |
| 5.083 | 1.9757 | 5.94 | Q V | . | . | . | . |
| 5.167 | 2.0168 | 5.97 | Q V | . | . | . | . |
| 5.250 | 2.0581 | 6.00 | Q V | . | . | . | . |
| 5.333 | 2.0997 | 6.03 | Q V | . | . | . | . |
| 5.417 | 2.1414 | 6.06 | Q V | . | . | . | . |
| 5.500 | 2.1834 | 6.09 | Q V | . | . | . | . |
| 5.583 | 2.2256 | 6.12 | Q V | . | . | . | . |
| 5.667 | 2.2680 | 6.15 | Q V | . | . | . | . |
| 5.750 | 2.3106 | 6.19 | Q V | . | . | . | . |
| 5.833 | 2.3534 | 6.22 | Q V | . | . | . | . |
| 5.917 | 2.3964 | 6.25 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6.000 | 2.4397 | 6.28 | Q | V | . | . | . | . |
| 6.083 | 2.4832 | 6.32 | Q | V | . | . | . | . |
| 6.167 | 2.5270 | 6.35 | Q | V | . | . | . | . |
| 6.250 | 2.5709 | 6.39 | Q | V | . | . | . | . |
| 6.333 | 2.6151 | 6.42 | Q | V | . | . | . | . |
| 6.417 | 2.6596 | 6.46 | Q | V | . | . | . | . |
| 6.500 | 2.7043 | 6.49 | Q | V | . | . | . | . |
| 6.583 | 2.7493 | 6.53 | Q | V | . | . | . | . |
| 6.667 | 2.7945 | 6.56 | Q | V | . | . | . | . |
| 6.750 | 2.8399 | 6.60 | Q | V | . | . | . | . |
| 6.833 | 2.8857 | 6.64 | Q | V | . | . | . | . |
| 6.917 | 2.9316 | 6.68 | Q | V | . | . | . | . |
| 7.000 | 2.9779 | 6.72 | Q | V | . | . | . | . |
| 7.083 | 3.0244 | 6.76 | Q | V | . | . | . | . |
| 7.167 | 3.0712 | 6.80 | Q | V | . | . | . | . |
| 7.250 | 3.1183 | 6.84 | Q | V | . | . | . | . |
| 7.333 | 3.1657 | 6.88 | Q | V | . | . | . | . |
| 7.417 | 3.2133 | 6.92 | Q | V | . | . | . | . |
| 7.500 | 3.2613 | 6.96 | Q | V | . | . | . | . |
| 7.583 | 3.3095 | 7.01 | Q | V | . | . | . | . |
| 7.667 | 3.3581 | 7.05 | Q | V | . | . | . | . |
| 7.750 | 3.4069 | 7.09 | Q | V | . | . | . | . |
| 7.833 | 3.4561 | 7.14 | Q | V | . | . | . | . |
| 7.917 | 3.5056 | 7.18 | Q | V | . | . | . | . |
| 8.000 | 3.5554 | 7.23 | Q | V | . | . | . | . |
| 8.083 | 3.6055 | 7.28 | Q | V | . | . | . | . |
| 8.167 | 3.6560 | 7.33 | Q | V | . | . | . | . |
| 8.250 | 3.7068 | 7.38 | Q | V | . | . | . | . |
| 8.333 | 3.7579 | 7.43 | Q | V | . | . | . | . |
| 8.417 | 3.8094 | 7.48 | Q | V | . | . | . | . |
| 8.500 | 3.8613 | 7.53 | Q | V | . | . | . | . |
| 8.583 | 3.9135 | 7.58 | Q | V | . | . | . | . |
| 8.667 | 3.9661 | 7.63 | Q | V | . | . | . | . |
| 8.750 | 4.0190 | 7.69 | Q | V | . | . | . | . |
| 8.833 | 4.0723 | 7.74 | Q | V | . | . | . | . |
| 8.917 | 4.1261 | 7.80 | Q | V | . | . | . | . |
| 9.000 | 4.1802 | 7.86 | Q | V | . | . | . | . |
| 9.083 | 4.2347 | 7.92 | Q | V | . | . | . | . |
| 9.167 | 4.2896 | 7.98 | Q | V | . | . | . | . |
| 9.250 | 4.3450 | 8.04 | Q | V | . | . | . | . |
| 9.333 | 4.4008 | 8.10 | Q | V | . | . | . | . |
| 9.417 | 4.4570 | 8.16 | Q | V | . | . | . | . |
| 9.500 | 4.5136 | 8.23 | Q | V | . | . | . | . |
| 9.583 | 4.5707 | 8.29 | Q | V | . | . | . | . |
| 9.667 | 4.6283 | 8.36 | Q | V | . | . | . | . |
| 9.750 | 4.6863 | 8.43 | Q | V | . | . | . | . |
| 9.833 | 4.7449 | 8.50 | Q | V | . | . | . | . |
| 9.917 | 4.8039 | 8.57 | Q | V | . | . | . | . |
| 10.000 | 4.8634 | 8.64 | Q | V | . | . | . | . |
| 10.083 | 4.9234 | 8.71 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10.167 | 4.9839 | 8.79 | Q | V | . | . | . | . |
| 10.250 | 5.0450 | 8.87 | Q | V | . | . | . | . |
| 10.333 | 5.1066 | 8.95 | Q | V | . | . | . | . |
| 10.417 | 5.1688 | 9.03 | Q | V | . | . | . | . |
| 10.500 | 5.2315 | 9.11 | Q | V | . | . | . | . |
| 10.583 | 5.2949 | 9.20 | Q | V | . | . | . | . |
| 10.667 | 5.3588 | 9.28 | Q | V | . | . | . | . |
| 10.750 | 5.4233 | 9.37 | Q | V | . | . | . | . |
| 10.833 | 5.4885 | 9.46 | Q | V | . | . | . | . |
| 10.917 | 5.5543 | 9.56 | Q | V | . | . | . | . |
| 11.000 | 5.6208 | 9.65 | Q | V | . | . | . | . |
| 11.083 | 5.6879 | 9.75 | Q | V | . | . | . | . |
| 11.167 | 5.7558 | 9.85 | Q | V | . | . | . | . |
| 11.250 | 5.8243 | 9.95 | Q | V | . | . | . | . |
| 11.333 | 5.8936 | 10.06 | .Q | V | . | . | . | . |
| 11.417 | 5.9636 | 10.17 | .Q | V | . | . | . | . |
| 11.500 | 6.0344 | 10.28 | .Q | V | . | . | . | . |
| 11.583 | 6.1060 | 10.39 | .Q | V | . | . | . | . |
| 11.667 | 6.1784 | 10.51 | .Q | V | . | . | . | . |
| 11.750 | 6.2516 | 10.63 | .Q | V | . | . | . | . |
| 11.833 | 6.3257 | 10.76 | .Q | V | . | . | . | . |
| 11.917 | 6.4007 | 10.89 | .Q | V | . | . | . | . |
| 12.000 | 6.4766 | 11.02 | .Q | V | . | . | . | . |
| 12.083 | 6.5534 | 11.15 | .Q | V | . | . | . | . |
| 12.167 | 6.6309 | 11.26 | .Q | V | . | . | . | . |
| 12.250 | 6.7090 | 11.34 | .Q | V | . | . | . | . |
| 12.333 | 6.7871 | 11.34 | .Q | V | . | . | . | . |
| 12.417 | 6.8653 | 11.35 | .Q | V | . | . | . | . |
| 12.500 | 6.9439 | 11.42 | .Q | V | . | . | . | . |
| 12.583 | 7.0232 | 11.52 | .Q | V | . | . | . | . |
| 12.667 | 7.1034 | 11.64 | .Q | V | . | . | . | . |
| 12.750 | 7.1844 | 11.77 | .Q | V | . | . | . | . |
| 12.833 | 7.2666 | 11.93 | .Q | V | . | . | . | . |
| 12.917 | 7.3498 | 12.09 | .Q | V | . | . | . | . |
| 13.000 | 7.4343 | 12.26 | .Q | V | . | . | . | . |
| 13.083 | 7.5200 | 12.45 | .Q | V | . | . | . | . |
| 13.167 | 7.6071 | 12.64 | .Q | V | . | . | . | . |
| 13.250 | 7.6955 | 12.85 | .Q | V | . | . | . | . |
| 13.333 | 7.7855 | 13.07 | .Q | V | . | . | . | . |
| 13.417 | 7.8771 | 13.29 | .Q | V | . | . | . | . |
| 13.500 | 7.9703 | 13.54 | .Q | V | . | . | . | . |
| 13.583 | 8.0653 | 13.79 | .Q | V | . | . | . | . |
| 13.667 | 8.1621 | 14.06 | .Q | V | . | . | . | . |
| 13.750 | 8.2609 | 14.34 | .Q | V | . | . | . | . |
| 13.833 | 8.3617 | 14.64 | .Q | V. | . | . | . | . |
| 13.917 | 8.4647 | 14.96 | .Q | V. | . | . | . | . |
| 14.000 | 8.5700 | 15.29 | .Q | V. | . | . | . | . |
| 14.083 | 8.6779 | 15.67 | .Q | V. | . | . | . | . |
| 14.167 | 8.7890 | 16.12 | .Q | V. | . | . | . | . |
| 14.250 | 8.9037 | 16.67 | .Q | V. | . | . | . | . |



```
18.500     33.0458     18.88  .Q        .         .         .    V    .
18.583     33.1731     18.49  .Q        .         .         .    V    .
18.667     33.2971     18.00  .Q        .         .         .     V   .
18.750     33.4168     17.38  .Q        .         .         .     V   .
18.833     33.5316     16.66  .Q        .         .         .     V   .
18.917     33.6397     15.70  .Q        .         .         .     V   .
19.000     33.7362     14.01  .Q        .         .         .     V   .
19.083     33.8164     11.65  .Q        .         .         .     V   .
19.167     33.8925     11.04  .Q        .         .         .     V   .
19.250     33.9659     10.66  .Q        .         .         .     V   .
19.333     34.0372     10.35  .Q        .         .         .     V   .
19.417     34.1067     10.10  .Q        .         .         .     V   .
19.500     34.1746      9.86  Q         .         .         .      V  .
19.583     34.2410      9.65  Q         .         .         .      V  .
19.667     34.3061      9.44  Q         .         .         .      V  .
19.750     34.3698      9.25  Q         .         .         .      V  .
19.833     34.4322      9.07  Q         .         .         .      V  .
19.917     34.4935      8.90  Q         .         .         .      V  .
20.000     34.5536      8.73  Q         .         .         .      V  .
20.083     34.6128      8.58  Q         .         .         .      V  .
20.167     34.6709      8.44  Q         .         .         .      V  .
20.250     34.7280      8.30  Q         .         .         .      V  .
20.333     34.7843      8.17  Q         .         .         .      V  .
20.417     34.8396      8.04  Q         .         .         .      V  .
20.500     34.8941      7.92  Q         .         .         .      V  .
20.583     34.9479      7.80  Q         .         .         .      V  .
20.667     35.0008      7.69  Q         .         .         .      V  .
20.750     35.0530      7.58  Q         .         .         .      V  .
20.833     35.1045      7.47  Q         .         .         .       V .
20.917     35.1553      7.37  Q         .         .         .       V .
21.000     35.2054      7.28  Q         .         .         .       V .
21.083     35.2548      7.18  Q         .         .         .       V .
21.167     35.3036      7.09  Q         .         .         .       V .
21.250     35.3518      7.00  Q         .         .         .       V .
21.333     35.3994      6.91  Q         .         .         .       V .
21.417     35.4464      6.83  Q         .         .         .       V .
21.500     35.4929      6.75  Q         .         .         .       V .
21.583     35.5388      6.67  Q         .         .         .       V .
21.667     35.5842      6.59  Q         .         .         .       V .
21.750     35.6290      6.51  Q         .         .         .       V .
21.833     35.6734      6.44  Q         .         .         .       V .
21.917     35.7173      6.37  Q         .         .         .       V .
22.000     35.7607      6.30  Q         .         .         .       V .
22.083     35.8037      6.24  Q         .         .         .       V .
22.167     35.8462      6.17  Q         .         .         .       V .
22.250     35.8882      6.11  Q         .         .         .       V .
22.333     35.9299      6.05  Q         .         .         .       V .
22.417     35.9711      5.99  Q         .         .         .       V .
22.500     36.0119      5.93  Q         .         .         .        V.
22.583     36.0524      5.87  Q         .         .         .        V.
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22.667 | 36.0924 | 5.82 | Q | . | . | . | V. |
| 22.750 | 36.1321 | 5.76 | Q | . | . | . | V. |
| 22.833 | 36.1714 | 5.71 | Q | . | . | . | V. |
| 22.917 | 36.2104 | 5.66 | Q | . | . | . | V. |
| 23.000 | 36.2489 | 5.60 | Q | . | . | . | V. |
| 23.083 | 36.2872 | 5.55 | Q | . | . | . | V. |
| 23.167 | 36.3251 | 5.51 | Q | . | . | . | V. |
| 23.250 | 36.3627 | 5.46 | Q | . | . | . | V. |
| 23.333 | 36.4000 | 5.41 | Q | . | . | . | V. |
| 23.417 | 36.4370 | 5.37 | Q | . | . | . | V. |
| 23.500 | 36.4736 | 5.32 | Q | . | . | . | V. |
| 23.583 | 36.5100 | 5.28 | Q | . | . | . | V. |
| 23.667 | 36.5460 | 5.24 | Q | . | . | . | V. |
| 23.750 | 36.5818 | 5.19 | Q | . | . | . | V. |
| 23.833 | 36.6173 | 5.15 | Q | . | . | . | V. |
| 23.917 | 36.6525 | 5.11 | Q | . | . | . | V. |
| 24.000 | 36.6874 | 5.07 | Q | . | . | . | V. |
| 24.083 | 36.7217 | 4.98 | Q | . | . | . | V. |
| 24.167 | 36.7545 | 4.76 | Q | . | . | . | V. |
| 24.250 | 36.7846 | 4.36 | Q | . | . | . | V. |
| 24.333 | 36.8088 | 3.51 | Q | . | . | . | V. |
| 24.417 | 36.8272 | 2.68 | Q | . | . | . | V. |
| 24.500 | 36.8419 | 2.13 | Q | . | . | . | V. |
| 24.583 | 36.8541 | 1.77 | Q | . | . | . | V. |
| 24.667 | 36.8644 | 1.50 | Q | . | . | . | V. |
| 24.750 | 36.8733 | 1.28 | Q | . | . | . | V. |
| 24.833 | 36.8808 | 1.10 | Q | . | . | . | V. |
| 24.917 | 36.8874 | 0.96 | Q | . | . | . | V. |
| 25.000 | 36.8932 | 0.84 | Q | . | . | . | V. |
| 25.083 | 36.8982 | 0.73 | Q | . | . | . | V. |
| 25.167 | 36.9026 | 0.63 | Q | . | . | . | V. |
| 25.250 | 36.9064 | 0.55 | Q | . | . | . | V. |
| 25.333 | 36.9098 | 0.49 | Q | . | . | . | V. |
| 25.417 | 36.9127 | 0.43 | Q | . | . | . | V. |
| 25.500 | 36.9153 | 0.38 | Q | . | . | . | V. |
| 25.583 | 36.9176 | 0.33 | Q | . | . | . | V. |
| 25.667 | 36.9196 | 0.29 | Q | . | . | . | V. |
| 25.750 | 36.9213 | 0.25 | Q | . | . | . | V. |
| 25.833 | 36.9228 | 0.22 | Q | . | . | . | V. |
| 25.917 | 36.9241 | 0.19 | Q | . | . | . | V. |
| 26.000 | 36.9252 | 0.16 | Q | . | . | . | V. |
| 26.083 | 36.9262 | 0.14 | Q | . | . | . | V. |
| 26.167 | 36.9270 | 0.12 | Q | . | . | . | V. |
| 26.250 | 36.9277 | 0.10 | Q | . | . | . | V. |
| 26.333 | 36.9284 | 0.09 | Q | . | . | . | V. |
| 26.417 | 36.9289 | 0.08 | Q | . | . | . | V. |
| 26.500 | 36.9294 | 0.07 | Q | . | . | . | V. |
| 26.583 | 36.9298 | 0.06 | Q | . | . | . | V. |
| 26.667 | 36.9301 | 0.05 | Q | . | . | . | V. |
| 26.750 | 36.9304 | 0.03 | Q | . | . | . | V. |

```
  26.833     36.9305      0.02  Q         .         .         .        V.
  26.917     36.9306      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1615.0
             10%                            135.0
             20%                             70.0
             30%                             50.0
             40%                             35.0
             50%                             30.0
             60%                             20.0
             70%                             20.0
             80%                             10.0
             90%                             10.0
================================================================================

  END OF FLOODSCx ROUTING ANALYSIS
```

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1355

                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 2 EXISTING CONDITION                                             *
 ************************************************************************

  FILE NAME: LOEX2.DAT
  TIME/DATE OF STUDY: 10:25 07/08/2021


**************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    5520.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    2488.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      19.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     218.070 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.370 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.350
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
```

SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.05
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.50
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.990
30-MINUTE FACTOR = 0.990
1-HOUR FACTOR = 0.990
3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 0.999
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 22.526

UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 1.170 | 30.846 |
| 2 | 5.502 | 114.251 |
| 3 | 14.926 | 248.541 |
| 4 | 34.349 | 512.235 |
| 5 | 50.449 | 424.607 |
| 6 | 60.709 | 270.595 |
| 7 | 67.517 | 179.529 |
| 8 | 72.753 | 138.107 |
| 9 | 76.851 | 108.071 |
| 10 | 80.147 | 86.923 |
| 11 | 82.844 | 71.126 |
| 12 | 85.167 | 61.262 |
| 13 | 87.218 | 54.086 |
| 14 | 88.923 | 44.970 |
| 15 | 90.283 | 35.855 |
| 16 | 91.533 | 32.979 |
| 17 | 92.635 | 29.055 |
| 18 | 93.638 | 26.464 |
| 19 | 94.469 | 21.900 |
| 20 | 95.235 | 20.201 |
| 21 | 95.906 | 17.713 |
| 22 | 96.492 | 15.444 |
| 23 | 97.019 | 13.917 |
| 24 | 97.428 | 10.780 |
| 25 | 97.803 | 9.883 |

| | | |
|---|---|---|
| 26 | 98.044 | 6.353 |
| 27 | 98.272 | 6.023 |
| 28 | 98.533 | 6.887 |
| 29 | 98.804 | 7.125 |
| 30 | 99.074 | 7.130 |
| 31 | 99.344 | 7.125 |
| 32 | 99.614 | 7.125 |
| 33 | 99.884 | 7.125 |
| 34 | 100.000 | 3.048 |

---

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 27.1967

TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 25.6488

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==========

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

==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

---

| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 75.0 | 150.0 | 225.0 | 300.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0003 | 0.04 | Q | . | . | . | . |
| 0.167 | 0.0015 | 0.18 | Q | . | . | . | . |
| 0.250 | 0.0049 | 0.50 | Q | . | . | . | . |
| 0.333 | 0.0128 | 1.14 | Q | . | . | . | . |
| 0.417 | 0.0243 | 1.68 | Q | . | . | . | . |
| 0.500 | 0.0383 | 2.02 | Q | . | . | . | . |
| 0.583 | 0.0538 | 2.26 | Q | . | . | . | . |
| 0.667 | 0.0706 | 2.44 | Q | . | . | . | . |
| 0.750 | 0.0884 | 2.58 | Q | . | . | . | . |
| 0.833 | 0.1070 | 2.70 | Q | . | . | . | . |
| 0.917 | 0.1262 | 2.80 | Q | . | . | . | . |
| 1.000 | 0.1461 | 2.89 | Q | . | . | . | . |
| 1.083 | 0.1665 | 2.96 | Q | . | . | . | . |
| 1.167 | 0.1874 | 3.03 | Q | . | . | . | . |
| 1.250 | 0.2087 | 3.09 | Q | . | . | . | . |
| 1.333 | 0.2303 | 3.14 | Q | . | . | . | . |
| 1.417 | 0.2523 | 3.19 | Q | . | . | . | . |
| 1.500 | 0.2745 | 3.23 | Q | . | . | . | . |
| 1.583 | 0.2971 | 3.27 | Q | . | . | . | . |
| 1.667 | 0.3199 | 3.31 | Q | . | . | . | . |
| 1.750 | 0.3429 | 3.35 | Q | . | . | . | . |
| 1.833 | 0.3662 | 3.38 | Q | . | . | . | . |
| 1.917 | 0.3897 | 3.41 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.000 | 0.4133 | 3.44 | Q | . | . | . | . |
| 2.083 | 0.4372 | 3.46 | Q | . | . | . | . |
| 2.167 | 0.4611 | 3.48 | Q | . | . | . | . |
| 2.250 | 0.4853 | 3.50 | Q | . | . | . | . |
| 2.333 | 0.5096 | 3.53 | Q | . | . | . | . |
| 2.417 | 0.5340 | 3.55 | Q | . | . | . | . |
| 2.500 | 0.5586 | 3.57 | Q | . | . | . | . |
| 2.583 | 0.5834 | 3.60 | Q | . | . | . | . |
| 2.667 | 0.6083 | 3.62 | Q | . | . | . | . |
| 2.750 | 0.6334 | 3.64 | Q | . | . | . | . |
| 2.833 | 0.6586 | 3.66 | QV | . | . | . | . |
| 2.917 | 0.6839 | 3.68 | QV | . | . | . | . |
| 3.000 | 0.7093 | 3.69 | QV | . | . | . | . |
| 3.083 | 0.7348 | 3.71 | QV | . | . | . | . |
| 3.167 | 0.7605 | 3.72 | QV | . | . | . | . |
| 3.250 | 0.7862 | 3.74 | QV | . | . | . | . |
| 3.333 | 0.8121 | 3.75 | QV | . | . | . | . |
| 3.417 | 0.8380 | 3.77 | QV | . | . | . | . |
| 3.500 | 0.8641 | 3.79 | QV | . | . | . | . |
| 3.583 | 0.8903 | 3.80 | QV | . | . | . | . |
| 3.667 | 0.9166 | 3.82 | QV | . | . | . | . |
| 3.750 | 0.9430 | 3.83 | QV | . | . | . | . |
| 3.833 | 0.9695 | 3.85 | QV | . | . | . | . |
| 3.917 | 0.9962 | 3.87 | QV | . | . | . | . |
| 4.000 | 1.0229 | 3.89 | QV | . | . | . | . |
| 4.083 | 1.0498 | 3.90 | QV | . | . | . | . |
| 4.167 | 1.0768 | 3.92 | QV | . | . | . | . |
| 4.250 | 1.1039 | 3.94 | QV | . | . | . | . |
| 4.333 | 1.1312 | 3.96 | QV | . | . | . | . |
| 4.417 | 1.1586 | 3.97 | QV | . | . | . | . |
| 4.500 | 1.1861 | 3.99 | QV | . | . | . | . |
| 4.583 | 1.2137 | 4.01 | QV | . | . | . | . |
| 4.667 | 1.2415 | 4.03 | QV | . | . | . | . |
| 4.750 | 1.2693 | 4.05 | QV | . | . | . | . |
| 4.833 | 1.2974 | 4.07 | Q V | . | . | . | . |
| 4.917 | 1.3255 | 4.09 | Q V | . | . | . | . |
| 5.000 | 1.3538 | 4.11 | Q V | . | . | . | . |
| 5.083 | 1.3823 | 4.13 | Q V | . | . | . | . |
| 5.167 | 1.4108 | 4.15 | Q V | . | . | . | . |
| 5.250 | 1.4396 | 4.17 | Q V | . | . | . | . |
| 5.333 | 1.4684 | 4.19 | Q V | . | . | . | . |
| 5.417 | 1.4974 | 4.21 | Q V | . | . | . | . |
| 5.500 | 1.5266 | 4.23 | Q V | . | . | . | . |
| 5.583 | 1.5559 | 4.25 | Q V | . | . | . | . |
| 5.667 | 1.5853 | 4.28 | Q V | . | . | . | . |
| 5.750 | 1.6149 | 4.30 | Q V | . | . | . | . |
| 5.833 | 1.6447 | 4.32 | Q V | . | . | . | . |
| 5.917 | 1.6746 | 4.34 | Q V | . | . | . | . |
| 6.000 | 1.7046 | 4.37 | Q V | . | . | . | . |
| 6.083 | 1.7349 | 4.39 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6.167 | 1.7653 | 4.41 | Q | V | . | . | . | . |
| 6.250 | 1.7958 | 4.44 | Q | V | . | . | . | . |
| 6.333 | 1.8265 | 4.46 | Q | V | . | . | . | . |
| 6.417 | 1.8574 | 4.49 | Q | V | . | . | . | . |
| 6.500 | 1.8885 | 4.51 | Q | V | . | . | . | . |
| 6.583 | 1.9197 | 4.54 | Q | V | . | . | . | . |
| 6.667 | 1.9512 | 4.56 | Q | V | . | . | . | . |
| 6.750 | 1.9827 | 4.59 | Q | V | . | . | . | . |
| 6.833 | 2.0145 | 4.61 | Q | V | . | . | . | . |
| 6.917 | 2.0465 | 4.64 | Q | V | . | . | . | . |
| 7.000 | 2.0786 | 4.67 | Q | V | . | . | . | . |
| 7.083 | 2.1110 | 4.69 | Q | V | . | . | . | . |
| 7.167 | 2.1435 | 4.72 | Q | V | . | . | . | . |
| 7.250 | 2.1762 | 4.75 | Q | V | . | . | . | . |
| 7.333 | 2.2091 | 4.78 | Q | V | . | . | . | . |
| 7.417 | 2.2422 | 4.81 | Q | V | . | . | . | . |
| 7.500 | 2.2756 | 4.84 | Q | V | . | . | . | . |
| 7.583 | 2.3091 | 4.87 | Q | V | . | . | . | . |
| 7.667 | 2.3429 | 4.90 | Q | V | . | . | . | . |
| 7.750 | 2.3768 | 4.93 | Q | V | . | . | . | . |
| 7.833 | 2.4110 | 4.96 | Q | V | . | . | . | . |
| 7.917 | 2.4454 | 4.99 | Q | V | . | . | . | . |
| 8.000 | 2.4800 | 5.03 | Q | V | . | . | . | . |
| 8.083 | 2.5149 | 5.06 | Q | V | . | . | . | . |
| 8.167 | 2.5499 | 5.09 | Q | V | . | . | . | . |
| 8.250 | 2.5853 | 5.13 | Q | V | . | . | . | . |
| 8.333 | 2.6208 | 5.16 | Q | V | . | . | . | . |
| 8.417 | 2.6566 | 5.20 | Q | V | . | . | . | . |
| 8.500 | 2.6927 | 5.23 | Q | V | . | . | . | . |
| 8.583 | 2.7290 | 5.27 | Q | V | . | . | . | . |
| 8.667 | 2.7655 | 5.31 | Q | V | . | . | . | . |
| 8.750 | 2.8023 | 5.35 | Q | V | . | . | . | . |
| 8.833 | 2.8394 | 5.39 | Q | V | . | . | . | . |
| 8.917 | 2.8768 | 5.42 | Q | V | . | . | . | . |
| 9.000 | 2.9144 | 5.46 | Q | V | . | . | . | . |
| 9.083 | 2.9523 | 5.51 | Q | V | . | . | . | . |
| 9.167 | 2.9905 | 5.55 | Q | V | . | . | . | . |
| 9.250 | 3.0290 | 5.59 | Q | V | . | . | . | . |
| 9.333 | 3.0678 | 5.63 | Q | V | . | . | . | . |
| 9.417 | 3.1069 | 5.68 | Q | V | . | . | . | . |
| 9.500 | 3.1463 | 5.72 | Q | V | . | . | . | . |
| 9.583 | 3.1860 | 5.77 | Q | V | . | . | . | . |
| 9.667 | 3.2261 | 5.81 | Q | V | . | . | . | . |
| 9.750 | 3.2665 | 5.86 | Q | V | . | . | . | . |
| 9.833 | 3.3072 | 5.91 | Q | V | . | . | . | . |
| 9.917 | 3.3482 | 5.96 | Q | V | . | . | . | . |
| 10.000 | 3.3896 | 6.01 | Q | V | . | . | . | . |
| 10.083 | 3.4314 | 6.06 | Q | V | . | . | . | . |
| 10.167 | 3.4735 | 6.12 | Q | V | . | . | . | . |
| 10.250 | 3.5160 | 6.17 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10.333 | 3.5589 | 6.23 | Q | V | . | . | . | . |
| 10.417 | 3.6021 | 6.28 | Q | V | . | . | . | . |
| 10.500 | 3.6458 | 6.34 | Q | V | . | . | . | . |
| 10.583 | 3.6899 | 6.40 | Q | V | . | . | . | . |
| 10.667 | 3.7344 | 6.46 | Q | V | . | . | . | . |
| 10.750 | 3.7793 | 6.52 | Q | V | . | . | . | . |
| 10.833 | 3.8246 | 6.59 | Q | V | . | . | . | . |
| 10.917 | 3.8704 | 6.65 | Q | V | . | . | . | . |
| 11.000 | 3.9167 | 6.72 | Q | V | . | . | . | . |
| 11.083 | 3.9635 | 6.79 | Q | V | . | . | . | . |
| 11.167 | 4.0107 | 6.86 | Q | V | . | . | . | . |
| 11.250 | 4.0584 | 6.93 | Q | V | . | . | . | . |
| 11.333 | 4.1067 | 7.00 | Q | V | . | . | . | . |
| 11.417 | 4.1554 | 7.08 | Q | V | . | . | . | . |
| 11.500 | 4.2047 | 7.16 | Q | V | . | . | . | . |
| 11.583 | 4.2546 | 7.24 | Q | V | . | . | . | . |
| 11.667 | 4.3050 | 7.32 | Q | V | . | . | . | . |
| 11.750 | 4.3560 | 7.41 | Q | V | . | . | . | . |
| 11.833 | 4.4076 | 7.50 | Q | V | . | . | . | . |
| 11.917 | 4.4599 | 7.58 | .Q | V | . | . | . | . |
| 12.000 | 4.5127 | 7.68 | .Q | V | . | . | . | . |
| 12.083 | 4.5662 | 7.77 | .Q | V | . | . | . | . |
| 12.167 | 4.6202 | 7.84 | .Q | V | . | . | . | . |
| 12.250 | 4.6745 | 7.89 | .Q | V | . | . | . | . |
| 12.333 | 4.7288 | 7.87 | .Q | V | . | . | . | . |
| 12.417 | 4.7831 | 7.88 | .Q | V | . | . | . | . |
| 12.500 | 4.8377 | 7.93 | .Q | V | . | . | . | . |
| 12.583 | 4.8929 | 8.01 | .Q | V | . | . | . | . |
| 12.667 | 4.9486 | 8.09 | .Q | V | . | . | . | . |
| 12.750 | 5.0050 | 8.19 | .Q | V | . | . | . | . |
| 12.833 | 5.0622 | 8.30 | .Q | V | . | . | . | . |
| 12.917 | 5.1201 | 8.41 | .Q | V | . | . | . | . |
| 13.000 | 5.1789 | 8.54 | .Q | V | . | . | . | . |
| 13.083 | 5.2386 | 8.67 | .Q | V | . | . | . | . |
| 13.167 | 5.2992 | 8.81 | .Q | V | . | . | . | . |
| 13.250 | 5.3609 | 8.95 | .Q | V | . | . | . | . |
| 13.333 | 5.4236 | 9.11 | .Q | V | . | . | . | . |
| 13.417 | 5.4874 | 9.26 | .Q | V | . | . | . | . |
| 13.500 | 5.5524 | 9.44 | .Q | V | . | . | . | . |
| 13.583 | 5.6186 | 9.61 | .Q | V | . | . | . | . |
| 13.667 | 5.6861 | 9.81 | .Q | V | . | . | . | . |
| 13.750 | 5.7550 | 10.00 | .Q | V | . | . | . | . |
| 13.833 | 5.8254 | 10.22 | .Q | V. | . | . | . | . |
| 13.917 | 5.8973 | 10.44 | .Q | V. | . | . | . | . |
| 14.000 | 5.9709 | 10.68 | .Q | V. | . | . | . | . |
| 14.083 | 6.0462 | 10.94 | .Q | V. | . | . | . | . |
| 14.167 | 6.1238 | 11.26 | .Q | V. | . | . | . | . |
| 14.250 | 6.2041 | 11.66 | .Q | V. | . | . | . | . |
| 14.333 | 6.2881 | 12.20 | .Q | V. | . | . | . | . |
| 14.417 | 6.3757 | 12.72 | .Q | V. | . | . | . | . |

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14.500      6.4667     13.21  .Q        V         .         .         .
14.583      6.5608     13.67  .Q        V         .         .         .
14.667      6.6583     14.16  .Q        V         .         .         .
14.750      6.7592     14.65  .Q        V         .         .         .
14.833      6.8638     15.19  . Q       V         .         .         .
14.917      6.9723     15.76  . Q       V         .         .         .
15.000      7.0852     16.39  . Q       .V        .         .         .
15.083      7.2027     17.06  . Q       .V        .         .         .
15.167      7.3254     17.82  . Q       .V        .         .         .
15.250      7.4537     18.64  . Q       .V        .         .         .
15.333      7.5886     19.58  . Q       .V        .         .         .
15.417      7.7314     20.74  . Q       . V       .         .         .
15.500      7.8856     22.38  . Q       . V       .         .         .
15.583      8.0554     24.67  .  Q      . V       .         .         .
15.667      8.2501     28.26  .  Q      . V       .         .         .
15.750      8.4734     32.43  .   Q     .  V      .         .         .
15.833      8.7357     38.09  .    Q    .  V      .         .         .
15.917      9.0605     47.16  .     Q   .   V     .         .         .
16.000      9.4982     63.55  .       Q .   V     .         .         .
16.083     10.1296     91.67  .         . Q  V    .         .         .
16.167     11.0663    136.01  .         .      VQ .         .         .
16.250     12.3647    188.53  .         .        V.    Q    .         .
16.333     14.0801    249.07  .         .         .V         .  Q      .
16.417     15.5705    216.41  .         .         .   V   Q .         .
16.500     16.6812    161.28  .         .         .Q    V   .         .
16.583     17.5250    122.52  .         .     Q   .      V  .         .
16.667     18.2076     99.11  .         .  Q      .       V .         .
16.750     18.7742     82.26  .         Q         .        V.         .
16.833     19.2564     70.02  .        Q.         .         V         .
16.917     19.6746     60.73  .       Q .         .         V         .
17.000     20.0457     53.88  .      Q  .         .         .V        .
17.083     20.3780     48.26  .     Q   .         .         .V        .
17.167     20.6724     42.74  .    Q    .         .         . V       .
17.250     20.9323     37.75  .    Q    .         .         . V       .
17.333     21.1697     34.47  .   Q     .         .         .  V      .
17.417     21.3857     31.35  .   Q     .         .         .  V      .
17.500     21.5838     28.77  .  Q      .         .         .  V      .
17.583     21.7631     26.04  .  Q      .         .         .  V      .
17.667     21.9290     24.08  .  Q      .         .         .   V     .
17.750     22.0814     22.14  . Q       .         .         .   V     .
17.833     22.2214     20.32  . Q       .         .         .   V     .
17.917     22.3506     18.76  . Q       .         .         .   V     .
18.000     22.4675     16.98  . Q       .         .         .    V    .
18.083     22.5764     15.80  . Q       .         .         .    V    .
18.167     22.6749     14.31  .Q        .         .         .    V    .
18.250     22.7696     13.74  .Q        .         .         .    V    .
18.333     22.8635     13.64  .Q        .         .         .    V    .
18.417     22.9557     13.40  .Q        .         .         .    V    .
18.500     23.0454     13.02  .Q        .         .         .    V    .
18.583     23.1318     12.55  .Q        .         .         .     V   .
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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 18.667 | 23.2142 | 11.97 | .Q | . | . | . | V . |
| 18.750 | 23.2913 | 11.18 | .Q | . | . | . | V . |
| 18.833 | 23.3569 | 9.53 | .Q | . | . | . | V . |
| 18.917 | 23.4138 | 8.27 | .Q | . | . | . | V . |
| 19.000 | 23.4680 | 7.87 | .Q | . | . | . | V . |
| 19.083 | 23.5204 | 7.60 | .Q | . | . | . | V . |
| 19.167 | 23.5712 | 7.39 | Q | . | . | . | V . |
| 19.250 | 23.6208 | 7.20 | Q | . | . | . | V . |
| 19.333 | 23.6692 | 7.03 | Q | . | . | . | V . |
| 19.417 | 23.7165 | 6.87 | Q | . | . | . | V . |
| 19.500 | 23.7628 | 6.72 | Q | . | . | . | V . |
| 19.583 | 23.8082 | 6.58 | Q | . | . | . | V . |
| 19.667 | 23.8526 | 6.45 | Q | . | . | . | V . |
| 19.750 | 23.8961 | 6.32 | Q | . | . | . | V . |
| 19.833 | 23.9389 | 6.21 | Q | . | . | . | V . |
| 19.917 | 23.9808 | 6.10 | Q | . | . | . | V . |
| 20.000 | 24.0221 | 5.99 | Q | . | . | . | V . |
| 20.083 | 24.0626 | 5.89 | Q | . | . | . | V . |
| 20.167 | 24.1025 | 5.79 | Q | . | . | . | V . |
| 20.250 | 24.1418 | 5.70 | Q | . | . | . | V . |
| 20.333 | 24.1804 | 5.61 | Q | . | . | . | V . |
| 20.417 | 24.2184 | 5.52 | Q | . | . | . | V . |
| 20.500 | 24.2559 | 5.44 | Q | . | . | . | V . |
| 20.583 | 24.2928 | 5.36 | Q | . | . | . | V . |
| 20.667 | 24.3292 | 5.29 | Q | . | . | . | V . |
| 20.750 | 24.3651 | 5.21 | Q | . | . | . | V . |
| 20.833 | 24.4006 | 5.14 | Q | . | . | . | V . |
| 20.917 | 24.4355 | 5.07 | Q | . | . | . | V . |
| 21.000 | 24.4700 | 5.01 | Q | . | . | . | V . |
| 21.083 | 24.5040 | 4.94 | Q | . | . | . | V . |
| 21.167 | 24.5376 | 4.88 | Q | . | . | . | V . |
| 21.250 | 24.5708 | 4.82 | Q | . | . | . | V . |
| 21.333 | 24.6035 | 4.76 | Q | . | . | . | V . |
| 21.417 | 24.6359 | 4.70 | Q | . | . | . | V . |
| 21.500 | 24.6679 | 4.65 | Q | . | . | . | V . |
| 21.583 | 24.6995 | 4.59 | Q | . | . | . | V . |
| 21.667 | 24.7308 | 4.54 | Q | . | . | . | V . |
| 21.750 | 24.7617 | 4.49 | Q | . | . | . | V . |
| 21.833 | 24.7923 | 4.44 | Q | . | . | . | V . |
| 21.917 | 24.8225 | 4.39 | Q | . | . | . | V . |
| 22.000 | 24.8524 | 4.34 | Q | . | . | . | V . |
| 22.083 | 24.8820 | 4.30 | Q | . | . | . | V . |
| 22.167 | 24.9113 | 4.25 | Q | . | . | . | V . |
| 22.250 | 24.9403 | 4.21 | Q | . | . | . | V . |
| 22.333 | 24.9691 | 4.17 | Q | . | . | . | V . |
| 22.417 | 24.9975 | 4.13 | Q | . | . | . | V . |
| 22.500 | 25.0256 | 4.09 | Q | . | . | . | V. |
| 22.583 | 25.0535 | 4.05 | Q | . | . | . | V. |
| 22.667 | 25.0812 | 4.01 | Q | . | . | . | V. |
| 22.750 | 25.1085 | 3.97 | Q | . | . | . | V. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22.833 | 25.1356 | 3.94 | Q | . | . | . | V. |
| 22.917 | 25.1625 | 3.90 | Q | . | . | . | V. |
| 23.000 | 25.1891 | 3.87 | Q | . | . | . | V. |
| 23.083 | 25.2155 | 3.83 | Q | . | . | . | V. |
| 23.167 | 25.2417 | 3.80 | Q | . | . | . | V. |
| 23.250 | 25.2676 | 3.77 | Q | . | . | . | V. |
| 23.333 | 25.2934 | 3.74 | Q | . | . | . | V. |
| 23.417 | 25.3189 | 3.70 | Q | . | . | . | V. |
| 23.500 | 25.3442 | 3.67 | Q | . | . | . | V. |
| 23.583 | 25.3693 | 3.64 | Q | . | . | . | V. |
| 23.667 | 25.3942 | 3.61 | Q | . | . | . | V. |
| 23.750 | 25.4189 | 3.59 | Q | . | . | . | V. |
| 23.833 | 25.4434 | 3.56 | Q | . | . | . | V. |
| 23.917 | 25.4677 | 3.53 | Q | . | . | . | V. |
| 24.000 | 25.4918 | 3.50 | Q | . | . | . | V. |
| 24.083 | 25.5155 | 3.44 | Q | . | . | . | V. |
| 24.167 | 25.5380 | 3.27 | Q | . | . | . | V. |
| 24.250 | 25.5582 | 2.93 | Q | . | . | . | V. |
| 24.333 | 25.5738 | 2.27 | Q | . | . | . | V. |
| 24.417 | 25.5856 | 1.72 | Q | . | . | . | V. |
| 24.500 | 25.5951 | 1.37 | Q | . | . | . | V. |
| 24.583 | 25.6029 | 1.13 | Q | . | . | . | V. |
| 24.667 | 25.6094 | 0.95 | Q | . | . | . | V. |
| 24.750 | 25.6150 | 0.81 | Q | . | . | . | V. |
| 24.833 | 25.6197 | 0.69 | Q | . | . | . | V. |
| 24.917 | 25.6239 | 0.60 | Q | . | . | . | V. |
| 25.000 | 25.6274 | 0.52 | Q | . | . | . | V. |
| 25.083 | 25.6305 | 0.45 | Q | . | . | . | V. |
| 25.167 | 25.6332 | 0.39 | Q | . | . | . | V. |
| 25.250 | 25.6355 | 0.34 | Q | . | . | . | V. |
| 25.333 | 25.6375 | 0.29 | Q | . | . | . | V. |
| 25.417 | 25.6393 | 0.26 | Q | . | . | . | V. |
| 25.500 | 25.6408 | 0.22 | Q | . | . | . | V. |
| 25.583 | 25.6421 | 0.19 | Q | . | . | . | V. |
| 25.667 | 25.6432 | 0.16 | Q | . | . | . | V. |
| 25.750 | 25.6442 | 0.14 | Q | . | . | . | V. |
| 25.833 | 25.6451 | 0.12 | Q | . | . | . | V. |
| 25.917 | 25.6458 | 0.10 | Q | . | . | . | V. |
| 26.000 | 25.6464 | 0.09 | Q | . | . | . | V. |
| 26.083 | 25.6469 | 0.08 | Q | . | . | . | V. |
| 26.167 | 25.6473 | 0.07 | Q | . | . | . | V. |
| 26.250 | 25.6477 | 0.06 | Q | . | . | . | V. |
| 26.333 | 25.6481 | 0.05 | Q | . | . | . | V. |
| 26.417 | 25.6484 | 0.04 | Q | . | . | . | V. |
| 26.500 | 25.6486 | 0.03 | Q | . | . | . | V. |
| 26.583 | 25.6487 | 0.02 | Q | . | . | . | V. |
| 26.667 | 25.6488 | 0.01 | Q | . | . | . | V. |
| 26.750 | 25.6488 | 0.00 | Q | . | . | . | V |

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TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:

(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

| Percentile of Estimated Peak Flow Rate | Duration (minutes) |
|---|---|
| 0% | 1605.0 |
| 10% | 120.0 |
| 20% | 65.0 |
| 30% | 45.0 |
| 40% | 30.0 |
| 50% | 25.0 |
| 60% | 20.0 |
| 70% | 15.0 |
| 80% | 10.0 |
| 90% | 5.0 |

END OF FLOODSCx ROUTING ANALYSIS

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            F L O O D    R O U T I N G    A N A L Y S I S
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                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 3 EXISTING CONDITIONS                                            *
 ************************************************************************

  FILE NAME: LOEX3.DAT
  TIME/DATE OF STUDY: 10:33 07/08/2021


**************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    8570.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    4508.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      49.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     176.340 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.498 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.350
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
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SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.05
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.50
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.992
 30-MINUTE FACTOR = 0.992
  1-HOUR FACTOR = 0.992
  3-HOUR FACTOR = 0.999
  6-HOUR FACTOR = 0.999
 24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.744

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UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 0.780 | 16.630 |
| 2 | 3.392 | 55.702 |
| 3 | 7.808 | 94.182 |
| 4 | 16.237 | 179.758 |
| 5 | 31.276 | 320.724 |
| 6 | 44.847 | 289.415 |
| 7 | 54.506 | 205.980 |
| 8 | 61.351 | 145.989 |
| 9 | 66.456 | 108.863 |
| 10 | 70.648 | 89.399 |
| 11 | 74.102 | 73.676 |
| 12 | 77.046 | 62.781 |
| 13 | 79.528 | 52.926 |
| 14 | 81.675 | 45.779 |
| 15 | 83.521 | 39.376 |
| 16 | 85.215 | 36.134 |
| 17 | 86.778 | 33.332 |
| 18 | 88.141 | 29.055 |
| 19 | 89.286 | 24.427 |
| 20 | 90.279 | 21.174 |
| 21 | 91.222 | 20.105 |
| 22 | 92.080 | 18.304 |
| 23 | 92.872 | 16.881 |
| 24 | 93.613 | 15.801 |
| 25 | 94.248 | 13.552 |

| | | |
|---|---|---|
| 26 | 94.817 | 12.142 |
| 27 | 95.385 | 12.115 |
| 28 | 95.872 | 10.383 |
| 29 | 96.307 | 9.279 |
| 30 | 96.742 | 9.261 |
| 31 | 97.093 | 7.483 |
| 32 | 97.394 | 6.428 |
| 33 | 97.694 | 6.398 |
| 34 | 97.909 | 4.592 |
| 35 | 98.077 | 3.572 |
| 36 | 98.245 | 3.582 |
| 37 | 98.434 | 4.040 |
| 38 | 98.635 | 4.279 |
| 39 | 98.836 | 4.289 |
| 40 | 99.037 | 4.284 |
| 41 | 99.238 | 4.284 |
| 42 | 99.438 | 4.284 |
| 43 | 99.639 | 4.284 |
| 44 | 99.840 | 4.284 |
| 45 | 100.000 | 3.408 |

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TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 21.9796
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 20.7570

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

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

---

| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 50.0 | 100.0 | 150.0 | 200.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0001 | 0.02 | Q | . | . | . | . |
| 0.167 | 0.0008 | 0.09 | Q | . | . | . | . |
| 0.250 | 0.0022 | 0.21 | Q | . | . | . | . |
| 0.333 | 0.0052 | 0.44 | Q | . | . | . | . |
| 0.417 | 0.0110 | 0.84 | Q | . | . | . | . |
| 0.500 | 0.0193 | 1.21 | Q | . | . | . | . |
| 0.583 | 0.0294 | 1.47 | Q | . | . | . | . |
| 0.667 | 0.0408 | 1.66 | Q | . | . | . | . |
| 0.750 | 0.0532 | 1.80 | Q | . | . | . | . |
| 0.833 | 0.0665 | 1.92 | Q | . | . | . | . |
| 0.917 | 0.0804 | 2.02 | Q | . | . | . | . |
| 1.000 | 0.0949 | 2.10 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.083 | 0.1099 | 2.18 | Q | . | . | . | . |
| 1.167 | 0.1253 | 2.24 | Q | . | . | . | . |
| 1.250 | 0.1412 | 2.30 | Q | . | . | . | . |
| 1.333 | 0.1574 | 2.36 | Q | . | . | . | . |
| 1.417 | 0.1740 | 2.41 | Q | . | . | . | . |
| 1.500 | 0.1909 | 2.45 | Q | . | . | . | . |
| 1.583 | 0.2080 | 2.49 | Q | . | . | . | . |
| 1.667 | 0.2254 | 2.53 | Q | . | . | . | . |
| 1.750 | 0.2431 | 2.56 | Q | . | . | . | . |
| 1.833 | 0.2609 | 2.59 | Q | . | . | . | . |
| 1.917 | 0.2790 | 2.63 | Q | . | . | . | . |
| 2.000 | 0.2973 | 2.66 | Q | . | . | . | . |
| 2.083 | 0.3158 | 2.68 | Q | . | . | . | . |
| 2.167 | 0.3345 | 2.71 | Q | . | . | . | . |
| 2.250 | 0.3533 | 2.73 | Q | . | . | . | . |
| 2.333 | 0.3723 | 2.76 | Q | . | . | . | . |
| 2.417 | 0.3914 | 2.78 | Q | . | . | . | . |
| 2.500 | 0.4107 | 2.80 | Q | . | . | . | . |
| 2.583 | 0.4302 | 2.82 | Q | . | . | . | . |
| 2.667 | 0.4498 | 2.84 | Q | . | . | . | . |
| 2.750 | 0.4695 | 2.86 | Q | . | . | . | . |
| 2.833 | 0.4893 | 2.88 | Q | . | . | . | . |
| 2.917 | 0.5093 | 2.90 | Q | . | . | . | . |
| 3.000 | 0.5293 | 2.91 | QV | . | . | . | . |
| 3.083 | 0.5495 | 2.93 | QV | . | . | . | . |
| 3.167 | 0.5698 | 2.95 | QV | . | . | . | . |
| 3.250 | 0.5902 | 2.96 | QV | . | . | . | . |
| 3.333 | 0.6107 | 2.98 | QV | . | . | . | . |
| 3.417 | 0.6314 | 3.00 | QV | . | . | . | . |
| 3.500 | 0.6522 | 3.02 | QV | . | . | . | . |
| 3.583 | 0.6731 | 3.04 | QV | . | . | . | . |
| 3.667 | 0.6941 | 3.05 | QV | . | . | . | . |
| 3.750 | 0.7153 | 3.07 | QV | . | . | . | . |
| 3.833 | 0.7365 | 3.09 | QV | . | . | . | . |
| 3.917 | 0.7579 | 3.10 | QV | . | . | . | . |
| 4.000 | 0.7793 | 3.11 | QV | . | . | . | . |
| 4.083 | 0.8009 | 3.13 | QV | . | . | . | . |
| 4.167 | 0.8225 | 3.14 | QV | . | . | . | . |
| 4.250 | 0.8442 | 3.15 | QV | . | . | . | . |
| 4.333 | 0.8660 | 3.17 | QV | . | . | . | . |
| 4.417 | 0.8880 | 3.18 | QV | . | . | . | . |
| 4.500 | 0.9100 | 3.20 | QV | . | . | . | . |
| 4.583 | 0.9321 | 3.21 | QV | . | . | . | . |
| 4.667 | 0.9543 | 3.23 | QV | . | . | . | . |
| 4.750 | 0.9767 | 3.24 | QV | . | . | . | . |
| 4.833 | 0.9991 | 3.26 | QV | . | . | . | . |
| 4.917 | 1.0216 | 3.27 | QV | . | . | . | . |
| 5.000 | 1.0443 | 3.29 | Q V | . | . | . | . |
| 5.083 | 1.0670 | 3.30 | Q V | . | . | . | . |
| 5.167 | 1.0899 | 3.32 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5.250 | 1.1129 | 3.34 | Q | V | . | . | . | . |
| 5.333 | 1.1360 | 3.35 | Q | V | . | . | . | . |
| 5.417 | 1.1592 | 3.37 | Q | V | . | . | . | . |
| 5.500 | 1.1825 | 3.39 | Q | V | . | . | . | . |
| 5.583 | 1.2059 | 3.40 | Q | V | . | . | . | . |
| 5.667 | 1.2295 | 3.42 | Q | V | . | . | . | . |
| 5.750 | 1.2532 | 3.44 | Q | V | . | . | . | . |
| 5.833 | 1.2770 | 3.46 | Q | V | . | . | . | . |
| 5.917 | 1.3009 | 3.47 | Q | V | . | . | . | . |
| 6.000 | 1.3249 | 3.49 | Q | V | . | . | . | . |
| 6.083 | 1.3491 | 3.51 | Q | V | . | . | . | . |
| 6.167 | 1.3734 | 3.53 | Q | V | . | . | . | . |
| 6.250 | 1.3978 | 3.55 | Q | V | . | . | . | . |
| 6.333 | 1.4224 | 3.57 | Q | V | . | . | . | . |
| 6.417 | 1.4471 | 3.59 | Q | V | . | . | . | . |
| 6.500 | 1.4719 | 3.60 | Q | V | . | . | . | . |
| 6.583 | 1.4969 | 3.62 | Q | V | . | . | . | . |
| 6.667 | 1.5220 | 3.64 | Q | V | . | . | . | . |
| 6.750 | 1.5472 | 3.67 | Q | V | . | . | . | . |
| 6.833 | 1.5726 | 3.69 | Q | V | . | . | . | . |
| 6.917 | 1.5981 | 3.71 | Q | V | . | . | . | . |
| 7.000 | 1.6238 | 3.73 | Q | V | . | . | . | . |
| 7.083 | 1.6496 | 3.75 | Q | V | . | . | . | . |
| 7.167 | 1.6756 | 3.77 | Q | V | . | . | . | . |
| 7.250 | 1.7017 | 3.79 | Q | V | . | . | . | . |
| 7.333 | 1.7280 | 3.82 | Q | V | . | . | . | . |
| 7.417 | 1.7545 | 3.84 | Q | V | . | . | . | . |
| 7.500 | 1.7811 | 3.86 | Q | V | . | . | . | . |
| 7.583 | 1.8079 | 3.89 | Q | V | . | . | . | . |
| 7.667 | 1.8348 | 3.91 | Q | V | . | . | . | . |
| 7.750 | 1.8619 | 3.94 | Q | V | . | . | . | . |
| 7.833 | 1.8892 | 3.96 | Q | V | . | . | . | . |
| 7.917 | 1.9166 | 3.98 | Q | V | . | . | . | . |
| 8.000 | 1.9442 | 4.01 | Q | V | . | . | . | . |
| 8.083 | 1.9720 | 4.04 | Q | V | . | . | . | . |
| 8.167 | 2.0000 | 4.06 | Q | V | . | . | . | . |
| 8.250 | 2.0282 | 4.09 | Q | V | . | . | . | . |
| 8.333 | 2.0565 | 4.12 | Q | V | . | . | . | . |
| 8.417 | 2.0851 | 4.14 | Q | V | . | . | . | . |
| 8.500 | 2.1138 | 4.17 | Q | V | . | . | . | . |
| 8.583 | 2.1427 | 4.20 | Q | V | . | . | . | . |
| 8.667 | 2.1719 | 4.23 | Q | V | . | . | . | . |
| 8.750 | 2.2012 | 4.26 | Q | V | . | . | . | . |
| 8.833 | 2.2307 | 4.29 | Q | V | . | . | . | . |
| 8.917 | 2.2605 | 4.32 | Q | V | . | . | . | . |
| 9.000 | 2.2905 | 4.35 | Q | V | . | . | . | . |
| 9.083 | 2.3207 | 4.38 | Q | V | . | . | . | . |
| 9.167 | 2.3511 | 4.42 | Q | V | . | . | . | . |
| 9.250 | 2.3817 | 4.45 | Q | V | . | . | . | . |
| 9.333 | 2.4126 | 4.48 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 9.417 | 2.4437 | 4.52 | Q | V | . | . | . | . |
| 9.500 | 2.4751 | 4.55 | Q | V | . | . | . | . |
| 9.583 | 2.5067 | 4.59 | Q | V | . | . | . | . |
| 9.667 | 2.5385 | 4.62 | Q | V | . | . | . | . |
| 9.750 | 2.5706 | 4.66 | Q | V | . | . | . | . |
| 9.833 | 2.6030 | 4.70 | Q | V | . | . | . | . |
| 9.917 | 2.6356 | 4.74 | Q | V | . | . | . | . |
| 10.000 | 2.6685 | 4.78 | Q | V | . | . | . | . |
| 10.083 | 2.7017 | 4.82 | Q | V | . | . | . | . |
| 10.167 | 2.7352 | 4.86 | Q | V | . | . | . | . |
| 10.250 | 2.7689 | 4.90 | Q | V | . | . | . | . |
| 10.333 | 2.8030 | 4.94 | Q | V | . | . | . | . |
| 10.417 | 2.8373 | 4.99 | Q | V | . | . | . | . |
| 10.500 | 2.8720 | 5.03 | .Q | V | . | . | . | . |
| 10.583 | 2.9070 | 5.08 | .Q | V | . | . | . | . |
| 10.667 | 2.9423 | 5.13 | .Q | V | . | . | . | . |
| 10.750 | 2.9779 | 5.17 | .Q | V | . | . | . | . |
| 10.833 | 3.0139 | 5.22 | .Q | V | . | . | . | . |
| 10.917 | 3.0502 | 5.27 | .Q | V | . | . | . | . |
| 11.000 | 3.0869 | 5.32 | .Q | V | . | . | . | . |
| 11.083 | 3.1239 | 5.38 | .Q | V | . | . | . | . |
| 11.167 | 3.1613 | 5.43 | .Q | V | . | . | . | . |
| 11.250 | 3.1991 | 5.49 | .Q | V | . | . | . | . |
| 11.333 | 3.2373 | 5.54 | .Q | V | . | . | . | . |
| 11.417 | 3.2759 | 5.60 | .Q | V | . | . | . | . |
| 11.500 | 3.3149 | 5.66 | .Q | V | . | . | . | . |
| 11.583 | 3.3544 | 5.73 | .Q | V | . | . | . | . |
| 11.667 | 3.3942 | 5.79 | .Q | V | . | . | . | . |
| 11.750 | 3.4346 | 5.85 | .Q | V | . | . | . | . |
| 11.833 | 3.4753 | 5.92 | .Q | V | . | . | . | . |
| 11.917 | 3.5166 | 5.99 | .Q | V | . | . | . | . |
| 12.000 | 3.5584 | 6.06 | .Q | V | . | . | . | . |
| 12.083 | 3.6006 | 6.13 | .Q | V | . | . | . | . |
| 12.167 | 3.6433 | 6.20 | .Q | V | . | . | . | . |
| 12.250 | 3.6863 | 6.25 | .Q | V | . | . | . | . |
| 12.333 | 3.7296 | 6.29 | .Q | V | . | . | . | . |
| 12.417 | 3.7730 | 6.30 | .Q | V | . | . | . | . |
| 12.500 | 3.8165 | 6.32 | .Q | V | . | . | . | . |
| 12.583 | 3.8603 | 6.36 | .Q | V | . | . | . | . |
| 12.667 | 3.9045 | 6.41 | .Q | V | . | . | . | . |
| 12.750 | 3.9491 | 6.48 | .Q | V | . | . | . | . |
| 12.833 | 3.9943 | 6.56 | .Q | V | . | . | . | . |
| 12.917 | 4.0401 | 6.64 | .Q | V | . | . | . | . |
| 13.000 | 4.0864 | 6.73 | .Q | V | . | . | . | . |
| 13.083 | 4.1334 | 6.83 | .Q | V | . | . | . | . |
| 13.167 | 4.1811 | 6.93 | .Q | V | . | . | . | . |
| 13.250 | 4.2296 | 7.03 | .Q | V | . | . | . | . |
| 13.333 | 4.2788 | 7.15 | .Q | V | . | . | . | . |
| 13.417 | 4.3288 | 7.27 | .Q | V | . | . | . | . |
| 13.500 | 4.3797 | 7.39 | .Q | V | . | . | . | . |

| | | | |
|---|---|---|---|
| 13.583 | 4.4316 | 7.52 | .Q V . . . . |
| 13.667 | 4.4843 | 7.66 | .Q V . . . . |
| 13.750 | 4.5381 | 7.81 | .Q V . . . . |
| 13.833 | 4.5930 | 7.97 | .Q V . . . . |
| 13.917 | 4.6490 | 8.13 | .Q V . . . . |
| 14.000 | 4.7062 | 8.30 | .Q V. . . . |
| 14.083 | 4.7647 | 8.50 | .Q V. . . . |
| 14.167 | 4.8247 | 8.71 | .Q V. . . . |
| 14.250 | 4.8865 | 8.96 | .Q V. . . . |
| 14.333 | 4.9503 | 9.26 | .Q V. . . . |
| 14.417 | 5.0167 | 9.64 | .Q V. . . . |
| 14.500 | 5.0857 | 10.02 | . Q V. . . . |
| 14.583 | 5.1573 | 10.39 | . Q V. . . . |
| 14.667 | 5.2313 | 10.75 | . Q V . . . |
| 14.750 | 5.3079 | 11.13 | . Q V . . . |
| 14.833 | 5.3872 | 11.51 | . Q V . . . |
| 14.917 | 5.4694 | 11.93 | . Q V . . . |
| 15.000 | 5.5546 | 12.37 | . Q V . . . |
| 15.083 | 5.6432 | 12.86 | . Q V . . . |
| 15.167 | 5.7354 | 13.38 | . Q .V . . . |
| 15.250 | 5.8315 | 13.97 | . Q .V . . . |
| 15.333 | 5.9322 | 14.61 | . Q .V . . . |
| 15.417 | 6.0383 | 15.40 | . Q .V . . . |
| 15.500 | 6.1514 | 16.42 | . Q .V . . . |
| 15.583 | 6.2734 | 17.72 | . Q . V . . . |
| 15.667 | 6.4079 | 19.52 | . Q . V . . . |
| 15.750 | 6.5616 | 22.33 | . Q . V . . . |
| 15.833 | 6.7405 | 25.97 | . Q . V . . . |
| 15.917 | 6.9535 | 30.93 | . Q . V . . . |
| 16.000 | 7.2218 | 38.96 | . Q . V . . . |
| 16.083 | 7.5987 | 54.72 | . Q V . . . |
| 16.167 | 8.1324 | 77.49 | . . Q . . . |
| 16.250 | 8.8366 | 102.25 | . . V Q . . |
| 16.333 | 9.7658 | 134.92 | . . V . Q . . |
| 16.417 | 10.9265 | 168.54 | . . .V . Q . |
| 16.500 | 11.9887 | 154.23 | . . . V Q . |
| 16.583 | 12.8354 | 122.94 | . . . Q . . |
| 16.667 | 13.5052 | 97.27 | . . Q. V . . |
| 16.750 | 14.0505 | 79.18 | . . Q . V . . |
| 16.833 | 14.5151 | 67.46 | . Q . V . . |
| 16.917 | 14.9174 | 58.40 | .Q . V . . |
| 17.000 | 15.2723 | 51.54 | Q . V. . |
| 17.083 | 15.5873 | 45.74 | Q. . V . |
| 17.167 | 15.8705 | 41.12 | Q . . V . |
| 17.250 | 16.1266 | 37.19 | Q . . .V . |
| 17.333 | 16.3625 | 34.25 | Q . . .V . |
| 17.417 | 16.5797 | 31.53 | Q . . .V . |
| 17.500 | 16.7769 | 28.64 | Q . . . V . |
| 17.583 | 16.9554 | 25.93 | Q . . . V . |
| 17.667 | 17.1195 | 23.82 | Q . . . V . |

```
17.750     17.2736     22.38  .   Q     .         .         .  V      .
17.833     17.4177     20.92  .   Q     .         .         .  V      .
17.917     17.5529     19.63  .  Q      .         .         .  V      .
18.000     17.6799     18.45  .  Q      .         .         .   V     .
18.083     17.7977     17.10  .  Q      .         .         .   V     .
18.167     17.9083     16.05  .  Q      .         .         .   V     .
18.250     18.0138     15.33  .  Q      .         .         .   V     .
18.333     18.1124     14.32  . Q       .         .         .   V     .
18.417     18.2056     13.52  . Q       .         .         .    V    .
18.500     18.2948     12.95  . Q       .         .         .    V    .
18.583     18.3775     12.02  . Q       .         .         .    V    .
18.667     18.4552     11.28  . Q       .         .         .    V    .
18.750     18.5294     10.77  . Q       .         .         .    V    .
18.833     18.5980      9.96  .Q        .         .         .    V    .
18.917     18.6628      9.41  .Q        .         .         .    V    .
19.000     18.7262      9.21  .Q        .         .         .     V   .
19.083     18.7892      9.14  .Q        .         .         .     V   .
19.167     18.8513      9.02  .Q        .         .         .     V   .
19.250     18.9122      8.85  .Q        .         .         .     V   .
19.333     18.9719      8.66  .Q        .         .         .     V   .
19.417     19.0301      8.46  .Q        .         .         .     V   .
19.500     19.0866      8.20  .Q        .         .         .     V   .
19.583     19.1410      7.90  .Q        .         .         .     V   .
19.667     19.1925      7.49  .Q        .         .         .     V   .
19.750     19.2394      6.80  .Q        .         .         .      V  .
19.833     19.2785      5.68  .Q        .         .         .      V  .
19.917     19.3157      5.40  .Q        .         .         .      V  .
20.000     19.3517      5.23  .Q        .         .         .      V  .
20.083     19.3869      5.10  .Q        .         .         .      V  .
20.167     19.4212      4.99  Q         .         .         .      V  .
20.250     19.4549      4.89  Q         .         .         .      V  .
20.333     19.4880      4.80  Q         .         .         .      V  .
20.417     19.5204      4.71  Q         .         .         .      V  .
20.500     19.5523      4.63  Q         .         .         .      V  .
20.583     19.5837      4.55  Q         .         .         .      V  .
20.667     19.6145      4.47  Q         .         .         .      V  .
20.750     19.6448      4.40  Q         .         .         .      V  .
20.833     19.6747      4.34  Q         .         .         .      V  .
20.917     19.7041      4.27  Q         .         .         .      V  .
21.000     19.7331      4.21  Q         .         .         .       V .
21.083     19.7617      4.15  Q         .         .         .       V .
21.167     19.7899      4.10  Q         .         .         .       V .
21.250     19.8177      4.04  Q         .         .         .       V .
21.333     19.8452      3.99  Q         .         .         .       V .
21.417     19.8723      3.94  Q         .         .         .       V .
21.500     19.8991      3.89  Q         .         .         .       V .
21.583     19.9255      3.84  Q         .         .         .       V .
21.667     19.9517      3.79  Q         .         .         .       V .
21.750     19.9775      3.75  Q         .         .         .       V .
21.833     20.0030      3.71  Q         .         .         .       V .
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 21.917 | 20.0282 | 3.66 | Q | . | . | . | V . |
| 22.000 | 20.0532 | 3.62 | Q | . | . | . | V . |
| 22.083 | 20.0778 | 3.58 | Q | . | . | . | V . |
| 22.167 | 20.1022 | 3.54 | Q | . | . | . | V . |
| 22.250 | 20.1264 | 3.50 | Q | . | . | . | V . |
| 22.333 | 20.1503 | 3.47 | Q | . | . | . | V . |
| 22.417 | 20.1739 | 3.43 | Q | . | . | . | V . |
| 22.500 | 20.1973 | 3.40 | Q | . | . | . | V . |
| 22.583 | 20.2204 | 3.36 | Q | . | . | . | V . |
| 22.667 | 20.2434 | 3.33 | Q | . | . | . | V. |
| 22.750 | 20.2661 | 3.30 | Q | . | . | . | V. |
| 22.833 | 20.2886 | 3.26 | Q | . | . | . | V. |
| 22.917 | 20.3108 | 3.23 | Q | . | . | . | V. |
| 23.000 | 20.3329 | 3.20 | Q | . | . | . | V. |
| 23.083 | 20.3548 | 3.17 | Q | . | . | . | V. |
| 23.167 | 20.3764 | 3.15 | Q | . | . | . | V. |
| 23.250 | 20.3979 | 3.12 | Q | . | . | . | V. |
| 23.333 | 20.4192 | 3.09 | Q | . | . | . | V. |
| 23.417 | 20.4403 | 3.06 | Q | . | . | . | V. |
| 23.500 | 20.4612 | 3.04 | Q | . | . | . | V. |
| 23.583 | 20.4819 | 3.01 | Q | . | . | . | V. |
| 23.667 | 20.5025 | 2.99 | Q | . | . | . | V. |
| 23.750 | 20.5229 | 2.96 | Q | . | . | . | V. |
| 23.833 | 20.5431 | 2.94 | Q | . | . | . | V. |
| 23.917 | 20.5632 | 2.91 | Q | . | . | . | V. |
| 24.000 | 20.5831 | 2.89 | Q | . | . | . | V. |
| 24.083 | 20.6027 | 2.85 | Q | . | . | . | V. |
| 24.167 | 20.6216 | 2.75 | Q | . | . | . | V. |
| 24.250 | 20.6397 | 2.62 | Q | . | . | . | V. |
| 24.333 | 20.6560 | 2.37 | Q | . | . | . | V. |
| 24.417 | 20.6694 | 1.95 | Q | . | . | . | V. |
| 24.500 | 20.6802 | 1.57 | Q | . | . | . | V. |
| 24.583 | 20.6892 | 1.30 | Q | . | . | . | V. |
| 24.667 | 20.6969 | 1.11 | Q | . | . | . | V. |
| 24.750 | 20.7035 | 0.96 | Q | . | . | . | V. |
| 24.833 | 20.7093 | 0.84 | Q | . | . | . | V. |
| 24.917 | 20.7144 | 0.75 | Q | . | . | . | V. |
| 25.000 | 20.7190 | 0.66 | Q | . | . | . | V. |
| 25.083 | 20.7231 | 0.59 | Q | . | . | . | V. |
| 25.167 | 20.7267 | 0.53 | Q | . | . | . | V. |
| 25.250 | 20.7300 | 0.47 | Q | . | . | . | V. |
| 25.333 | 20.7329 | 0.43 | Q | . | . | . | V. |
| 25.417 | 20.7355 | 0.38 | Q | . | . | . | V. |
| 25.500 | 20.7378 | 0.34 | Q | . | . | . | V. |
| 25.583 | 20.7400 | 0.31 | Q | . | . | . | V. |
| 25.667 | 20.7419 | 0.28 | Q | . | . | . | V. |
| 25.750 | 20.7436 | 0.25 | Q | . | . | . | V. |
| 25.833 | 20.7452 | 0.23 | Q | . | . | . | V. |
| 25.917 | 20.7466 | 0.20 | Q | . | . | . | V. |
| 26.000 | 20.7478 | 0.18 | Q | . | . | . | V. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 26.083 | 20.7490 | 0.16 | Q | . | . | . | V. |
| 26.167 | 20.7500 | 0.15 | Q | . | . | . | V. |
| 26.250 | 20.7509 | 0.13 | Q | . | . | . | V. |
| 26.333 | 20.7517 | 0.12 | Q | . | . | . | V. |
| 26.417 | 20.7524 | 0.10 | Q | . | . | . | V. |
| 26.500 | 20.7530 | 0.09 | Q | . | . | . | V. |
| 26.583 | 20.7536 | 0.08 | Q | . | . | . | V. |
| 26.667 | 20.7541 | 0.07 | Q | . | . | . | V. |
| 26.750 | 20.7545 | 0.06 | Q | . | . | . | V. |
| 26.833 | 20.7549 | 0.06 | Q | . | . | . | V. |
| 26.917 | 20.7553 | 0.05 | Q | . | . | . | V. |
| 27.000 | 20.7556 | 0.05 | Q | . | . | . | V. |
| 27.083 | 20.7559 | 0.04 | Q | . | . | . | V. |
| 27.167 | 20.7562 | 0.04 | Q | . | . | . | V. |
| 27.250 | 20.7564 | 0.03 | Q | . | . | . | V. |
| 27.333 | 20.7566 | 0.03 | Q | . | . | . | V. |
| 27.417 | 20.7567 | 0.02 | Q | . | . | . | V. |
| 27.500 | 20.7568 | 0.02 | Q | . | . | . | V. |
| 27.583 | 20.7569 | 0.01 | Q | . | . | . | V. |

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

| Percentile of Estimated Peak Flow Rate | Duration (minutes) |
|---|---|
| 0% | 1655.0 |
| 10% | 155.0 |
| 20% | 85.0 |
| 30% | 60.0 |
| 40% | 45.0 |
| 50% | 30.0 |
| 60% | 25.0 |
| 70% | 20.0 |
| 80% | 15.0 |
| 90% | 10.0 |

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END OF FLOODSCx ROUTING ANALYSIS

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 1 PROPOSED CONDITIONS                                            *
 ************************************************************************

  FILE NAME: LOPR1.DAT
  TIME/DATE OF STUDY: 16:54 07/26/2021


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    5357.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    3838.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      29.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     314.560 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.396 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
```

SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.05
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.50
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.986
 30-MINUTE FACTOR = 0.986
  1-HOUR FACTOR = 0.986
  3-HOUR FACTOR = 0.998
  6-HOUR FACTOR = 0.999
 24-HOUR FACTOR = 0.999

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  21.060

UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 1.066 | 40.545 |
| 2 | 4.908 | 146.176 |
| 3 | 12.648 | 294.434 |
| 4 | 29.637 | 646.317 |
| 5 | 46.517 | 642.147 |
| 6 | 57.607 | 421.890 |
| 7 | 64.897 | 277.307 |
| 8 | 70.370 | 208.196 |
| 9 | 74.680 | 163.982 |
| 10 | 78.215 | 134.478 |
| 11 | 81.063 | 108.352 |
| 12 | 83.454 | 90.942 |
| 13 | 85.572 | 80.557 |
| 14 | 87.444 | 71.224 |
| 15 | 89.009 | 59.551 |
| 16 | 90.272 | 48.035 |
| 17 | 91.447 | 44.701 |
| 18 | 92.488 | 39.621 |
| 19 | 93.443 | 36.297 |
| 20 | 94.263 | 31.192 |
| 21 | 94.979 | 27.241 |
| 22 | 95.661 | 25.956 |
| 23 | 96.220 | 21.264 |
| 24 | 96.762 | 20.622 |
| 25 | 97.187 | 16.180 |

| | | |
|---|---|---|
| 26 | 97.566 | 14.423 |
| 27 | 97.880 | 11.918 |
| 28 | 98.091 | 8.051 |
| 29 | 98.307 | 8.220 |
| 30 | 98.555 | 9.427 |
| 31 | 98.808 | 9.611 |
| 32 | 99.060 | 9.610 |
| 33 | 99.313 | 9.610 |
| 34 | 99.566 | 9.610 |
| 35 | 99.818 | 9.610 |
| 36 | 100.000 | 6.910 |

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TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 39.2480
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 36.9655

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

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

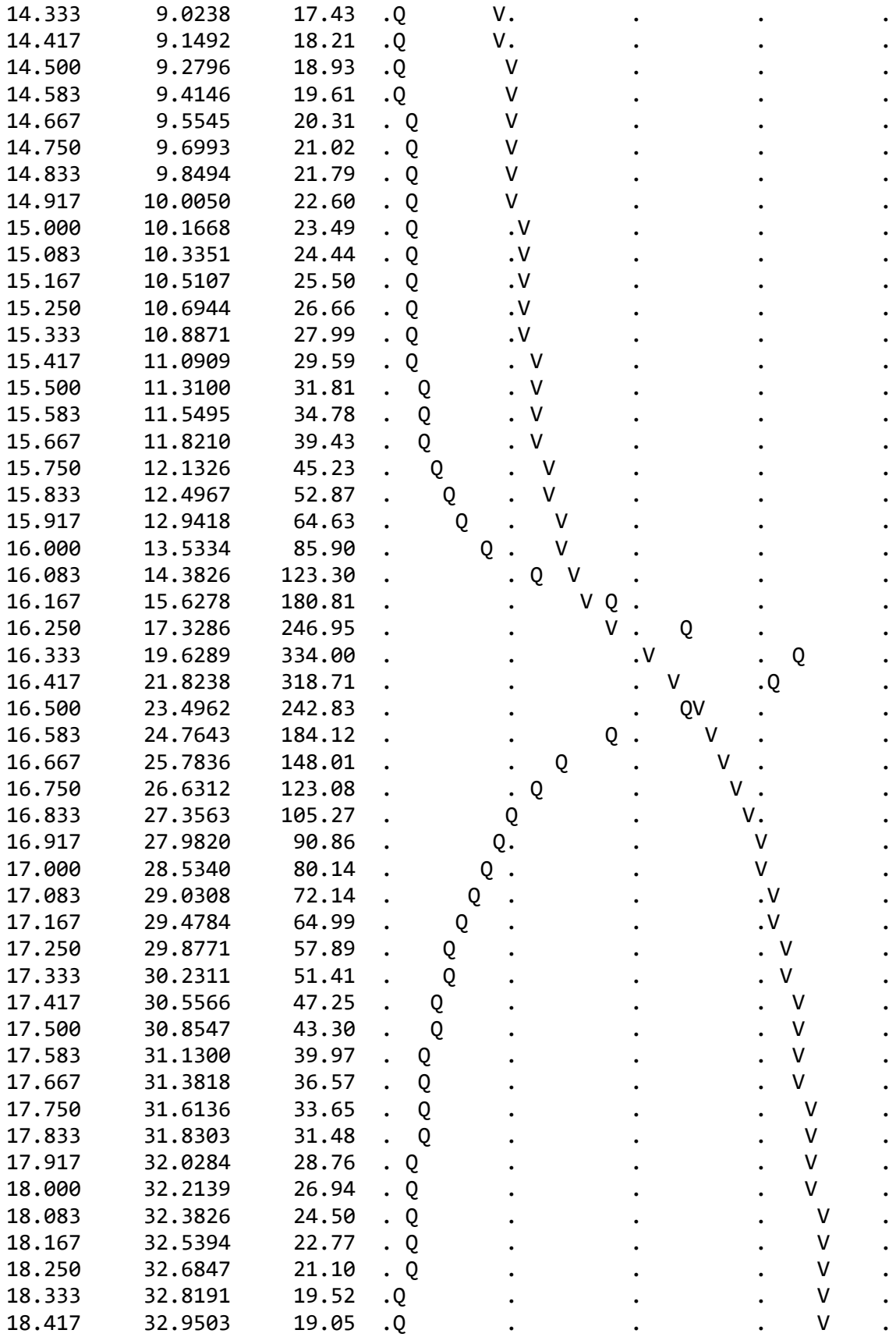
---

| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 100.0 | 200.0 | 300.0 | 400.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0004 | 0.05 | Q | . | . | . | . |
| 0.167 | 0.0020 | 0.23 | Q | . | . | . | . |
| 0.250 | 0.0061 | 0.61 | Q | . | . | . | . |
| 0.333 | 0.0159 | 1.42 | Q | . | . | . | . |
| 0.417 | 0.0313 | 2.23 | Q | . | . | . | . |
| 0.500 | 0.0503 | 2.77 | Q | . | . | . | . |
| 0.583 | 0.0719 | 3.13 | Q | . | . | . | . |
| 0.667 | 0.0953 | 3.40 | Q | . | . | . | . |
| 0.750 | 0.1202 | 3.62 | Q | . | . | . | . |
| 0.833 | 0.1463 | 3.80 | Q | . | . | . | . |
| 0.917 | 0.1735 | 3.95 | Q | . | . | . | . |
| 1.000 | 0.2016 | 4.08 | Q | . | . | . | . |
| 1.083 | 0.2305 | 4.19 | Q | . | . | . | . |
| 1.167 | 0.2601 | 4.30 | Q | . | . | . | . |
| 1.250 | 0.2903 | 4.39 | Q | . | . | . | . |
| 1.333 | 0.3211 | 4.46 | Q | . | . | . | . |
| 1.417 | 0.3523 | 4.54 | Q | . | . | . | . |
| 1.500 | 0.3840 | 4.60 | Q | . | . | . | . |
| 1.583 | 0.4161 | 4.67 | Q | . | . | . | . |
| 1.667 | 0.4487 | 4.72 | Q | . | . | . | . |
| 1.750 | 0.4816 | 4.78 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.833 | 0.5148 | 4.83 | Q | . | . | . | . |
| 1.917 | 0.5484 | 4.87 | Q | . | . | . | . |
| 2.000 | 0.5822 | 4.92 | Q | . | . | . | . |
| 2.083 | 0.6164 | 4.96 | Q | . | . | . | . |
| 2.167 | 0.6507 | 4.99 | Q | . | . | . | . |
| 2.250 | 0.6854 | 5.03 | Q | . | . | . | . |
| 2.333 | 0.7202 | 5.06 | Q | . | . | . | . |
| 2.417 | 0.7552 | 5.09 | Q | . | . | . | . |
| 2.500 | 0.7905 | 5.12 | Q | . | . | . | . |
| 2.583 | 0.8260 | 5.15 | Q | . | . | . | . |
| 2.667 | 0.8617 | 5.19 | Q | . | . | . | . |
| 2.750 | 0.8976 | 5.22 | Q | . | . | . | . |
| 2.833 | 0.9338 | 5.25 | QV | . | . | . | . |
| 2.917 | 0.9702 | 5.28 | QV | . | . | . | . |
| 3.000 | 1.0068 | 5.32 | QV | . | . | . | . |
| 3.083 | 1.0435 | 5.34 | QV | . | . | . | . |
| 3.167 | 1.0805 | 5.36 | QV | . | . | . | . |
| 3.250 | 1.1175 | 5.38 | QV | . | . | . | . |
| 3.333 | 1.1547 | 5.40 | QV | . | . | . | . |
| 3.417 | 1.1921 | 5.43 | QV | . | . | . | . |
| 3.500 | 1.2297 | 5.45 | QV | . | . | . | . |
| 3.583 | 1.2674 | 5.47 | QV | . | . | . | . |
| 3.667 | 1.3052 | 5.50 | QV | . | . | . | . |
| 3.750 | 1.3433 | 5.52 | QV | . | . | . | . |
| 3.833 | 1.3815 | 5.55 | QV | . | . | . | . |
| 3.917 | 1.4198 | 5.57 | QV | . | . | . | . |
| 4.000 | 1.4583 | 5.60 | QV | . | . | . | . |
| 4.083 | 1.4971 | 5.62 | QV | . | . | . | . |
| 4.167 | 1.5359 | 5.65 | QV | . | . | . | . |
| 4.250 | 1.5750 | 5.67 | QV | . | . | . | . |
| 4.333 | 1.6142 | 5.70 | QV | . | . | . | . |
| 4.417 | 1.6536 | 5.72 | QV | . | . | . | . |
| 4.500 | 1.6932 | 5.75 | QV | . | . | . | . |
| 4.583 | 1.7330 | 5.78 | QV | . | . | . | . |
| 4.667 | 1.7730 | 5.80 | QV | . | . | . | . |
| 4.750 | 1.8131 | 5.83 | QV | . | . | . | . |
| 4.833 | 1.8535 | 5.86 | Q V | . | . | . | . |
| 4.917 | 1.8940 | 5.89 | Q V | . | . | . | . |
| 5.000 | 1.9348 | 5.91 | Q V | . | . | . | . |
| 5.083 | 1.9757 | 5.94 | Q V | . | . | . | . |
| 5.167 | 2.0168 | 5.97 | Q V | . | . | . | . |
| 5.250 | 2.0581 | 6.00 | Q V | . | . | . | . |
| 5.333 | 2.0997 | 6.03 | Q V | . | . | . | . |
| 5.417 | 2.1414 | 6.06 | Q V | . | . | . | . |
| 5.500 | 2.1834 | 6.09 | Q V | . | . | . | . |
| 5.583 | 2.2256 | 6.12 | Q V | . | . | . | . |
| 5.667 | 2.2680 | 6.15 | Q V | . | . | . | . |
| 5.750 | 2.3106 | 6.19 | Q V | . | . | . | . |
| 5.833 | 2.3534 | 6.22 | Q V | . | . | . | . |
| 5.917 | 2.3964 | 6.25 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6.000 | 2.4397 | 6.28 | Q | V | . | . | . | . |
| 6.083 | 2.4832 | 6.32 | Q | V | . | . | . | . |
| 6.167 | 2.5270 | 6.35 | Q | V | . | . | . | . |
| 6.250 | 2.5709 | 6.39 | Q | V | . | . | . | . |
| 6.333 | 2.6151 | 6.42 | Q | V | . | . | . | . |
| 6.417 | 2.6596 | 6.46 | Q | V | . | . | . | . |
| 6.500 | 2.7043 | 6.49 | Q | V | . | . | . | . |
| 6.583 | 2.7493 | 6.53 | Q | V | . | . | . | . |
| 6.667 | 2.7945 | 6.56 | Q | V | . | . | . | . |
| 6.750 | 2.8399 | 6.60 | Q | V | . | . | . | . |
| 6.833 | 2.8857 | 6.64 | Q | V | . | . | . | . |
| 6.917 | 2.9316 | 6.68 | Q | V | . | . | . | . |
| 7.000 | 2.9779 | 6.72 | Q | V | . | . | . | . |
| 7.083 | 3.0244 | 6.76 | Q | V | . | . | . | . |
| 7.167 | 3.0712 | 6.80 | Q | V | . | . | . | . |
| 7.250 | 3.1183 | 6.84 | Q | V | . | . | . | . |
| 7.333 | 3.1657 | 6.88 | Q | V | . | . | . | . |
| 7.417 | 3.2133 | 6.92 | Q | V | . | . | . | . |
| 7.500 | 3.2613 | 6.96 | Q | V | . | . | . | . |
| 7.583 | 3.3095 | 7.01 | Q | V | . | . | . | . |
| 7.667 | 3.3581 | 7.05 | Q | V | . | . | . | . |
| 7.750 | 3.4069 | 7.09 | Q | V | . | . | . | . |
| 7.833 | 3.4561 | 7.14 | Q | V | . | . | . | . |
| 7.917 | 3.5056 | 7.18 | Q | V | . | . | . | . |
| 8.000 | 3.5554 | 7.23 | Q | V | . | . | . | . |
| 8.083 | 3.6055 | 7.28 | Q | V | . | . | . | . |
| 8.167 | 3.6560 | 7.33 | Q | V | . | . | . | . |
| 8.250 | 3.7068 | 7.38 | Q | V | . | . | . | . |
| 8.333 | 3.7579 | 7.43 | Q | V | . | . | . | . |
| 8.417 | 3.8094 | 7.48 | Q | V | . | . | . | . |
| 8.500 | 3.8613 | 7.53 | Q | V | . | . | . | . |
| 8.583 | 3.9135 | 7.58 | Q | V | . | . | . | . |
| 8.667 | 3.9661 | 7.63 | Q | V | . | . | . | . |
| 8.750 | 4.0190 | 7.69 | Q | V | . | . | . | . |
| 8.833 | 4.0723 | 7.74 | Q | V | . | . | . | . |
| 8.917 | 4.1261 | 7.80 | Q | V | . | . | . | . |
| 9.000 | 4.1802 | 7.86 | Q | V | . | . | . | . |
| 9.083 | 4.2347 | 7.92 | Q | V | . | . | . | . |
| 9.167 | 4.2896 | 7.98 | Q | V | . | . | . | . |
| 9.250 | 4.3450 | 8.04 | Q | V | . | . | . | . |
| 9.333 | 4.4008 | 8.10 | Q | V | . | . | . | . |
| 9.417 | 4.4570 | 8.16 | Q | V | . | . | . | . |
| 9.500 | 4.5136 | 8.23 | Q | V | . | . | . | . |
| 9.583 | 4.5707 | 8.29 | Q | V | . | . | . | . |
| 9.667 | 4.6283 | 8.36 | Q | V | . | . | . | . |
| 9.750 | 4.6863 | 8.43 | Q | V | . | . | . | . |
| 9.833 | 4.7449 | 8.50 | Q | V | . | . | . | . |
| 9.917 | 4.8039 | 8.57 | Q | V | . | . | . | . |
| 10.000 | 4.8634 | 8.64 | Q | V | . | . | . | . |
| 10.083 | 4.9234 | 8.71 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10.167 | 4.9839 | 8.79 | Q | V | . | . | . | . |
| 10.250 | 5.0450 | 8.87 | Q | V | . | . | . | . |
| 10.333 | 5.1066 | 8.95 | Q | V | . | . | . | . |
| 10.417 | 5.1688 | 9.03 | Q | V | . | . | . | . |
| 10.500 | 5.2315 | 9.11 | Q | V | . | . | . | . |
| 10.583 | 5.2949 | 9.20 | Q | V | . | . | . | . |
| 10.667 | 5.3588 | 9.28 | Q | V | . | . | . | . |
| 10.750 | 5.4233 | 9.37 | Q | V | . | . | . | . |
| 10.833 | 5.4885 | 9.46 | Q | V | . | . | . | . |
| 10.917 | 5.5543 | 9.56 | Q | V | . | . | . | . |
| 11.000 | 5.6208 | 9.65 | Q | V | . | . | . | . |
| 11.083 | 5.6879 | 9.75 | Q | V | . | . | . | . |
| 11.167 | 5.7558 | 9.85 | Q | V | . | . | . | . |
| 11.250 | 5.8243 | 9.95 | Q | V | . | . | . | . |
| 11.333 | 5.8936 | 10.06 | .Q | V | . | . | . | . |
| 11.417 | 5.9636 | 10.17 | .Q | V | . | . | . | . |
| 11.500 | 6.0344 | 10.28 | .Q | V | . | . | . | . |
| 11.583 | 6.1060 | 10.39 | .Q | V | . | . | . | . |
| 11.667 | 6.1784 | 10.51 | .Q | V | . | . | . | . |
| 11.750 | 6.2516 | 10.63 | .Q | V | . | . | . | . |
| 11.833 | 6.3257 | 10.76 | .Q | V | . | . | . | . |
| 11.917 | 6.4007 | 10.89 | .Q | V | . | . | . | . |
| 12.000 | 6.4766 | 11.02 | .Q | V | . | . | . | . |
| 12.083 | 6.5534 | 11.15 | .Q | V | . | . | . | . |
| 12.167 | 6.6309 | 11.26 | .Q | V | . | . | . | . |
| 12.250 | 6.7090 | 11.34 | .Q | V | . | . | . | . |
| 12.333 | 6.7871 | 11.34 | .Q | V | . | . | . | . |
| 12.417 | 6.8653 | 11.35 | .Q | V | . | . | . | . |
| 12.500 | 6.9439 | 11.42 | .Q | V | . | . | . | . |
| 12.583 | 7.0232 | 11.52 | .Q | V | . | . | . | . |
| 12.667 | 7.1034 | 11.64 | .Q | V | . | . | . | . |
| 12.750 | 7.1844 | 11.77 | .Q | V | . | . | . | . |
| 12.833 | 7.2666 | 11.93 | .Q | V | . | . | . | . |
| 12.917 | 7.3498 | 12.09 | .Q | V | . | . | . | . |
| 13.000 | 7.4343 | 12.26 | .Q | V | . | . | . | . |
| 13.083 | 7.5200 | 12.45 | .Q | V | . | . | . | . |
| 13.167 | 7.6071 | 12.64 | .Q | V | . | . | . | . |
| 13.250 | 7.6955 | 12.85 | .Q | V | . | . | . | . |
| 13.333 | 7.7855 | 13.07 | .Q | V | . | . | . | . |
| 13.417 | 7.8771 | 13.29 | .Q | V | . | . | . | . |
| 13.500 | 7.9703 | 13.54 | .Q | V | . | . | . | . |
| 13.583 | 8.0653 | 13.79 | .Q | V | . | . | . | . |
| 13.667 | 8.1621 | 14.06 | .Q | V | . | . | . | . |
| 13.750 | 8.2609 | 14.34 | .Q | V | . | . | . | . |
| 13.833 | 8.3617 | 14.64 | .Q | V. | . | . | . | . |
| 13.917 | 8.4647 | 14.96 | .Q | V. | . | . | . | . |
| 14.000 | 8.5700 | 15.29 | .Q | V. | . | . | . | . |
| 14.083 | 8.6779 | 15.67 | .Q | V. | . | . | . | . |
| 14.167 | 8.7890 | 16.12 | .Q | V. | . | . | . | . |
| 14.250 | 8.9037 | 16.67 | .Q | V. | . | . | . | . |



```
18.500     33.0804     18.89  .Q        .         .         .    V    .
18.583     33.2078     18.50  .Q        .         .         .    V    .
18.667     33.3318     18.01  .Q        .         .         .     V   .
18.750     33.4516     17.39  .Q        .         .         .     V   .
18.833     33.5664     16.67  .Q        .         .         .     V   .
18.917     33.6746     15.70  .Q        .         .         .     V   .
19.000     33.7711     14.02  .Q        .         .         .     V   .
19.083     33.8514     11.66  .Q        .         .         .     V   .
19.167     33.9274     11.04  .Q        .         .         .     V   .
19.250     34.0008     10.66  .Q        .         .         .     V   .
19.333     34.0721     10.35  .Q        .         .         .     V   .
19.417     34.1416     10.10  .Q        .         .         .     V   .
19.500     34.2095      9.86  Q         .         .         .      V  .
19.583     34.2760      9.65  Q         .         .         .      V  .
19.667     34.3410      9.44  Q         .         .         .      V  .
19.750     34.4047      9.25  Q         .         .         .      V  .
19.833     34.4672      9.07  Q         .         .         .      V  .
19.917     34.5284      8.90  Q         .         .         .      V  .
20.000     34.5886      8.73  Q         .         .         .      V  .
20.083     34.6477      8.58  Q         .         .         .      V  .
20.167     34.7058      8.44  Q         .         .         .      V  .
20.250     34.7630      8.30  Q         .         .         .      V  .
20.333     34.8192      8.17  Q         .         .         .      V  .
20.417     34.8746      8.04  Q         .         .         .      V  .
20.500     34.9291      7.92  Q         .         .         .      V  .
20.583     34.9828      7.80  Q         .         .         .      V  .
20.667     35.0357      7.69  Q         .         .         .      V  .
20.750     35.0879      7.58  Q         .         .         .      V  .
20.833     35.1394      7.47  Q         .         .         .       V .
20.917     35.1902      7.37  Q         .         .         .       V .
21.000     35.2403      7.28  Q         .         .         .       V .
21.083     35.2897      7.18  Q         .         .         .       V .
21.167     35.3386      7.09  Q         .         .         .       V .
21.250     35.3868      7.00  Q         .         .         .       V .
21.333     35.4344      6.91  Q         .         .         .       V .
21.417     35.4814      6.83  Q         .         .         .       V .
21.500     35.5278      6.75  Q         .         .         .       V .
21.583     35.5737      6.67  Q         .         .         .       V .
21.667     35.6191      6.59  Q         .         .         .       V .
21.750     35.6640      6.51  Q         .         .         .       V .
21.833     35.7084      6.44  Q         .         .         .       V .
21.917     35.7522      6.37  Q         .         .         .       V .
22.000     35.7956      6.30  Q         .         .         .       V .
22.083     35.8386      6.24  Q         .         .         .       V .
22.167     35.8811      6.17  Q         .         .         .       V .
22.250     35.9232      6.11  Q         .         .         .       V .
22.333     35.9648      6.05  Q         .         .         .       V .
22.417     36.0060      5.99  Q         .         .         .       V .
22.500     36.0469      5.93  Q         .         .         .        V.
22.583     36.0873      5.87  Q         .         .         .        V.
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22.667 | 36.1274 | 5.82 | Q | . | . | . | V. |
| 22.750 | 36.1670 | 5.76 | Q | . | . | . | V. |
| 22.833 | 36.2063 | 5.71 | Q | . | . | . | V. |
| 22.917 | 36.2453 | 5.66 | Q | . | . | . | V. |
| 23.000 | 36.2839 | 5.60 | Q | . | . | . | V. |
| 23.083 | 36.3221 | 5.55 | Q | . | . | . | V. |
| 23.167 | 36.3601 | 5.51 | Q | . | . | . | V. |
| 23.250 | 36.3977 | 5.46 | Q | . | . | . | V. |
| 23.333 | 36.4349 | 5.41 | Q | . | . | . | V. |
| 23.417 | 36.4719 | 5.37 | Q | . | . | . | V. |
| 23.500 | 36.5085 | 5.32 | Q | . | . | . | V. |
| 23.583 | 36.5449 | 5.28 | Q | . | . | . | V. |
| 23.667 | 36.5810 | 5.24 | Q | . | . | . | V. |
| 23.750 | 36.6167 | 5.19 | Q | . | . | . | V. |
| 23.833 | 36.6522 | 5.15 | Q | . | . | . | V. |
| 23.917 | 36.6874 | 5.11 | Q | . | . | . | V. |
| 24.000 | 36.7224 | 5.07 | Q | . | . | . | V. |
| 24.083 | 36.7567 | 4.98 | Q | . | . | . | V. |
| 24.167 | 36.7895 | 4.76 | Q | . | . | . | V. |
| 24.250 | 36.8195 | 4.36 | Q | . | . | . | V. |
| 24.333 | 36.8437 | 3.51 | Q | . | . | . | V. |
| 24.417 | 36.8622 | 2.68 | Q | . | . | . | V. |
| 24.500 | 36.8769 | 2.13 | Q | . | . | . | V. |
| 24.583 | 36.8891 | 1.77 | Q | . | . | . | V. |
| 24.667 | 36.8994 | 1.50 | Q | . | . | . | V. |
| 24.750 | 36.9082 | 1.28 | Q | . | . | . | V. |
| 24.833 | 36.9158 | 1.10 | Q | . | . | . | V. |
| 24.917 | 36.9224 | 0.96 | Q | . | . | . | V. |
| 25.000 | 36.9281 | 0.84 | Q | . | . | . | V. |
| 25.083 | 36.9332 | 0.73 | Q | . | . | . | V. |
| 25.167 | 36.9375 | 0.63 | Q | . | . | . | V. |
| 25.250 | 36.9413 | 0.55 | Q | . | . | . | V. |
| 25.333 | 36.9447 | 0.49 | Q | . | . | . | V. |
| 25.417 | 36.9477 | 0.43 | Q | . | . | . | V. |
| 25.500 | 36.9503 | 0.38 | Q | . | . | . | V. |
| 25.583 | 36.9525 | 0.33 | Q | . | . | . | V. |
| 25.667 | 36.9545 | 0.29 | Q | . | . | . | V. |
| 25.750 | 36.9562 | 0.25 | Q | . | . | . | V. |
| 25.833 | 36.9577 | 0.22 | Q | . | . | . | V. |
| 25.917 | 36.9590 | 0.19 | Q | . | . | . | V. |
| 26.000 | 36.9601 | 0.16 | Q | . | . | . | V. |
| 26.083 | 36.9611 | 0.14 | Q | . | . | . | V. |
| 26.167 | 36.9619 | 0.12 | Q | . | . | . | V. |
| 26.250 | 36.9627 | 0.10 | Q | . | . | . | V. |
| 26.333 | 36.9633 | 0.09 | Q | . | . | . | V. |
| 26.417 | 36.9639 | 0.08 | Q | . | . | . | V. |
| 26.500 | 36.9644 | 0.07 | Q | . | . | . | V. |
| 26.583 | 36.9648 | 0.06 | Q | . | . | . | V. |
| 26.667 | 36.9651 | 0.05 | Q | . | . | . | V. |
| 26.750 | 36.9653 | 0.03 | Q | . | . | . | V. |

```
  26.833     36.9655      0.02  Q         .         .         .        V.
  26.917     36.9655      0.01  Q         .         .         .         V
--------------------------------------------------------------------------------
   TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
   (Note: 100% of Peak Flow Rate estimate assumed to have
   an instantaneous time duration)

   Percentile of Estimated                Duration
       Peak Flow Rate                     (minutes)
   ======================                 =========
              0%                           1615.0
             10%                            135.0
             20%                             70.0
             30%                             50.0
             40%                             35.0
             50%                             30.0
             60%                             20.0
             70%                             20.0
             80%                             10.0
             90%                             10.0
================================================================================

  END OF FLOODSCx ROUTING ANALYSIS
```

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
         (c) Copyright 1989-2016 Advanced Engineering Software (aes)
             Ver. 23.0  Release Date: 07/01/2016  License ID 1355

                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 2 PROPOSED CONDITIONS                                            *
 ************************************************************************

  FILE NAME: LOPR2.DAT
  TIME/DATE OF STUDY: 17:00 07/26/2021


**************************************************************************
  FLOW PROCESS FROM NODE    200.00 TO NODE    201.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    5520.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    2488.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      19.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     218.070 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.370 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
```

SPECIFIED PEAK 1-HOUR RAINFALL(INCH) = 1.05
SPECIFIED PEAK 3-HOUR RAINFALL(INCH) = 1.50
SPECIFIED PEAK 6-HOUR RAINFALL(INCH) = 1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) = 2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
5-MINUTE FACTOR = 0.990
30-MINUTE FACTOR = 0.990
1-HOUR FACTOR = 0.990
3-HOUR FACTOR = 0.999
6-HOUR FACTOR = 0.999
24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 22.526

UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 1.170 | 30.846 |
| 2 | 5.502 | 114.251 |
| 3 | 14.926 | 248.541 |
| 4 | 34.349 | 512.235 |
| 5 | 50.449 | 424.607 |
| 6 | 60.709 | 270.595 |
| 7 | 67.517 | 179.529 |
| 8 | 72.753 | 138.107 |
| 9 | 76.851 | 108.071 |
| 10 | 80.147 | 86.923 |
| 11 | 82.844 | 71.126 |
| 12 | 85.167 | 61.262 |
| 13 | 87.218 | 54.086 |
| 14 | 88.923 | 44.970 |
| 15 | 90.283 | 35.855 |
| 16 | 91.533 | 32.979 |
| 17 | 92.635 | 29.055 |
| 18 | 93.638 | 26.464 |
| 19 | 94.469 | 21.900 |
| 20 | 95.235 | 20.201 |
| 21 | 95.906 | 17.713 |
| 22 | 96.492 | 15.444 |
| 23 | 97.019 | 13.917 |
| 24 | 97.428 | 10.780 |
| 25 | 97.803 | 9.883 |

| | | |
|---|---|---|
| 26 | 98.044 | 6.353 |
| 27 | 98.272 | 6.023 |
| 28 | 98.533 | 6.887 |
| 29 | 98.804 | 7.125 |
| 30 | 99.074 | 7.130 |
| 31 | 99.344 | 7.125 |
| 32 | 99.614 | 7.125 |
| 33 | 99.884 | 7.125 |
| 34 | 100.000 | 3.048 |

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TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 27.1725

TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 25.6731

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

==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

---

| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 75.0 | 150.0 | 225.0 | 300.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0003 | 0.04 | Q | . | . | . | . |
| 0.167 | 0.0015 | 0.18 | Q | . | . | . | . |
| 0.250 | 0.0049 | 0.50 | Q | . | . | . | . |
| 0.333 | 0.0128 | 1.14 | Q | . | . | . | . |
| 0.417 | 0.0243 | 1.68 | Q | . | . | . | . |
| 0.500 | 0.0383 | 2.02 | Q | . | . | . | . |
| 0.583 | 0.0538 | 2.26 | Q | . | . | . | . |
| 0.667 | 0.0706 | 2.44 | Q | . | . | . | . |
| 0.750 | 0.0884 | 2.58 | Q | . | . | . | . |
| 0.833 | 0.1070 | 2.70 | Q | . | . | . | . |
| 0.917 | 0.1262 | 2.80 | Q | . | . | . | . |
| 1.000 | 0.1461 | 2.89 | Q | . | . | . | . |
| 1.083 | 0.1665 | 2.96 | Q | . | . | . | . |
| 1.167 | 0.1874 | 3.03 | Q | . | . | . | . |
| 1.250 | 0.2087 | 3.09 | Q | . | . | . | . |
| 1.333 | 0.2303 | 3.14 | Q | . | . | . | . |
| 1.417 | 0.2523 | 3.19 | Q | . | . | . | . |
| 1.500 | 0.2745 | 3.23 | Q | . | . | . | . |
| 1.583 | 0.2971 | 3.27 | Q | . | . | . | . |
| 1.667 | 0.3199 | 3.31 | Q | . | . | . | . |
| 1.750 | 0.3429 | 3.35 | Q | . | . | . | . |
| 1.833 | 0.3662 | 3.38 | Q | . | . | . | . |
| 1.917 | 0.3897 | 3.41 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 2.000 | 0.4133 | 3.44 | Q | . | . | . | . |
| 2.083 | 0.4372 | 3.46 | Q | . | . | . | . |
| 2.167 | 0.4611 | 3.48 | Q | . | . | . | . |
| 2.250 | 0.4853 | 3.50 | Q | . | . | . | . |
| 2.333 | 0.5096 | 3.53 | Q | . | . | . | . |
| 2.417 | 0.5340 | 3.55 | Q | . | . | . | . |
| 2.500 | 0.5586 | 3.57 | Q | . | . | . | . |
| 2.583 | 0.5834 | 3.60 | Q | . | . | . | . |
| 2.667 | 0.6083 | 3.62 | Q | . | . | . | . |
| 2.750 | 0.6334 | 3.64 | Q | . | . | . | . |
| 2.833 | 0.6586 | 3.66 | QV | . | . | . | . |
| 2.917 | 0.6839 | 3.68 | QV | . | . | . | . |
| 3.000 | 0.7093 | 3.69 | QV | . | . | . | . |
| 3.083 | 0.7348 | 3.71 | QV | . | . | . | . |
| 3.167 | 0.7605 | 3.72 | QV | . | . | . | . |
| 3.250 | 0.7862 | 3.74 | QV | . | . | . | . |
| 3.333 | 0.8121 | 3.75 | QV | . | . | . | . |
| 3.417 | 0.8380 | 3.77 | QV | . | . | . | . |
| 3.500 | 0.8641 | 3.79 | QV | . | . | . | . |
| 3.583 | 0.8903 | 3.80 | QV | . | . | . | . |
| 3.667 | 0.9166 | 3.82 | QV | . | . | . | . |
| 3.750 | 0.9430 | 3.83 | QV | . | . | . | . |
| 3.833 | 0.9695 | 3.85 | QV | . | . | . | . |
| 3.917 | 0.9962 | 3.87 | QV | . | . | . | . |
| 4.000 | 1.0229 | 3.89 | QV | . | . | . | . |
| 4.083 | 1.0498 | 3.90 | QV | . | . | . | . |
| 4.167 | 1.0768 | 3.92 | QV | . | . | . | . |
| 4.250 | 1.1039 | 3.94 | QV | . | . | . | . |
| 4.333 | 1.1312 | 3.96 | QV | . | . | . | . |
| 4.417 | 1.1586 | 3.97 | QV | . | . | . | . |
| 4.500 | 1.1861 | 3.99 | QV | . | . | . | . |
| 4.583 | 1.2137 | 4.01 | QV | . | . | . | . |
| 4.667 | 1.2415 | 4.03 | QV | . | . | . | . |
| 4.750 | 1.2693 | 4.05 | QV | . | . | . | . |
| 4.833 | 1.2974 | 4.07 | Q V | . | . | . | . |
| 4.917 | 1.3255 | 4.09 | Q V | . | . | . | . |
| 5.000 | 1.3538 | 4.11 | Q V | . | . | . | . |
| 5.083 | 1.3823 | 4.13 | Q V | . | . | . | . |
| 5.167 | 1.4108 | 4.15 | Q V | . | . | . | . |
| 5.250 | 1.4396 | 4.17 | Q V | . | . | . | . |
| 5.333 | 1.4684 | 4.19 | Q V | . | . | . | . |
| 5.417 | 1.4974 | 4.21 | Q V | . | . | . | . |
| 5.500 | 1.5266 | 4.23 | Q V | . | . | . | . |
| 5.583 | 1.5559 | 4.25 | Q V | . | . | . | . |
| 5.667 | 1.5853 | 4.28 | Q V | . | . | . | . |
| 5.750 | 1.6149 | 4.30 | Q V | . | . | . | . |
| 5.833 | 1.6447 | 4.32 | Q V | . | . | . | . |
| 5.917 | 1.6746 | 4.34 | Q V | . | . | . | . |
| 6.000 | 1.7046 | 4.37 | Q V | . | . | . | . |
| 6.083 | 1.7349 | 4.39 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6.167 | 1.7653 | 4.41 | Q | V | . | . | . | . |
| 6.250 | 1.7958 | 4.44 | Q | V | . | . | . | . |
| 6.333 | 1.8265 | 4.46 | Q | V | . | . | . | . |
| 6.417 | 1.8574 | 4.49 | Q | V | . | . | . | . |
| 6.500 | 1.8885 | 4.51 | Q | V | . | . | . | . |
| 6.583 | 1.9197 | 4.54 | Q | V | . | . | . | . |
| 6.667 | 1.9512 | 4.56 | Q | V | . | . | . | . |
| 6.750 | 1.9827 | 4.59 | Q | V | . | . | . | . |
| 6.833 | 2.0145 | 4.61 | Q | V | . | . | . | . |
| 6.917 | 2.0465 | 4.64 | Q | V | . | . | . | . |
| 7.000 | 2.0786 | 4.67 | Q | V | . | . | . | . |
| 7.083 | 2.1110 | 4.69 | Q | V | . | . | . | . |
| 7.167 | 2.1435 | 4.72 | Q | V | . | . | . | . |
| 7.250 | 2.1762 | 4.75 | Q | V | . | . | . | . |
| 7.333 | 2.2091 | 4.78 | Q | V | . | . | . | . |
| 7.417 | 2.2422 | 4.81 | Q | V | . | . | . | . |
| 7.500 | 2.2756 | 4.84 | Q | V | . | . | . | . |
| 7.583 | 2.3091 | 4.87 | Q | V | . | . | . | . |
| 7.667 | 2.3429 | 4.90 | Q | V | . | . | . | . |
| 7.750 | 2.3768 | 4.93 | Q | V | . | . | . | . |
| 7.833 | 2.4110 | 4.96 | Q | V | . | . | . | . |
| 7.917 | 2.4454 | 4.99 | Q | V | . | . | . | . |
| 8.000 | 2.4800 | 5.03 | Q | V | . | . | . | . |
| 8.083 | 2.5149 | 5.06 | Q | V | . | . | . | . |
| 8.167 | 2.5499 | 5.09 | Q | V | . | . | . | . |
| 8.250 | 2.5853 | 5.13 | Q | V | . | . | . | . |
| 8.333 | 2.6208 | 5.16 | Q | V | . | . | . | . |
| 8.417 | 2.6566 | 5.20 | Q | V | . | . | . | . |
| 8.500 | 2.6927 | 5.23 | Q | V | . | . | . | . |
| 8.583 | 2.7290 | 5.27 | Q | V | . | . | . | . |
| 8.667 | 2.7655 | 5.31 | Q | V | . | . | . | . |
| 8.750 | 2.8023 | 5.35 | Q | V | . | . | . | . |
| 8.833 | 2.8394 | 5.39 | Q | V | . | . | . | . |
| 8.917 | 2.8768 | 5.42 | Q | V | . | . | . | . |
| 9.000 | 2.9144 | 5.46 | Q | V | . | . | . | . |
| 9.083 | 2.9523 | 5.51 | Q | V | . | . | . | . |
| 9.167 | 2.9905 | 5.55 | Q | V | . | . | . | . |
| 9.250 | 3.0290 | 5.59 | Q | V | . | . | . | . |
| 9.333 | 3.0678 | 5.63 | Q | V | . | . | . | . |
| 9.417 | 3.1069 | 5.68 | Q | V | . | . | . | . |
| 9.500 | 3.1463 | 5.72 | Q | V | . | . | . | . |
| 9.583 | 3.1860 | 5.77 | Q | V | . | . | . | . |
| 9.667 | 3.2261 | 5.81 | Q | V | . | . | . | . |
| 9.750 | 3.2665 | 5.86 | Q | V | . | . | . | . |
| 9.833 | 3.3072 | 5.91 | Q | V | . | . | . | . |
| 9.917 | 3.3482 | 5.96 | Q | V | . | . | . | . |
| 10.000 | 3.3896 | 6.01 | Q | V | . | . | . | . |
| 10.083 | 3.4314 | 6.06 | Q | V | . | . | . | . |
| 10.167 | 3.4735 | 6.12 | Q | V | . | . | . | . |
| 10.250 | 3.5160 | 6.17 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10.333 | 3.5589 | 6.23 | Q | V | . | . | . | . |
| 10.417 | 3.6021 | 6.28 | Q | V | . | . | . | . |
| 10.500 | 3.6458 | 6.34 | Q | V | . | . | . | . |
| 10.583 | 3.6899 | 6.40 | Q | V | . | . | . | . |
| 10.667 | 3.7344 | 6.46 | Q | V | . | . | . | . |
| 10.750 | 3.7793 | 6.52 | Q | V | . | . | . | . |
| 10.833 | 3.8246 | 6.59 | Q | V | . | . | . | . |
| 10.917 | 3.8704 | 6.65 | Q | V | . | . | . | . |
| 11.000 | 3.9167 | 6.72 | Q | V | . | . | . | . |
| 11.083 | 3.9635 | 6.79 | Q | V | . | . | . | . |
| 11.167 | 4.0107 | 6.86 | Q | V | . | . | . | . |
| 11.250 | 4.0584 | 6.93 | Q | V | . | . | . | . |
| 11.333 | 4.1067 | 7.00 | Q | V | . | . | . | . |
| 11.417 | 4.1554 | 7.08 | Q | V | . | . | . | . |
| 11.500 | 4.2047 | 7.16 | Q | V | . | . | . | . |
| 11.583 | 4.2546 | 7.24 | Q | V | . | . | . | . |
| 11.667 | 4.3050 | 7.32 | Q | V | . | . | . | . |
| 11.750 | 4.3560 | 7.41 | Q | V | . | . | . | . |
| 11.833 | 4.4076 | 7.50 | Q | V | . | . | . | . |
| 11.917 | 4.4599 | 7.58 | .Q | V | . | . | . | . |
| 12.000 | 4.5127 | 7.68 | .Q | V | . | . | . | . |
| 12.083 | 4.5662 | 7.77 | .Q | V | . | . | . | . |
| 12.167 | 4.6202 | 7.84 | .Q | V | . | . | . | . |
| 12.250 | 4.6745 | 7.89 | .Q | V | . | . | . | . |
| 12.333 | 4.7288 | 7.87 | .Q | V | . | . | . | . |
| 12.417 | 4.7831 | 7.88 | .Q | V | . | . | . | . |
| 12.500 | 4.8377 | 7.93 | .Q | V | . | . | . | . |
| 12.583 | 4.8929 | 8.01 | .Q | V | . | . | . | . |
| 12.667 | 4.9486 | 8.09 | .Q | V | . | . | . | . |
| 12.750 | 5.0050 | 8.19 | .Q | V | . | . | . | . |
| 12.833 | 5.0622 | 8.30 | .Q | V | . | . | . | . |
| 12.917 | 5.1201 | 8.41 | .Q | V | . | . | . | . |
| 13.000 | 5.1789 | 8.54 | .Q | V | . | . | . | . |
| 13.083 | 5.2386 | 8.67 | .Q | V | . | . | . | . |
| 13.167 | 5.2992 | 8.81 | .Q | V | . | . | . | . |
| 13.250 | 5.3609 | 8.95 | .Q | V | . | . | . | . |
| 13.333 | 5.4236 | 9.11 | .Q | V | . | . | . | . |
| 13.417 | 5.4874 | 9.26 | .Q | V | . | . | . | . |
| 13.500 | 5.5524 | 9.44 | .Q | V | . | . | . | . |
| 13.583 | 5.6186 | 9.61 | .Q | V | . | . | . | . |
| 13.667 | 5.6861 | 9.81 | .Q | V | . | . | . | . |
| 13.750 | 5.7550 | 10.00 | .Q | V | . | . | . | . |
| 13.833 | 5.8254 | 10.22 | .Q | V. | . | . | . | . |
| 13.917 | 5.8973 | 10.44 | .Q | V. | . | . | . | . |
| 14.000 | 5.9709 | 10.68 | .Q | V. | . | . | . | . |
| 14.083 | 6.0462 | 10.94 | .Q | V. | . | . | . | . |
| 14.167 | 6.1238 | 11.26 | .Q | V. | . | . | . | . |
| 14.250 | 6.2041 | 11.66 | .Q | V. | . | . | . | . |
| 14.333 | 6.2881 | 12.20 | .Q | V. | . | . | . | . |
| 14.417 | 6.3757 | 12.72 | .Q | V. | . | . | . | . |

```
14.500      6.4667     13.21  .Q        V         .         .         .
14.583      6.5608     13.67  .Q        V         .         .         .
14.667      6.6583     14.16  .Q        V         .         .         .
14.750      6.7592     14.65  .Q        V         .         .         .
14.833      6.8638     15.19  . Q       V         .         .         .
14.917      6.9723     15.76  . Q       V         .         .         .
15.000      7.0852     16.39  . Q       .V        .         .         .
15.083      7.2027     17.06  . Q       .V        .         .         .
15.167      7.3254     17.82  . Q       .V        .         .         .
15.250      7.4537     18.64  . Q       .V        .         .         .
15.333      7.5886     19.58  . Q       .V        .         .         .
15.417      7.7314     20.74  . Q       . V       .         .         .
15.500      7.8856     22.38  . Q       . V       .         .         .
15.583      8.0554     24.67  .  Q      . V       .         .         .
15.667      8.2501     28.27  .  Q      . V       .         .         .
15.750      8.4736     32.45  .   Q     .  V      .         .         .
15.833      8.7364     38.16  .    Q    .  V      .         .         .
15.917      9.0622     47.32  .     Q   .   V     .         .         .
16.000      9.5014     63.77  .       Q .   V     .         .         .
16.083     10.1346     91.94  .         . Q  V    .         .         .
16.167     11.0734    136.31  .         .      VQ .         .         .
16.250     12.3740    188.85  .         .        V.    Q    .         .
16.333     14.0917    249.40  .         .         .V         .  Q      .
16.417     15.5843    216.74  .         .         .   V   Q .         .
16.500     16.6971    161.58  .         .         .Q    V   .         .
16.583     17.5425    122.74  .         .     Q   .      V  .         .
16.667     18.2262     99.28  .         .  Q      .       V .         .
16.750     18.7936     82.39  .         Q         .        V.         .
16.833     19.2765     70.12  .        Q.         .         V         .
16.917     19.6953     60.81  .       Q .         .         V         .
17.000     20.0668     53.95  .      Q  .         .         .V        .
17.083     20.3996     48.32  .     Q   .         .         .V        .
17.167     20.6943     42.79  .    Q    .         .         . V       .
17.250     20.9546     37.79  .    Q    .         .         . V       .
17.333     21.1922     34.51  .   Q     .         .         .  V      .
17.417     21.4084     31.39  .   Q     .         .         .  V      .
17.500     21.6067     28.79  .  Q      .         .         .  V      .
17.583     21.7862     26.06  .  Q      .         .         .  V      .
17.667     21.9522     24.11  .  Q      .         .         .   V     .
17.750     22.1048     22.16  . Q       .         .         .   V     .
17.833     22.2449     20.34  . Q       .         .         .   V     .
17.917     22.3742     18.77  . Q       .         .         .   V     .
18.000     22.4912     17.00  . Q       .         .         .    V    .
18.083     22.6001     15.81  . Q       .         .         .    V    .
18.167     22.6987     14.32  .Q        .         .         .    V    .
18.250     22.7935     13.75  .Q        .         .         .    V    .
18.333     22.8874     13.64  .Q        .         .         .    V    .
18.417     22.9798     13.41  .Q        .         .         .    V    .
18.500     23.0695     13.03  .Q        .         .         .    V    .
18.583     23.1560     12.56  .Q        .         .         .     V   .
```

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 18.667 | 23.2384 | 11.97 | .Q | . | . | . | V | . |
| 18.750 | 23.3154 | 11.19 | .Q | . | . | . | V | . |
| 18.833 | 23.3811 | 9.53 | .Q | . | . | . | V | . |
| 18.917 | 23.4380 | 8.27 | .Q | . | . | . | V | . |
| 19.000 | 23.4922 | 7.87 | .Q | . | . | . | V | . |
| 19.083 | 23.5446 | 7.60 | .Q | . | . | . | V | . |
| 19.167 | 23.5954 | 7.39 | Q | . | . | . | V | . |
| 19.250 | 23.6450 | 7.20 | Q | . | . | . | V | . |
| 19.333 | 23.6934 | 7.03 | Q | . | . | . | V | . |
| 19.417 | 23.7407 | 6.87 | Q | . | . | . | V | . |
| 19.500 | 23.7870 | 6.72 | Q | . | . | . | V | . |
| 19.583 | 23.8324 | 6.58 | Q | . | . | . | V | . |
| 19.667 | 23.8768 | 6.45 | Q | . | . | . | V | . |
| 19.750 | 23.9203 | 6.32 | Q | . | . | . | V | . |
| 19.833 | 23.9631 | 6.21 | Q | . | . | . | V | . |
| 19.917 | 24.0051 | 6.10 | Q | . | . | . | V | . |
| 20.000 | 24.0463 | 5.99 | Q | . | . | . | V | . |
| 20.083 | 24.0869 | 5.89 | Q | . | . | . | V | . |
| 20.167 | 24.1267 | 5.79 | Q | . | . | . | V | . |
| 20.250 | 24.1660 | 5.70 | Q | . | . | . | V | . |
| 20.333 | 24.2046 | 5.61 | Q | . | . | . | V | . |
| 20.417 | 24.2426 | 5.52 | Q | . | . | . | V | . |
| 20.500 | 24.2801 | 5.44 | Q | . | . | . | V | . |
| 20.583 | 24.3170 | 5.36 | Q | . | . | . | V | . |
| 20.667 | 24.3535 | 5.29 | Q | . | . | . | V | . |
| 20.750 | 24.3894 | 5.21 | Q | . | . | . | V | . |
| 20.833 | 24.4248 | 5.14 | Q | . | . | . | V | . |
| 20.917 | 24.4597 | 5.07 | Q | . | . | . | V | . |
| 21.000 | 24.4942 | 5.01 | Q | . | . | . | V | . |
| 21.083 | 24.5282 | 4.94 | Q | . | . | . | V | . |
| 21.167 | 24.5618 | 4.88 | Q | . | . | . | V | . |
| 21.250 | 24.5950 | 4.82 | Q | . | . | . | V | . |
| 21.333 | 24.6277 | 4.76 | Q | . | . | . | V | . |
| 21.417 | 24.6601 | 4.70 | Q | . | . | . | V | . |
| 21.500 | 24.6921 | 4.65 | Q | . | . | . | V | . |
| 21.583 | 24.7237 | 4.59 | Q | . | . | . | V | . |
| 21.667 | 24.7550 | 4.54 | Q | . | . | . | V | . |
| 21.750 | 24.7859 | 4.49 | Q | . | . | . | V | . |
| 21.833 | 24.8165 | 4.44 | Q | . | . | . | V | . |
| 21.917 | 24.8467 | 4.39 | Q | . | . | . | V | . |
| 22.000 | 24.8766 | 4.34 | Q | . | . | . | V | . |
| 22.083 | 24.9063 | 4.30 | Q | . | . | . | V | . |
| 22.167 | 24.9356 | 4.25 | Q | . | . | . | V | . |
| 22.250 | 24.9646 | 4.21 | Q | . | . | . | V | . |
| 22.333 | 24.9933 | 4.17 | Q | . | . | . | V | . |
| 22.417 | 25.0217 | 4.13 | Q | . | . | . | V | . |
| 22.500 | 25.0499 | 4.09 | Q | . | . | . | V | . |
| 22.583 | 25.0777 | 4.05 | Q | . | . | . | V | . |
| 22.667 | 25.1054 | 4.01 | Q | . | . | . | V | . |
| 22.750 | 25.1327 | 3.97 | Q | . | . | . | V | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 22.833 | 25.1599 | 3.94 | Q | . | . | . | V. |
| 22.917 | 25.1867 | 3.90 | Q | . | . | . | V. |
| 23.000 | 25.2134 | 3.87 | Q | . | . | . | V. |
| 23.083 | 25.2398 | 3.83 | Q | . | . | . | V. |
| 23.167 | 25.2659 | 3.80 | Q | . | . | . | V. |
| 23.250 | 25.2919 | 3.77 | Q | . | . | . | V. |
| 23.333 | 25.3176 | 3.74 | Q | . | . | . | V. |
| 23.417 | 25.3431 | 3.70 | Q | . | . | . | V. |
| 23.500 | 25.3684 | 3.67 | Q | . | . | . | V. |
| 23.583 | 25.3935 | 3.64 | Q | . | . | . | V. |
| 23.667 | 25.4184 | 3.61 | Q | . | . | . | V. |
| 23.750 | 25.4431 | 3.59 | Q | . | . | . | V. |
| 23.833 | 25.4676 | 3.56 | Q | . | . | . | V. |
| 23.917 | 25.4919 | 3.53 | Q | . | . | . | V. |
| 24.000 | 25.5160 | 3.50 | Q | . | . | . | V. |
| 24.083 | 25.5397 | 3.44 | Q | . | . | . | V. |
| 24.167 | 25.5622 | 3.27 | Q | . | . | . | V. |
| 24.250 | 25.5824 | 2.93 | Q | . | . | . | V. |
| 24.333 | 25.5980 | 2.27 | Q | . | . | . | V. |
| 24.417 | 25.6099 | 1.72 | Q | . | . | . | V. |
| 24.500 | 25.6193 | 1.37 | Q | . | . | . | V. |
| 24.583 | 25.6271 | 1.13 | Q | . | . | . | V. |
| 24.667 | 25.6336 | 0.95 | Q | . | . | . | V. |
| 24.750 | 25.6392 | 0.81 | Q | . | . | . | V. |
| 24.833 | 25.6440 | 0.69 | Q | . | . | . | V. |
| 24.917 | 25.6481 | 0.60 | Q | . | . | . | V. |
| 25.000 | 25.6516 | 0.52 | Q | . | . | . | V. |
| 25.083 | 25.6547 | 0.45 | Q | . | . | . | V. |
| 25.167 | 25.6574 | 0.39 | Q | . | . | . | V. |
| 25.250 | 25.6597 | 0.34 | Q | . | . | . | V. |
| 25.333 | 25.6617 | 0.29 | Q | . | . | . | V. |
| 25.417 | 25.6635 | 0.26 | Q | . | . | . | V. |
| 25.500 | 25.6650 | 0.22 | Q | . | . | . | V. |
| 25.583 | 25.6663 | 0.19 | Q | . | . | . | V. |
| 25.667 | 25.6675 | 0.16 | Q | . | . | . | V. |
| 25.750 | 25.6684 | 0.14 | Q | . | . | . | V. |
| 25.833 | 25.6693 | 0.12 | Q | . | . | . | V. |
| 25.917 | 25.6700 | 0.10 | Q | . | . | . | V. |
| 26.000 | 25.6706 | 0.09 | Q | . | . | . | V. |
| 26.083 | 25.6711 | 0.08 | Q | . | . | . | V. |
| 26.167 | 25.6716 | 0.07 | Q | . | . | . | V. |
| 26.250 | 25.6720 | 0.06 | Q | . | . | . | V. |
| 26.333 | 25.6723 | 0.05 | Q | . | . | . | V. |
| 26.417 | 25.6726 | 0.04 | Q | . | . | . | V. |
| 26.500 | 25.6728 | 0.03 | Q | . | . | . | V. |
| 26.583 | 25.6729 | 0.02 | Q | . | . | . | V. |
| 26.667 | 25.6730 | 0.01 | Q | . | . | . | V. |
| 26.750 | 25.6731 | 0.00 | Q | . | . | . | V. |

---

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:

(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

| Percentile of Estimated Peak Flow Rate | Duration (minutes) |
|---|---|
| 0% | 1605.0 |
| 10% | 120.0 |
| 20% | 65.0 |
| 30% | 45.0 |
| 40% | 30.0 |
| 50% | 25.0 |
| 60% | 20.0 |
| 70% | 15.0 |
| 80% | 10.0 |
| 90% | 5.0 |

END OF FLOODSCx ROUTING ANALYSIS

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

            F L O O D    R O U T I N G    A N A L Y S I S
          USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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             Ver. 23.0  Release Date: 07/01/2016  License ID 1355

                         Analysis prepared by:



 ************************* DESCRIPTION OF STUDY *************************
* LOCKHART SOLAR                                                        *
* 100-YR STORM EVENT                                                    *
* AREA 3 PROPOSED CONDITIONS                                            *
 ************************************************************************

  FILE NAME: LOPR3.DAT
  TIME/DATE OF STUDY: 17:03 07/26/2021


**************************************************************************
  FLOW PROCESS FROM NODE    300.00 TO NODE    301.00 IS CODE =   1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =    8570.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =    4508.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =      49.000 FEET
         BASIN FACTOR = 0.035
         WATERSHED AREA =     176.340 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    0.498 HOURS
          CAUTION: LAG TIME IS LESS THAN 0.50 HOURS.
          THE 5-MINUTE PERIOD UH MODEL (USED IN THIS COMPUTER PROGRAM)
          MAY BE TOO LARGE FOR PEAK FLOW ESTIMATES.
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.348
         LOW LOSS FRACTION = 0.620
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.78
```

SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.05
SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.50
SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.85
SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
  5-MINUTE FACTOR = 0.992
 30-MINUTE FACTOR = 0.992
  1-HOUR FACTOR = 0.992
  3-HOUR FACTOR = 0.999
  6-HOUR FACTOR = 0.999
 24-HOUR FACTOR = 1.000

UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME =  16.744

==========

UNIT HYDROGRAPH DETERMINATION

| INTERVAL NUMBER | "S" GRAPH MEAN VALUES | UNIT HYDROGRAPH ORDINATES(CFS) |
|---|---|---|
| 1 | 0.780 | 16.630 |
| 2 | 3.392 | 55.702 |
| 3 | 7.808 | 94.182 |
| 4 | 16.237 | 179.758 |
| 5 | 31.276 | 320.724 |
| 6 | 44.847 | 289.415 |
| 7 | 54.506 | 205.980 |
| 8 | 61.351 | 145.989 |
| 9 | 66.456 | 108.863 |
| 10 | 70.648 | 89.399 |
| 11 | 74.102 | 73.676 |
| 12 | 77.046 | 62.781 |
| 13 | 79.528 | 52.926 |
| 14 | 81.675 | 45.779 |
| 15 | 83.521 | 39.376 |
| 16 | 85.215 | 36.134 |
| 17 | 86.778 | 33.332 |
| 18 | 88.141 | 29.055 |
| 19 | 89.286 | 24.427 |
| 20 | 90.279 | 21.174 |
| 21 | 91.222 | 20.105 |
| 22 | 92.080 | 18.304 |
| 23 | 92.872 | 16.881 |
| 24 | 93.613 | 15.801 |
| 25 | 94.248 | 13.552 |

| | | |
|---|---|---|
| 26 | 94.817 | 12.142 |
| 27 | 95.385 | 12.115 |
| 28 | 95.872 | 10.383 |
| 29 | 96.307 | 9.279 |
| 30 | 96.742 | 9.261 |
| 31 | 97.093 | 7.483 |
| 32 | 97.394 | 6.428 |
| 33 | 97.694 | 6.398 |
| 34 | 97.909 | 4.592 |
| 35 | 98.077 | 3.572 |
| 36 | 98.245 | 3.582 |
| 37 | 98.434 | 4.040 |
| 38 | 98.635 | 4.279 |
| 39 | 98.836 | 4.289 |
| 40 | 99.037 | 4.284 |
| 41 | 99.238 | 4.284 |
| 42 | 99.438 | 4.284 |
| 43 | 99.639 | 4.284 |
| 44 | 99.840 | 4.284 |
| 45 | 100.000 | 3.408 |

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TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 21.9600
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 20.7765

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

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

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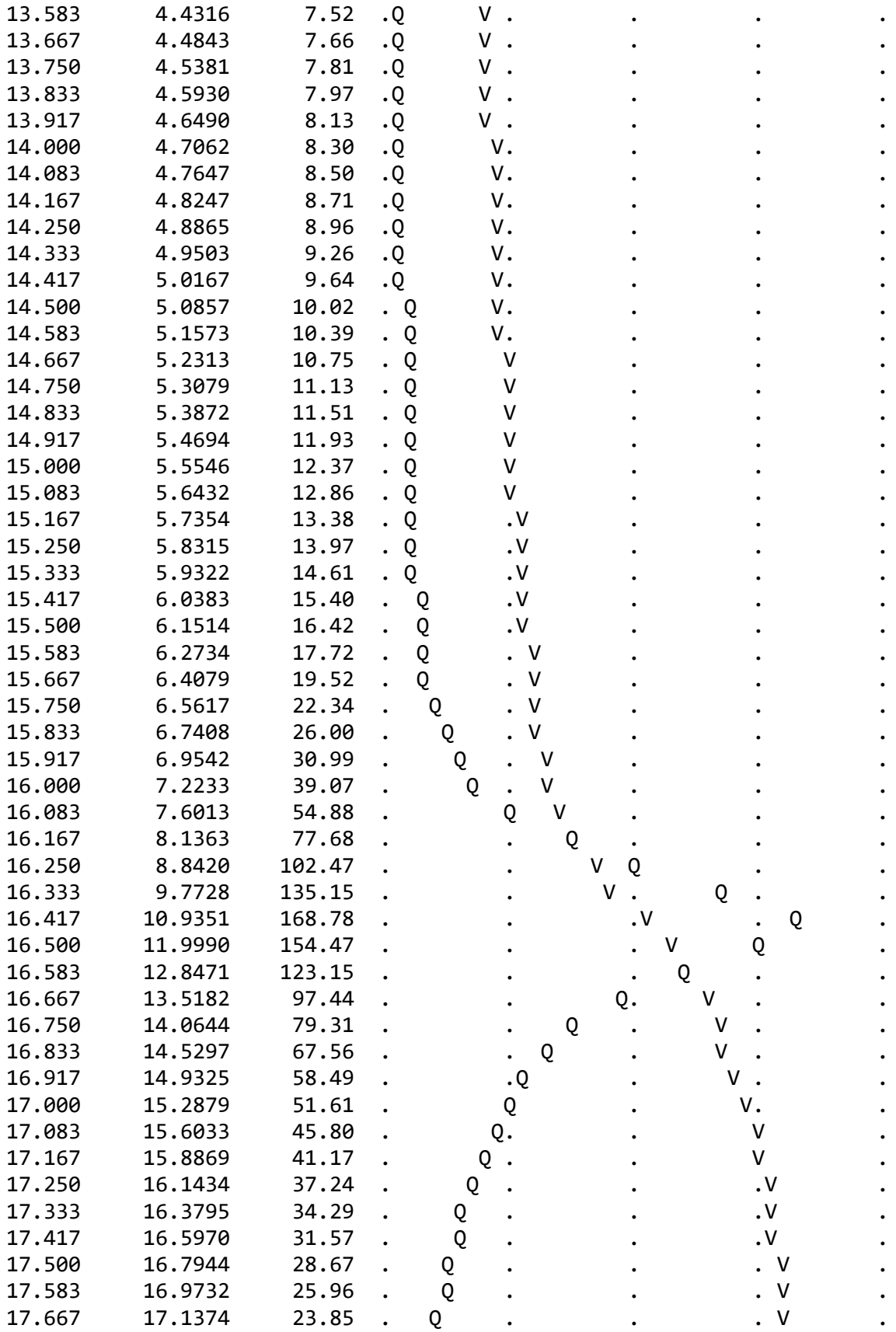
| TIME(HRS) | VOLUME(AF) | Q(CFS) | 0. | 50.0 | 100.0 | 150.0 | 200.0 |
|---|---|---|---|---|---|---|---|
| 0.083 | 0.0001 | 0.02 | Q | . | . | . | . |
| 0.167 | 0.0008 | 0.09 | Q | . | . | . | . |
| 0.250 | 0.0022 | 0.21 | Q | . | . | . | . |
| 0.333 | 0.0052 | 0.44 | Q | . | . | . | . |
| 0.417 | 0.0110 | 0.84 | Q | . | . | . | . |
| 0.500 | 0.0193 | 1.21 | Q | . | . | . | . |
| 0.583 | 0.0294 | 1.47 | Q | . | . | . | . |
| 0.667 | 0.0408 | 1.66 | Q | . | . | . | . |
| 0.750 | 0.0532 | 1.80 | Q | . | . | . | . |
| 0.833 | 0.0665 | 1.92 | Q | . | . | . | . |
| 0.917 | 0.0804 | 2.02 | Q | . | . | . | . |
| 1.000 | 0.0949 | 2.10 | Q | . | . | . | . |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1.083 | 0.1099 | 2.18 | Q | . | . | . | . |
| 1.167 | 0.1253 | 2.24 | Q | . | . | . | . |
| 1.250 | 0.1412 | 2.30 | Q | . | . | . | . |
| 1.333 | 0.1574 | 2.36 | Q | . | . | . | . |
| 1.417 | 0.1740 | 2.41 | Q | . | . | . | . |
| 1.500 | 0.1909 | 2.45 | Q | . | . | . | . |
| 1.583 | 0.2080 | 2.49 | Q | . | . | . | . |
| 1.667 | 0.2254 | 2.53 | Q | . | . | . | . |
| 1.750 | 0.2431 | 2.56 | Q | . | . | . | . |
| 1.833 | 0.2609 | 2.59 | Q | . | . | . | . |
| 1.917 | 0.2790 | 2.63 | Q | . | . | . | . |
| 2.000 | 0.2973 | 2.66 | Q | . | . | . | . |
| 2.083 | 0.3158 | 2.68 | Q | . | . | . | . |
| 2.167 | 0.3345 | 2.71 | Q | . | . | . | . |
| 2.250 | 0.3533 | 2.73 | Q | . | . | . | . |
| 2.333 | 0.3723 | 2.76 | Q | . | . | . | . |
| 2.417 | 0.3914 | 2.78 | Q | . | . | . | . |
| 2.500 | 0.4107 | 2.80 | Q | . | . | . | . |
| 2.583 | 0.4302 | 2.82 | Q | . | . | . | . |
| 2.667 | 0.4498 | 2.84 | Q | . | . | . | . |
| 2.750 | 0.4695 | 2.86 | Q | . | . | . | . |
| 2.833 | 0.4893 | 2.88 | Q | . | . | . | . |
| 2.917 | 0.5093 | 2.90 | Q | . | . | . | . |
| 3.000 | 0.5293 | 2.91 | QV | . | . | . | . |
| 3.083 | 0.5495 | 2.93 | QV | . | . | . | . |
| 3.167 | 0.5698 | 2.95 | QV | . | . | . | . |
| 3.250 | 0.5902 | 2.96 | QV | . | . | . | . |
| 3.333 | 0.6107 | 2.98 | QV | . | . | . | . |
| 3.417 | 0.6314 | 3.00 | QV | . | . | . | . |
| 3.500 | 0.6522 | 3.02 | QV | . | . | . | . |
| 3.583 | 0.6731 | 3.04 | QV | . | . | . | . |
| 3.667 | 0.6941 | 3.05 | QV | . | . | . | . |
| 3.750 | 0.7153 | 3.07 | QV | . | . | . | . |
| 3.833 | 0.7365 | 3.09 | QV | . | . | . | . |
| 3.917 | 0.7579 | 3.10 | QV | . | . | . | . |
| 4.000 | 0.7793 | 3.11 | QV | . | . | . | . |
| 4.083 | 0.8009 | 3.13 | QV | . | . | . | . |
| 4.167 | 0.8225 | 3.14 | QV | . | . | . | . |
| 4.250 | 0.8442 | 3.15 | QV | . | . | . | . |
| 4.333 | 0.8660 | 3.17 | QV | . | . | . | . |
| 4.417 | 0.8880 | 3.18 | QV | . | . | . | . |
| 4.500 | 0.9100 | 3.20 | QV | . | . | . | . |
| 4.583 | 0.9321 | 3.21 | QV | . | . | . | . |
| 4.667 | 0.9543 | 3.23 | QV | . | . | . | . |
| 4.750 | 0.9767 | 3.24 | QV | . | . | . | . |
| 4.833 | 0.9991 | 3.26 | QV | . | . | . | . |
| 4.917 | 1.0216 | 3.27 | QV | . | . | . | . |
| 5.000 | 1.0443 | 3.29 | Q V | . | . | . | . |
| 5.083 | 1.0670 | 3.30 | Q V | . | . | . | . |
| 5.167 | 1.0899 | 3.32 | Q V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5.250 | 1.1129 | 3.34 | Q | V | . | . | . | . |
| 5.333 | 1.1360 | 3.35 | Q | V | . | . | . | . |
| 5.417 | 1.1592 | 3.37 | Q | V | . | . | . | . |
| 5.500 | 1.1825 | 3.39 | Q | V | . | . | . | . |
| 5.583 | 1.2059 | 3.40 | Q | V | . | . | . | . |
| 5.667 | 1.2295 | 3.42 | Q | V | . | . | . | . |
| 5.750 | 1.2532 | 3.44 | Q | V | . | . | . | . |
| 5.833 | 1.2770 | 3.46 | Q | V | . | . | . | . |
| 5.917 | 1.3009 | 3.47 | Q | V | . | . | . | . |
| 6.000 | 1.3249 | 3.49 | Q | V | . | . | . | . |
| 6.083 | 1.3491 | 3.51 | Q | V | . | . | . | . |
| 6.167 | 1.3734 | 3.53 | Q | V | . | . | . | . |
| 6.250 | 1.3978 | 3.55 | Q | V | . | . | . | . |
| 6.333 | 1.4224 | 3.57 | Q | V | . | . | . | . |
| 6.417 | 1.4471 | 3.59 | Q | V | . | . | . | . |
| 6.500 | 1.4719 | 3.60 | Q | V | . | . | . | . |
| 6.583 | 1.4969 | 3.62 | Q | V | . | . | . | . |
| 6.667 | 1.5220 | 3.64 | Q | V | . | . | . | . |
| 6.750 | 1.5472 | 3.67 | Q | V | . | . | . | . |
| 6.833 | 1.5726 | 3.69 | Q | V | . | . | . | . |
| 6.917 | 1.5981 | 3.71 | Q | V | . | . | . | . |
| 7.000 | 1.6238 | 3.73 | Q | V | . | . | . | . |
| 7.083 | 1.6496 | 3.75 | Q | V | . | . | . | . |
| 7.167 | 1.6756 | 3.77 | Q | V | . | . | . | . |
| 7.250 | 1.7017 | 3.79 | Q | V | . | . | . | . |
| 7.333 | 1.7280 | 3.82 | Q | V | . | . | . | . |
| 7.417 | 1.7545 | 3.84 | Q | V | . | . | . | . |
| 7.500 | 1.7811 | 3.86 | Q | V | . | . | . | . |
| 7.583 | 1.8079 | 3.89 | Q | V | . | . | . | . |
| 7.667 | 1.8348 | 3.91 | Q | V | . | . | . | . |
| 7.750 | 1.8619 | 3.94 | Q | V | . | . | . | . |
| 7.833 | 1.8892 | 3.96 | Q | V | . | . | . | . |
| 7.917 | 1.9166 | 3.98 | Q | V | . | . | . | . |
| 8.000 | 1.9442 | 4.01 | Q | V | . | . | . | . |
| 8.083 | 1.9720 | 4.04 | Q | V | . | . | . | . |
| 8.167 | 2.0000 | 4.06 | Q | V | . | . | . | . |
| 8.250 | 2.0282 | 4.09 | Q | V | . | . | . | . |
| 8.333 | 2.0565 | 4.12 | Q | V | . | . | . | . |
| 8.417 | 2.0851 | 4.14 | Q | V | . | . | . | . |
| 8.500 | 2.1138 | 4.17 | Q | V | . | . | . | . |
| 8.583 | 2.1427 | 4.20 | Q | V | . | . | . | . |
| 8.667 | 2.1719 | 4.23 | Q | V | . | . | . | . |
| 8.750 | 2.2012 | 4.26 | Q | V | . | . | . | . |
| 8.833 | 2.2307 | 4.29 | Q | V | . | . | . | . |
| 8.917 | 2.2605 | 4.32 | Q | V | . | . | . | . |
| 9.000 | 2.2905 | 4.35 | Q | V | . | . | . | . |
| 9.083 | 2.3207 | 4.38 | Q | V | . | . | . | . |
| 9.167 | 2.3511 | 4.42 | Q | V | . | . | . | . |
| 9.250 | 2.3817 | 4.45 | Q | V | . | . | . | . |
| 9.333 | 2.4126 | 4.48 | Q | V | . | . | . | . |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 9.417 | 2.4437 | 4.52 | Q | V | . | . | . | . |
| 9.500 | 2.4751 | 4.55 | Q | V | . | . | . | . |
| 9.583 | 2.5067 | 4.59 | Q | V | . | . | . | . |
| 9.667 | 2.5385 | 4.62 | Q | V | . | . | . | . |
| 9.750 | 2.5706 | 4.66 | Q | V | . | . | . | . |
| 9.833 | 2.6030 | 4.70 | Q | V | . | . | . | . |
| 9.917 | 2.6356 | 4.74 | Q | V | . | . | . | . |
| 10.000 | 2.6685 | 4.78 | Q | V | . | . | . | . |
| 10.083 | 2.7017 | 4.82 | Q | V | . | . | . | . |
| 10.167 | 2.7352 | 4.86 | Q | V | . | . | . | . |
| 10.250 | 2.7689 | 4.90 | Q | V | . | . | . | . |
| 10.333 | 2.8030 | 4.94 | Q | V | . | . | . | . |
| 10.417 | 2.8373 | 4.99 | Q | V | . | . | . | . |
| 10.500 | 2.8720 | 5.03 | .Q | V | . | . | . | . |
| 10.583 | 2.9070 | 5.08 | .Q | V | . | . | . | . |
| 10.667 | 2.9423 | 5.13 | .Q | V | . | . | . | . |
| 10.750 | 2.9779 | 5.17 | .Q | V | . | . | . | . |
| 10.833 | 3.0139 | 5.22 | .Q | V | . | . | . | . |
| 10.917 | 3.0502 | 5.27 | .Q | V | . | . | . | . |
| 11.000 | 3.0869 | 5.32 | .Q | V | . | . | . | . |
| 11.083 | 3.1239 | 5.38 | .Q | V | . | . | . | . |
| 11.167 | 3.1613 | 5.43 | .Q | V | . | . | . | . |
| 11.250 | 3.1991 | 5.49 | .Q | V | . | . | . | . |
| 11.333 | 3.2373 | 5.54 | .Q | V | . | . | . | . |
| 11.417 | 3.2759 | 5.60 | .Q | V | . | . | . | . |
| 11.500 | 3.3149 | 5.66 | .Q | V | . | . | . | . |
| 11.583 | 3.3544 | 5.73 | .Q | V | . | . | . | . |
| 11.667 | 3.3942 | 5.79 | .Q | V | . | . | . | . |
| 11.750 | 3.4346 | 5.85 | .Q | V | . | . | . | . |
| 11.833 | 3.4753 | 5.92 | .Q | V | . | . | . | . |
| 11.917 | 3.5166 | 5.99 | .Q | V | . | . | . | . |
| 12.000 | 3.5584 | 6.06 | .Q | V | . | . | . | . |
| 12.083 | 3.6006 | 6.13 | .Q | V | . | . | . | . |
| 12.167 | 3.6433 | 6.20 | .Q | V | . | . | . | . |
| 12.250 | 3.6863 | 6.25 | .Q | V | . | . | . | . |
| 12.333 | 3.7296 | 6.29 | .Q | V | . | . | . | . |
| 12.417 | 3.7730 | 6.30 | .Q | V | . | . | . | . |
| 12.500 | 3.8165 | 6.32 | .Q | V | . | . | . | . |
| 12.583 | 3.8603 | 6.36 | .Q | V | . | . | . | . |
| 12.667 | 3.9045 | 6.41 | .Q | V | . | . | . | . |
| 12.750 | 3.9491 | 6.48 | .Q | V | . | . | . | . |
| 12.833 | 3.9943 | 6.56 | .Q | V | . | . | . | . |
| 12.917 | 4.0401 | 6.64 | .Q | V | . | . | . | . |
| 13.000 | 4.0864 | 6.73 | .Q | V | . | . | . | . |
| 13.083 | 4.1334 | 6.83 | .Q | V | . | . | . | . |
| 13.167 | 4.1811 | 6.93 | .Q | V | . | . | . | . |
| 13.250 | 4.2296 | 7.03 | .Q | V | . | . | . | . |
| 13.333 | 4.2788 | 7.15 | .Q | V | . | . | . | . |
| 13.417 | 4.3288 | 7.27 | .Q | V | . | . | . | . |
| 13.500 | 4.3797 | 7.39 | .Q | V | . | . | . | . |



```
17.750     17.2917     22.40  .   Q     .         .         .  V      .
17.833     17.4359     20.94  .   Q     .         .         .  V      .
17.917     17.5713     19.65  .  Q      .         .         .  V      .
18.000     17.6984     18.46  .  Q      .         .         .   V     .
18.083     17.8163     17.12  .  Q      .         .         .   V     .
18.167     17.9270     16.07  .  Q      .         .         .   V     .
18.250     18.0326     15.34  .  Q      .         .         .   V     .
18.333     18.1313     14.33  . Q       .         .         .   V     .
18.417     18.2245     13.53  . Q       .         .         .    V    .
18.500     18.3138     12.96  . Q       .         .         .    V    .
18.583     18.3966     12.03  . Q       .         .         .    V    .
18.667     18.4744     11.29  . Q       .         .         .    V    .
18.750     18.5486     10.78  . Q       .         .         .    V    .
18.833     18.6172      9.96  .Q        .         .         .    V    .
18.917     18.6821      9.42  .Q        .         .         .    V    .
19.000     18.7455      9.21  .Q        .         .         .     V   .
19.083     18.8085      9.15  .Q        .         .         .     V   .
19.167     18.8707      9.03  .Q        .         .         .     V   .
19.250     18.9317      8.85  .Q        .         .         .     V   .
19.333     18.9913      8.67  .Q        .         .         .     V   .
19.417     19.0496      8.46  .Q        .         .         .     V   .
19.500     19.1061      8.20  .Q        .         .         .     V   .
19.583     19.1605      7.90  .Q        .         .         .     V   .
19.667     19.2121      7.49  .Q        .         .         .     V   .
19.750     19.2590      6.81  .Q        .         .         .      V  .
19.833     19.2981      5.68  .Q        .         .         .      V  .
19.917     19.3353      5.40  .Q        .         .         .      V  .
20.000     19.3713      5.23  .Q        .         .         .      V  .
20.083     19.4064      5.10  .Q        .         .         .      V  .
20.167     19.4408      4.99  Q         .         .         .      V  .
20.250     19.4745      4.89  Q         .         .         .      V  .
20.333     19.5076      4.80  Q         .         .         .      V  .
20.417     19.5400      4.71  Q         .         .         .      V  .
20.500     19.5719      4.63  Q         .         .         .      V  .
20.583     19.6032      4.55  Q         .         .         .      V  .
20.667     19.6341      4.47  Q         .         .         .      V  .
20.750     19.6644      4.40  Q         .         .         .      V  .
20.833     19.6942      4.34  Q         .         .         .      V  .
20.917     19.7237      4.27  Q         .         .         .      V  .
21.000     19.7527      4.21  Q         .         .         .       V .
21.083     19.7813      4.15  Q         .         .         .       V .
21.167     19.8095      4.10  Q         .         .         .       V .
21.250     19.8373      4.04  Q         .         .         .       V .
21.333     19.8648      3.99  Q         .         .         .       V .
21.417     19.8919      3.94  Q         .         .         .       V .
21.500     19.9187      3.89  Q         .         .         .       V .
21.583     19.9451      3.84  Q         .         .         .       V .
21.667     19.9712      3.79  Q         .         .         .       V .
21.750     19.9971      3.75  Q         .         .         .       V .
21.833     20.0226      3.71  Q         .         .         .       V .
```

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 21.917 | 20.0478 | 3.66 | Q | . | . | . | V . |
| 22.000 | 20.0728 | 3.62 | Q | . | . | . | V . |
| 22.083 | 20.0974 | 3.58 | Q | . | . | . | V . |
| 22.167 | 20.1218 | 3.54 | Q | . | . | . | V . |
| 22.250 | 20.1460 | 3.50 | Q | . | . | . | V . |
| 22.333 | 20.1698 | 3.47 | Q | . | . | . | V . |
| 22.417 | 20.1935 | 3.43 | Q | . | . | . | V . |
| 22.500 | 20.2169 | 3.40 | Q | . | . | . | V . |
| 22.583 | 20.2400 | 3.36 | Q | . | . | . | V . |
| 22.667 | 20.2629 | 3.33 | Q | . | . | . | V. |
| 22.750 | 20.2857 | 3.30 | Q | . | . | . | V. |
| 22.833 | 20.3081 | 3.26 | Q | . | . | . | V. |
| 22.917 | 20.3304 | 3.23 | Q | . | . | . | V. |
| 23.000 | 20.3525 | 3.20 | Q | . | . | . | V. |
| 23.083 | 20.3743 | 3.17 | Q | . | . | . | V. |
| 23.167 | 20.3960 | 3.15 | Q | . | . | . | V. |
| 23.250 | 20.4175 | 3.12 | Q | . | . | . | V. |
| 23.333 | 20.4388 | 3.09 | Q | . | . | . | V. |
| 23.417 | 20.4598 | 3.06 | Q | . | . | . | V. |
| 23.500 | 20.4808 | 3.04 | Q | . | . | . | V. |
| 23.583 | 20.5015 | 3.01 | Q | . | . | . | V. |
| 23.667 | 20.5221 | 2.99 | Q | . | . | . | V. |
| 23.750 | 20.5425 | 2.96 | Q | . | . | . | V. |
| 23.833 | 20.5627 | 2.94 | Q | . | . | . | V. |
| 23.917 | 20.5827 | 2.91 | Q | . | . | . | V. |
| 24.000 | 20.6027 | 2.89 | Q | . | . | . | V. |
| 24.083 | 20.6223 | 2.85 | Q | . | . | . | V. |
| 24.167 | 20.6412 | 2.75 | Q | . | . | . | V. |
| 24.250 | 20.6592 | 2.62 | Q | . | . | . | V. |
| 24.333 | 20.6756 | 2.37 | Q | . | . | . | V. |
| 24.417 | 20.6890 | 1.95 | Q | . | . | . | V. |
| 24.500 | 20.6998 | 1.57 | Q | . | . | . | V. |
| 24.583 | 20.7088 | 1.30 | Q | . | . | . | V. |
| 24.667 | 20.7164 | 1.11 | Q | . | . | . | V. |
| 24.750 | 20.7231 | 0.96 | Q | . | . | . | V. |
| 24.833 | 20.7289 | 0.84 | Q | . | . | . | V. |
| 24.917 | 20.7340 | 0.75 | Q | . | . | . | V. |
| 25.000 | 20.7386 | 0.66 | Q | . | . | . | V. |
| 25.083 | 20.7426 | 0.59 | Q | . | . | . | V. |
| 25.167 | 20.7463 | 0.53 | Q | . | . | . | V. |
| 25.250 | 20.7495 | 0.47 | Q | . | . | . | V. |
| 25.333 | 20.7525 | 0.43 | Q | . | . | . | V. |
| 25.417 | 20.7551 | 0.38 | Q | . | . | . | V. |
| 25.500 | 20.7574 | 0.34 | Q | . | . | . | V. |
| 25.583 | 20.7595 | 0.31 | Q | . | . | . | V. |
| 25.667 | 20.7615 | 0.28 | Q | . | . | . | V. |
| 25.750 | 20.7632 | 0.25 | Q | . | . | . | V. |
| 25.833 | 20.7648 | 0.23 | Q | . | . | . | V. |
| 25.917 | 20.7662 | 0.20 | Q | . | . | . | V. |
| 26.000 | 20.7674 | 0.18 | Q | . | . | . | V. |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 26.083 | 20.7685 | 0.16 | Q | . | . | . | V. |
| 26.167 | 20.7695 | 0.15 | Q | . | . | . | V. |
| 26.250 | 20.7704 | 0.13 | Q | . | . | . | V. |
| 26.333 | 20.7713 | 0.12 | Q | . | . | . | V. |
| 26.417 | 20.7720 | 0.10 | Q | . | . | . | V. |
| 26.500 | 20.7726 | 0.09 | Q | . | . | . | V. |
| 26.583 | 20.7732 | 0.08 | Q | . | . | . | V. |
| 26.667 | 20.7737 | 0.07 | Q | . | . | . | V. |
| 26.750 | 20.7741 | 0.06 | Q | . | . | . | V. |
| 26.833 | 20.7745 | 0.06 | Q | . | . | . | V. |
| 26.917 | 20.7749 | 0.05 | Q | . | . | . | V. |
| 27.000 | 20.7752 | 0.05 | Q | . | . | . | V. |
| 27.083 | 20.7755 | 0.04 | Q | . | . | . | V. |
| 27.167 | 20.7758 | 0.04 | Q | . | . | . | V. |
| 27.250 | 20.7760 | 0.03 | Q | . | . | . | V. |
| 27.333 | 20.7762 | 0.03 | Q | . | . | . | V. |
| 27.417 | 20.7763 | 0.02 | Q | . | . | . | V. |
| 27.500 | 20.7764 | 0.02 | Q | . | . | . | V. |
| 27.583 | 20.7765 | 0.01 | Q | . | . | . | V. |

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

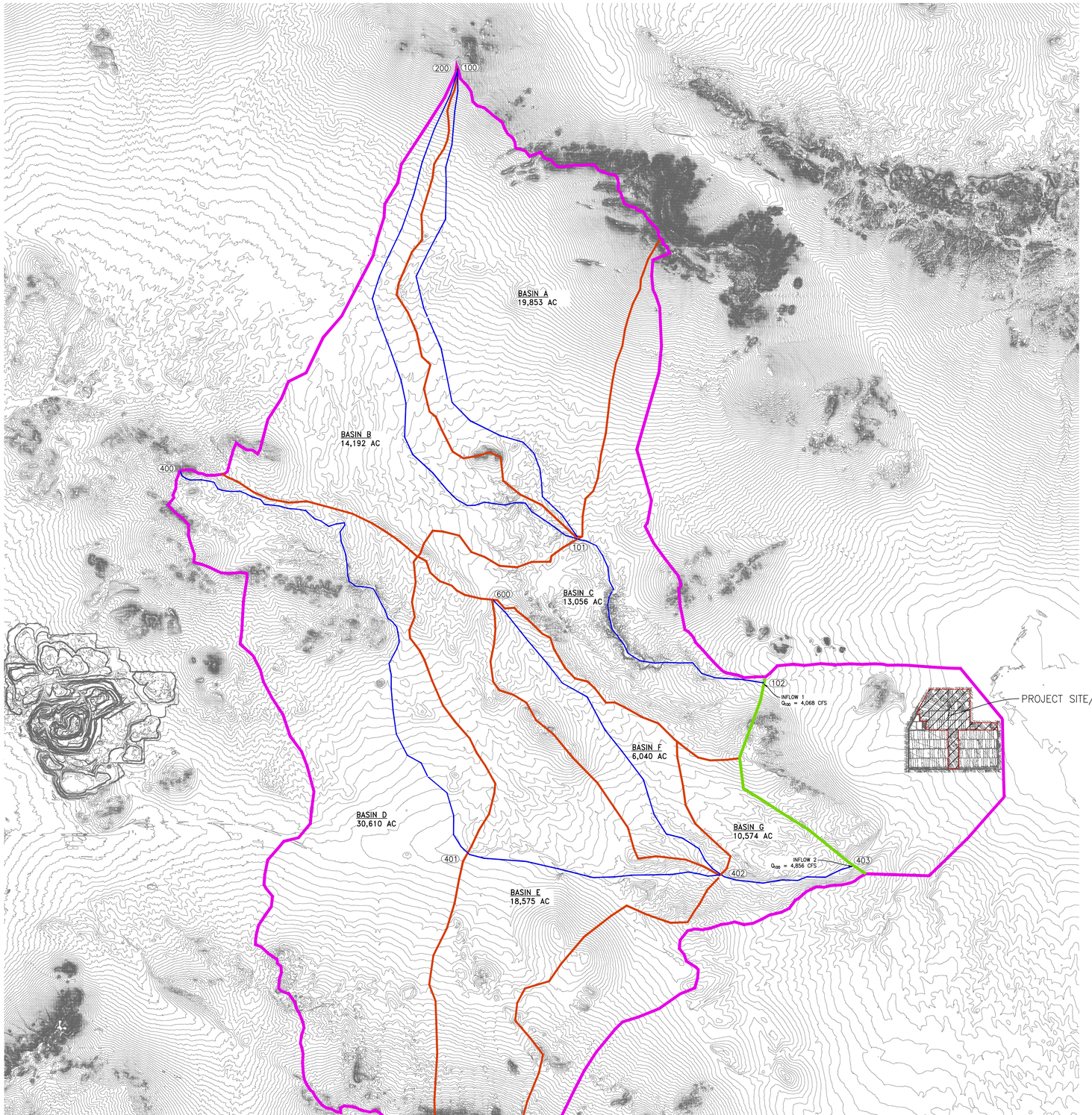
| Percentile of Estimated Peak Flow Rate | Duration (minutes) |
|---|---|
| 0% | 1655.0 |
| 10% | 155.0 |
| 20% | 85.0 |
| 30% | 60.0 |
| 40% | 45.0 |
| 50% | 30.0 |
| 60% | 25.0 |
| 70% | 20.0 |
| 80% | 15.0 |
| 90% | 10.0 |

==========

END OF FLOODSCx ROUTING ANALYSIS

# APPENDIX 4

# Offsite Hydrology Map




N

6000' 0' 3000' 6000'

SCALE: 1" = 6000'

## LEGEND

- BASIN BOUNDARY
- SUBBASIN BOUNDARY
- FLO-2D STUDY BOUNDARY
- MAIN FLOW PATH
- PROJECT BOUNDARY
- STUDY AREA
- NODE NUMBER (101)

# OFFSITE HYDROLOGY

## 100-YR STORM EVENT

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

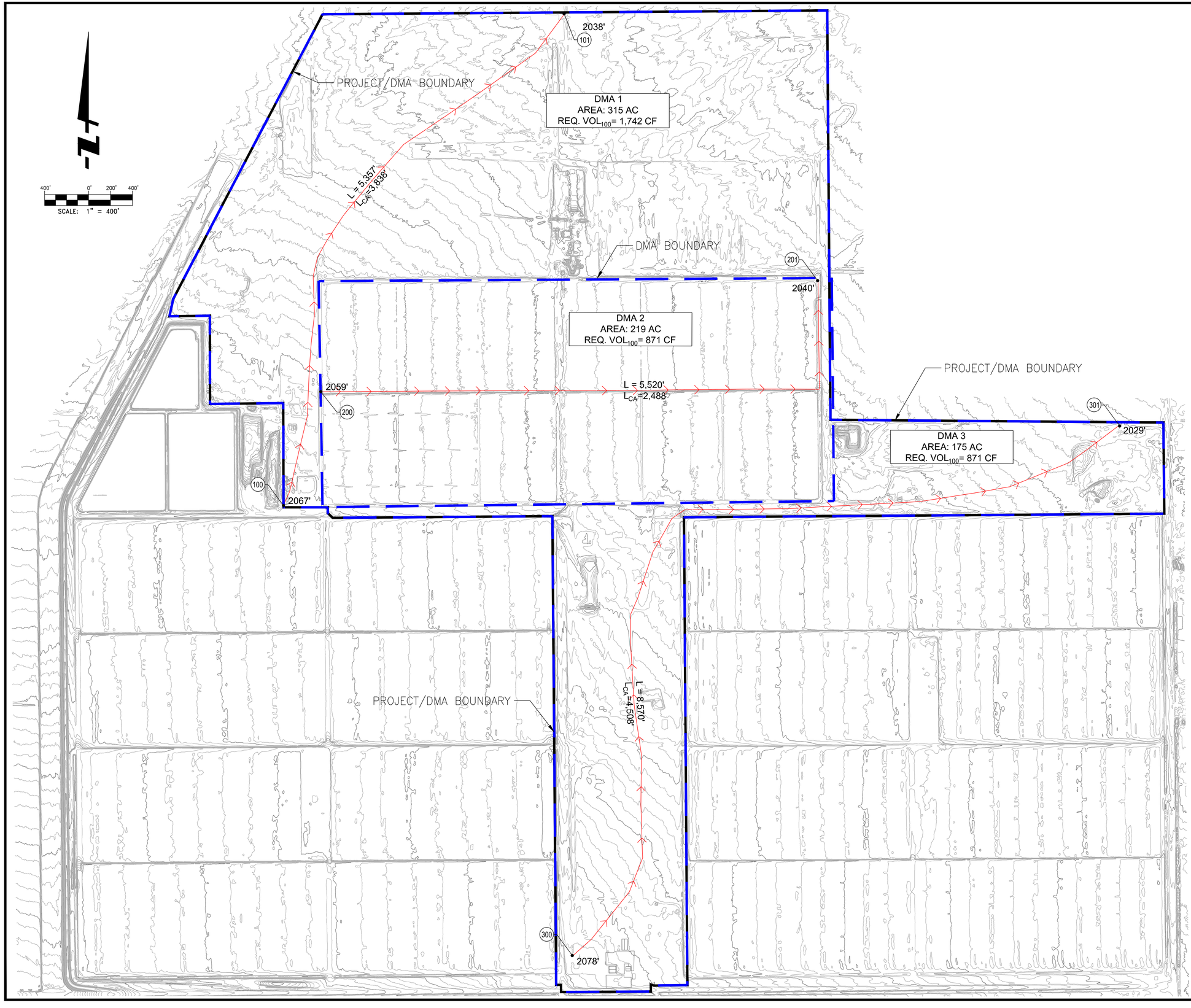
SCALE: 1"=6000'

DATE: SEPTEMBER 2021

**SHEET** 1 OF 1

FUSCOE ENGINEERING
6390 Greenwich Drive, Suite 170
San Diego, California 92122
tel 858.554.1500 ◦ fax 858.597.0335
www.fuscoe.com

# APPENDIX 5
# Onsite Hydrology Map




## LEGEND

PROJECT BOUNDARY

DMA BOUNDARY

FLOW PATH

# ONSITE HYDROLOGY

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

DATE: SEPTEMBER 2021

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# APPENDIX 6

# San Bernardino County Hydrology Manual

Residential Landscaping (Lawn, Shrubs, etc.) - The pervious portions of commercial establishments, single and multiple family dwellings, trailer parks and schools where the predominant land cover is lawn, shrubbery and trees.

Row Crops - Lettuce, tomatoes, beets, tulips or any field crop planted in rows far enough apart that most of the soil surface is exposed to rainfall impact throughout the growing season. At plowing, planting and harvest times it is equivalent to fallow.

Small Grain - Wheat, oats, barley, flax, etc. planted in rows close enough that the soil surface is not exposed except during planting and shortly thereafter.

Legumes - Alfalfa, sweetclover, timothy, etc. and combinations are either planted in close rows or broadcast.

Fallow - Fallow land is land plowed but not yet seeded or tilled.

Woodland - grass - Areas with an open cover of broadleaf or coniferous trees usually live oak and pines, with the intervening ground space occupied by annual grasses or weeds. The trees may occur singly or in small clumps. Canopy density, the amount of ground surface shaded at high noon, is from 20 to 50 percent.

Woodland - Areas on which coniferous or broadleaf trees predominate. The canopy density is at least 50 percent. Open areas may have a cover of annual or perennial grasses or of brush. Herbaceous plant cover under the trees is usually sparse because of leaf or needle litter accumulation.

Chaparral - Land on which the principal vegetation consists of evergreen shrubs with broad, hard, stiff leaves such as manzonita, ceanothus and scrub oak. The brush cover is usually dense or moderately dense. Diffusely branched evergreen shrubs with fine needle-like leaves, such as chamise and redchank, with dense high growth are also included in this soil cover.

Annual Grass - Land on which the principal vegetation consists of annual grasses and weeds such as annual bromes, wild barley, soft chess, ryegrass and filaree.

Irrigated Pasture - Irrigated land planted to perennial grasses and legumes for production of forage and which is cultivated only to establish or renew the stand of plants. Dry land pasture is considered as annual grass.

Meadow - Land areas with seasonally high water table, locally called cienegas. Principal vegetation consists of sod-forming grasses interspersed with other plants.

Orchard (Deciduous) - Land planted to such deciduous trees as apples, apricots, pears, walnuts, and almonds.

Orchard (Evergreen) - Land planted to evergreen trees which include citrus and avocados and coniferous plantings.

Turf - Golf courses, parks and similar lands where the predominant cover is irrigated mowed close-grown turf grass. Parks in which trees are dense may be classified as woodland.

**SAN BERNARDINO COUNTY**
**HYDROLOGY MANUAL**

**SCS COVER TYPE DESCRIPTIONS**



Figure C-2

POOR: Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.

FAIR: Moderate cover with 50 percent to 75 percent of the ground surface protected by vegetation.

GOOD: Heavy or dense cover with more than 75 percent of the ground surface protected by vegetation.

In most cases, watershed existing conditions cover type and quality can be readily determined by a field review of a watershed. In ultimate planned open spaces, the soil cover condition shall be considered as "good." Figure C-3 provides the CN values for various types and quality of ground cover. Impervious areas shall be assigned a CN of 98. It is noted that for ultimately developed conditions, the CN for urban landscaping (turf) is provided in Figure C-3.

## C.4. WATERSHED DEVELOPMENT CONDITIONS

Ultimate development of the watershed should normally be assumed since watershed urbanization is reasonably likely within the expected life of most hydraulic facilities. Long range master plans for the County and incorporated cities should be reviewed to insure that reasonable land use assumptions are made for the ultimate development of the watershed. A field review shall also be made to confirm existing use and drainage patterns. Particular attention shall be paid to existing and proposed landscape practices, as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. Appropriate actual impervious percentages can then be selected from Figure C-4. It should be noted that the recommended values from these figures are for average conditions and, therefore, some adjustment for particular applications may be required.

Runoff Index Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

| Cover Type (3) | Quality of Cover (2) | Soil Group A | B | C | D |
|---|---|---|---|---|---|
| NATURAL COVERS - | | | | | |
| Barren (Rockland, eroded and graded land) | | 78 | 86 | 91 | 93 |
| Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak) | Poor | 53 | 70 | 80 | 85 |
| | Fair | 40 | 63 | 75 | 81 |
| | Good | 31 | 57 | 71 | 78 |
| Chaparrel, Narrowleaf (Chamise and redshank) | Poor | 71 | 82 | 88 | 91 |
| | Fair | 55 | 72 | 81 | 86 |
| Grass, Annual or Perennial | Poor | 67 | 78 | 86 | 89 |
| | Fair | 50 | 69 | 79 | 84 |
| | Good | 38 | 61 | 74 | 80 |
| Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass) | Poor | 63 | 77 | 85 | 88 |
| | Fair | 51 | 70 | 80 | 84 |
| | Good | 30 | 58 | 71 | 78 |
| Open Brush (Soft wood shrubs - buckwheat, sage, etc.) | Poor | 62 | 76 | 84 | 88 |
| | Fair | 46 | 66 | 77 | 83 |
| | Good | 41 | 63 | 75 | 81 |
| Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent.) | Poor | 45 | 66 | 77 | 83 |
| | Fair | 36 | 60 | 73 | 79 |
| | Good | 25 | 55 | 70 | 77 |
| Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent) | Poor | 57 | 73 | 82 | 86 |
| | Fair | 44 | 65 | 77 | 82 |
| | Good | 33 | 58 | 72 | 79 |
| URBAN COVERS - | | | | | |
| Residential or Commercial Landscaping (Lawn, shrubs, etc.) | Good | 32 | 56 | 69 | 75 |
| Turf (Irrigated and mowed grass) | Poor | 58 | 74 | 83 | 87 |
| | Fair | 44 | 65 | 77 | 82 |
| | Good | 33 | 58 | 72 | 79 |
| AGRICULTURAL COVERS - | | | | | |
| Fallow (Land plowed but not tilled or seeded) | | 77 | 86 | 91 | 94 |

CURVE NUMBERS FOR PERVIOUS AREAS

SAN BERNARDINO COUNTY HYDROLOGY MANUAL



FIGURE C-3 (1 OF 2)

## Runoff Index Numbers of Hydrologic Soil-Cover Complexes For Pervious Areas-AMC II

| Cover Type (3) | Quality of Cover (2) | Soil Group A | B | C | D |
|---|---|---|---|---|---|
| AGRICULTURAL COVERS (Continued) | | | | | |
| Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.) | Poor | 66 | 77 | 85 | 89 |
| | Good | 58 | 72 | 81 | 85 |
| Orchards, Evergreen (Citrus, avocados, etc.) | Poor | 57 | 73 | 82 | 86 |
| | Fair | 44 | 65 | 77 | 82 |
| | Good | 33 | 58 | 72 | 79 |
| Pasture, Dryland (Annual grasses) | Poor | 68 | 79 | 86 | 89 |
| | Fair | 49 | 69 | 79 | 84 |
| | Good | 39 | 61 | 74 | 80 |
| Pasture, Irrigated (Legumes and perennial grass) | Poor | 58 | 74 | 83 | 87 |
| | Fair | 44 | 65 | 77 | 82 |
| | Good | 33 | 58 | 72 | 79 |
| Row Crops (Field crops - tomatoes, sugar beets, etc.) | Poor | 72 | 81 | 88 | 91 |
| | Good | 67 | 78 | 85 | 89 |
| Small grain (Wheat, oats, barley, etc.) | Poor | 65 | 76 | 84 | 88 |
| | Good | 63 | 75 | 83 | 87 |

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.
2. Quality of cover definitions:

   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.

   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.

   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.
3. See Figure C-2 for definition of cover types.

**SAN BERNARDINO COUNTY**
HYDROLOGY MANUAL

NUMBERS
FOR
PERVIOUS AREAS



FIGURE C-3 (2 OF 2)

TABLE C.1. CURVE NUMBER RELATIONSHIPS

| CN for AMC Condition II | Corresponding CN for AMC Condition I | III |
|---|---|---|
| 100 | 100 | 100 |
| 95 | 87 | 99 |
| 90 | 78 | 98 |
| 85 | 70 | 97 |
| 80 | 63 | 94 |
| 75 | 57 | 91 |
| 70 | 51 | 87 |
| 65 | 45 | 83 |
| 60 | 40 | 79 |
| 55 | 35 | 75 |
| 50 | 31 | 70 |
| 45 | 27 | 65 |
| 40 | 23 | 60 |
| 35 | 19 | 55 |
| 30 | 15 | 50 |
| 25 | 12 | 45 |
| 20 | 9 | 39 |
| 15 | 7 | 33 |
| 10 | 4 | 26 |
| 5 | 2 | 17 |
| 0 | 0 | 0 |

## C.6. ESTIMATION OF LOSS RATES

In estimating loss rates for design hydrology, a watershed curve number (CN) is determined for each soil-cover complex within the watershed using Figure C-3. The working range of CN values is between 0 and 98, where a low CN indicates low runoff potential (high infiltration), and a high CN indicates high runoff potential (low infiltration). Selection of a CN takes into account the major factors affecting loss rates on pervious surfaces including the hydrologic soil group, cover type and quality, and antecedent moisture condition (AMC).

Also included in the CN selection are the effects of "initial abstraction" (Ia) which represents the combined effects of other effective rainfall losses including depression storage, vegetation interception, evaporation, and transpiration, among other factors.

## C.6.1. Estimation of Initial Abstraction (Ia)

The initial abstraction (Ia) for an area is a function of land use, treatment, and condition; interception; infiltration; depression storage; and antecedent soil moisture. An estimate for Ia is given by the SCS as

$$Ia = 0.2S \tag{C.1}$$

where S is an estimate of total soil capacity given by

$$S = \frac{1000}{CN} - 10 \tag{C.2}$$

where CN is the area curve number.

## C.6.2. Estimation of Storm Runoff Yield

Given the CN for a subarea $A_j$, the corresponding 24-hour storm runoff yield fraction, $Y_j$, is estimated by

$$Y_j = \frac{(P_{24} - Ia)^2}{(P_{24} - Ia + S)P_{24}} \tag{C.3}$$

where

| | | |
|---|---|---|
| $Y_j$ | = | 24-hour storm runoff yield fraction for subarea $A_j$ |
| $P_{24}$ | = | 24-hour storm rainfall |
| Ia | = | initial abstraction from (C.1) |
| S | = | see (C.2) |

It is noted that should Ia be greater than $P_{24}$ in (C.3), then $Y_j$ is defined to be zero. In this manual, the notation Y and $Y_j$ will represent the runoff yield fraction, rather than the volume of runoff.

If the area under study contains several (say m) CN designations, then the yield, Y, for the total area must represent the net effect of the several curve

numbers. By weighting each of the subarea yield values according to the respective areas,

$$Y = (Y_1 A_1 + \cdots + Y_m A_m)/(A_1 + A_2 + \cdots + A_m) \qquad (C.4)$$

where each $Y_j$ follows from (C.3).

## C.6.3. Low Loss Rate, F*

In design storm runoff hydrograph studies, the following formula is used to estimate that portion of rainfall to be attributed to watershed losses:

$$\bar{Y} = 1 - Y \qquad (C.5)$$

where

$\bar{Y}$ = catchment low loss fraction

$Y$ = catchment 24-hour storm runoff yield fraction computed from (C.4)

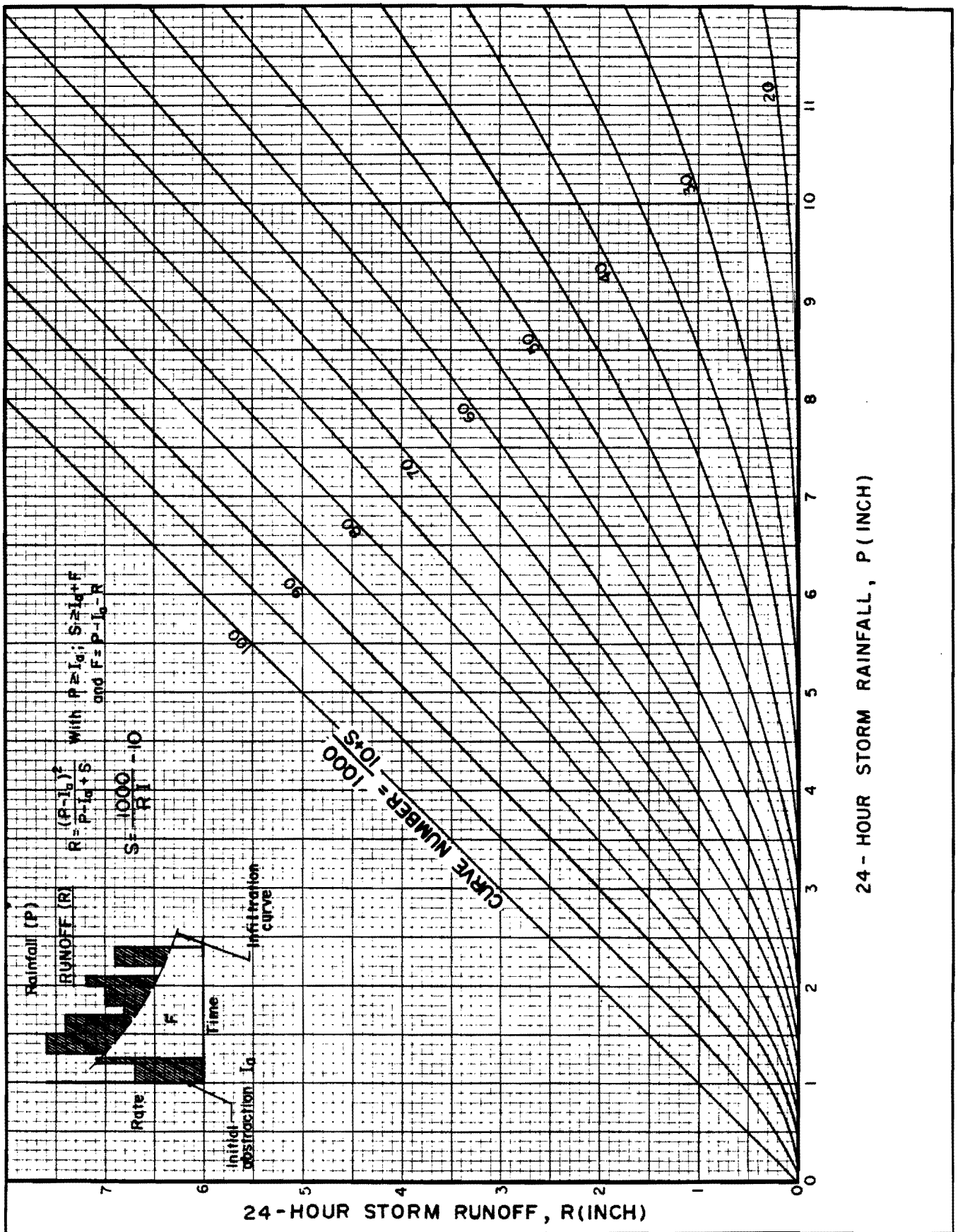
Using the low loss fraction, $\bar{Y}$, the corresponding low loss rate, F*, is given by

$$F^* = \bar{Y} \cdot I \qquad (C.6)$$

where I is the rainfall intensity and F* has units of inches/hour. Use of F* enables the design storm 24-hour storm runoff yield to approximate the yield values obtained from the CN approach (see Figure C-5).

## C.6.4. Infiltration Rates

Soil infiltration rates have been estimated for each of the soil groups by laboratory studies and measurements. These measurements show that an initially dry soil will have an associated infiltration rate which essentially decreases with time as the soil becomes wetted. As the soil is subjected to continual heavy rainfall, this infiltration rate approaches a minimum (usually within about 30 minutes) which represents the infiltration capacity of the soil.




**SAN BERNARDINO COUNTY**
HYDROLOGY MANUAL

SCS 24-HOUR STORM
RAINFALL-RUNOFF
RELATIONSHIPS



Figure C-5

When sufficient stream gauge information is available, infiltration rates for unit hydrograph hydrology can be estimated from a study of rainfall-runoff relationships of major storms. Where such data is not available, infiltration rates for pervious areas as a function of CN can be estimated using Figures C-3 and C-6. Loss rates for pervious areas estimated from the Figure C-6 curves are generally consistent with values developed from rainfall-runoff reconstitution studies in San Bernardino County watersheds.

## C.6.5. Estimation of Catchment Maximum Loss Rates, $F_m$

The infiltration rate selected from Figure C-6 applies to the pervious area fraction of the watershed. The infiltration rate assumed for an impervious surface is 0.0 inch/hour. The maximum loss rate, $F_m$, for a catchment is therefore given by

$$F_m = a_p F_p \qquad (C.7)$$

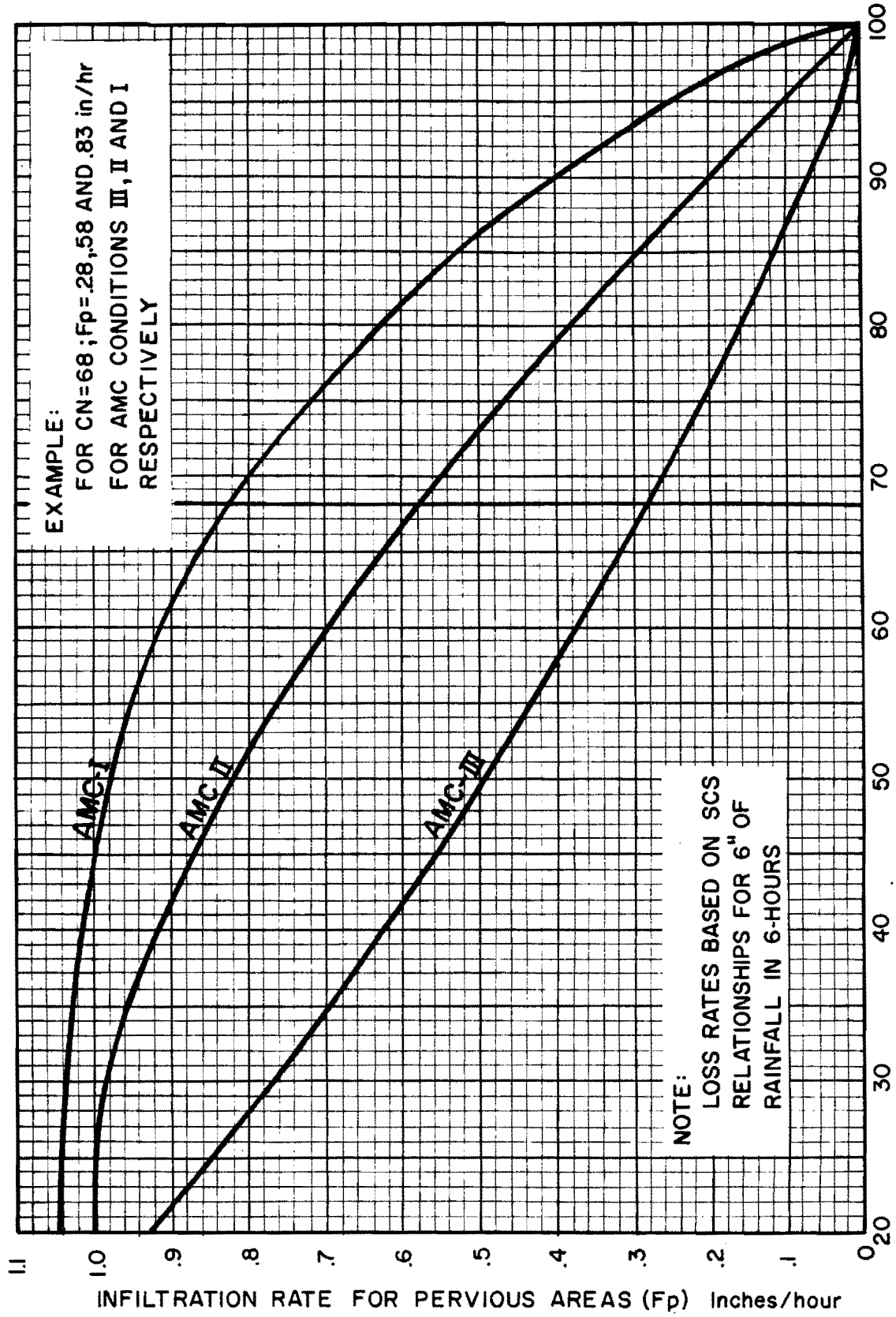
where $a_p$ is the pervious area fraction, and $F_p$ is the infiltration rate for the pervious area.

Should a catchment contain several $F_p$ values, the composite $F_m$ value is determined as a simple area average of the several $F_m$ values. Table C.2 provides Fm values for a wide range of cover types and soil groups.

## C.6.6. Design Storm Loss Rates

In design storm runoff hydrograph studies, a 24-hour duration storm pattern is used to develop the time distribution of effective rainfall over the watershed. The effective rainfall quantities are determined by subtracting the watershed losses from the design storm rainfall.

The loss rate used for a particular catchment is a combination of the maximum loss rate $F_m$ and the low loss rate F*. F* is used as the loss rate unless F* exceeds $F_m$, in which case $F_m$ is used as the loss rate. That is, $F_m$ serves as the maximum loss rate. Typically in 100-year storm studies, F* serves as the loss rate for the entire storm pattern except for the most



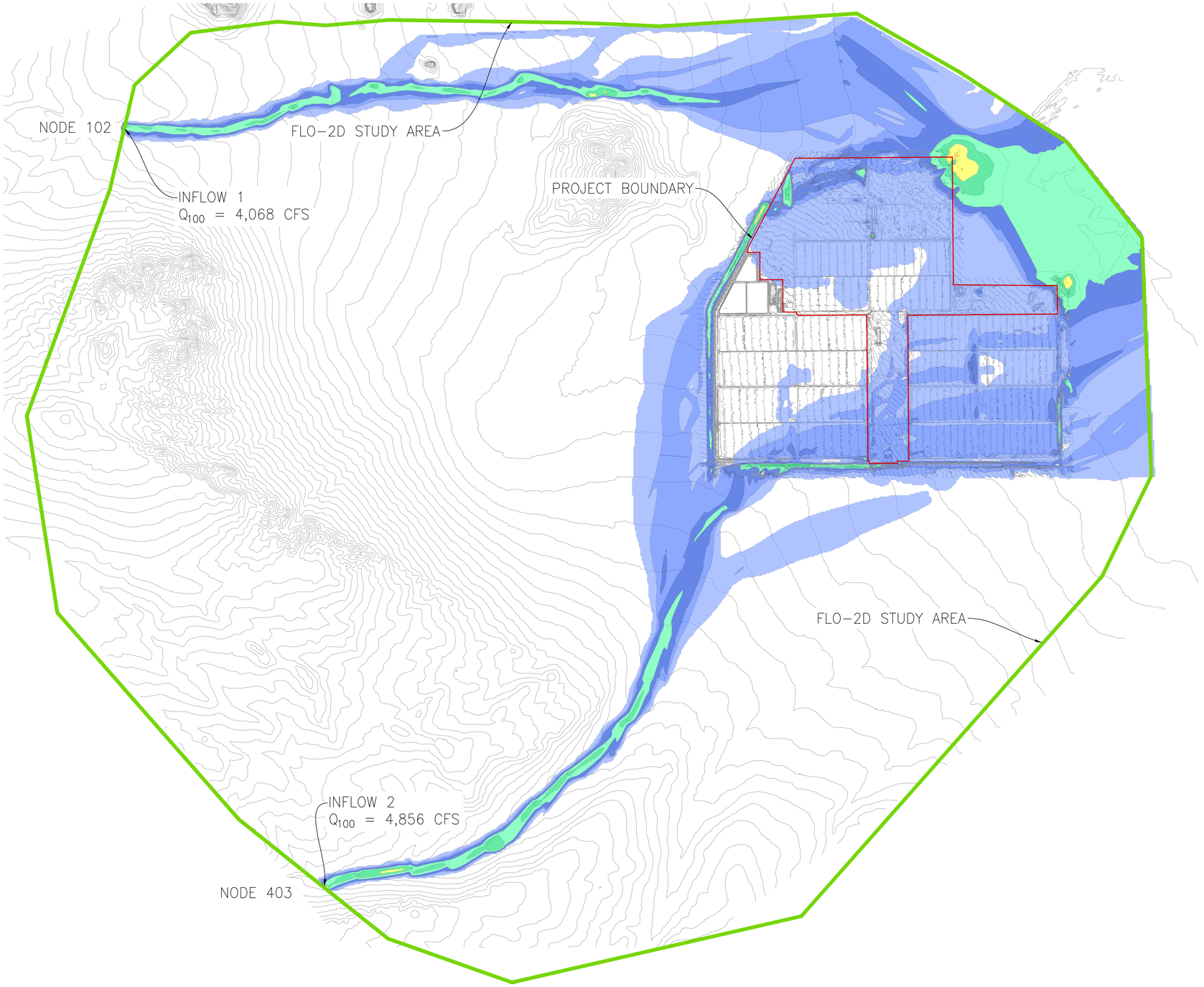

**SAN BERNARDINO COUNTY**
**HYDROLOGY MANUAL**

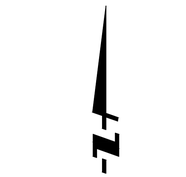
INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS



Figure C-6

# APPENDIX 7
# Flow Depth Results



1500' 0' 750' 1500'

SCALE: 1" = 1500'

**MAX FLOW DEPTH (FT)**

- 0.1 FT – 0.5 FT
- 0.5 FT – 1.0 FT
- 1.0 FT – 2.0 FT
- 2.0 FT – 3.0 FT
- 3.0 FT – 4.0 FT
- 4.0 FT – 5.0 FT
- 5.0 FT – 6.0 FT
- 6.0 FT – MAX

# MAXIMUM FLOW DEPTH EXHIBIT (OVERALL)

100-YR STORM EVENT

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

DATE: SEPTEMBER 2021

**SHEET** 1 OF 2

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San Diego, California 92122
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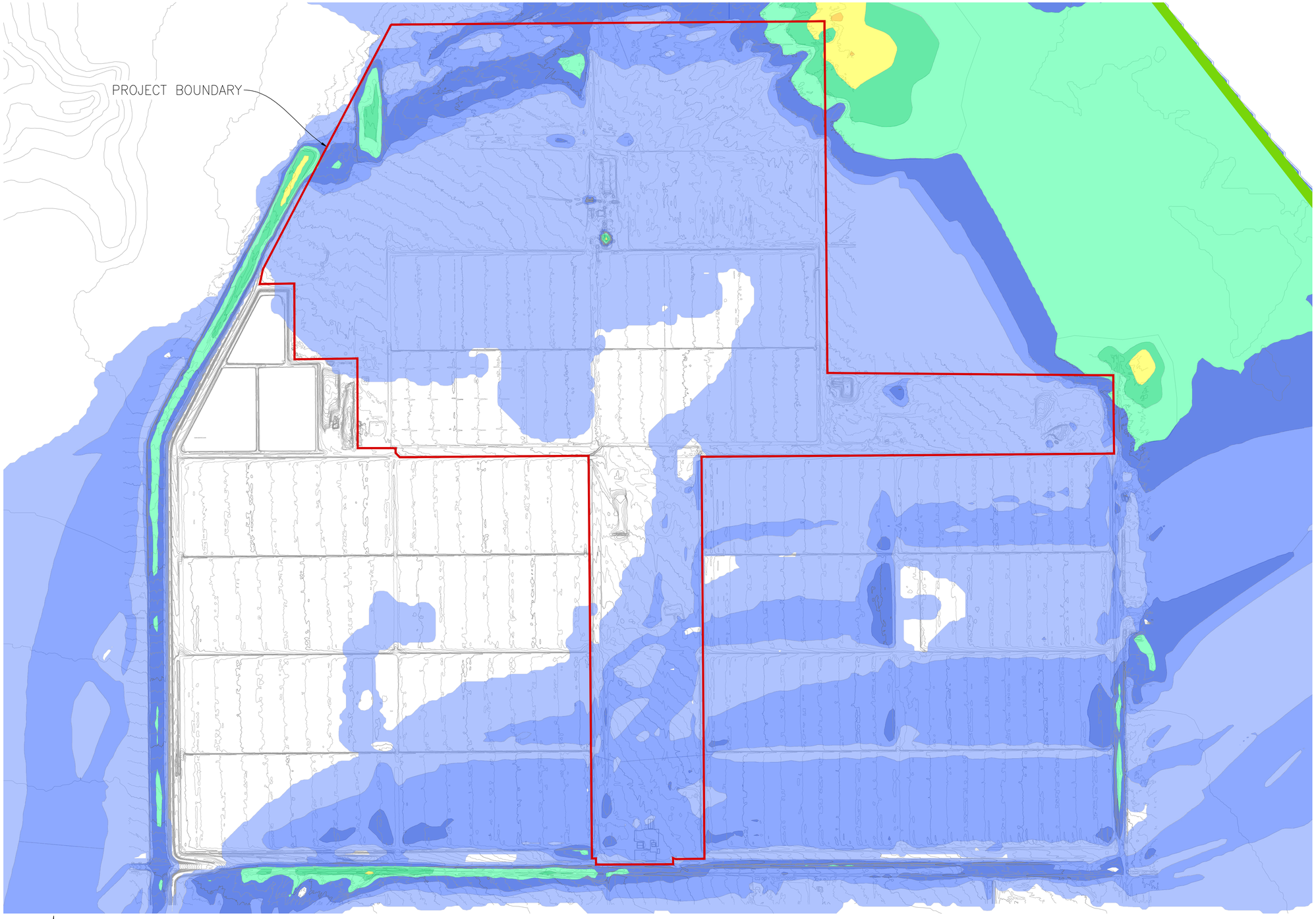


MAX FLOW DEPTH (FT)

- 0.1 FT – 0.5 FT
- 0.5 FT – 1.0 FT
- 1.0 FT – 2.0 FT
- 2.0 FT – 3.0 FT
- 3.0 FT – 4.0 FT
- 4.0 FT – 5.0 FT
- 5.0 FT – 6.0 FT
- 6.0 FT – MAX

N

500' 0' 250' 500'

SCALE: 1" = 500'

# MAXIMUM FLOW DEPTH EXHIBIT

## 100-YR STORM EVENT

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

DATE: SEPTEMBER 2021

SHEET 2 OF 2

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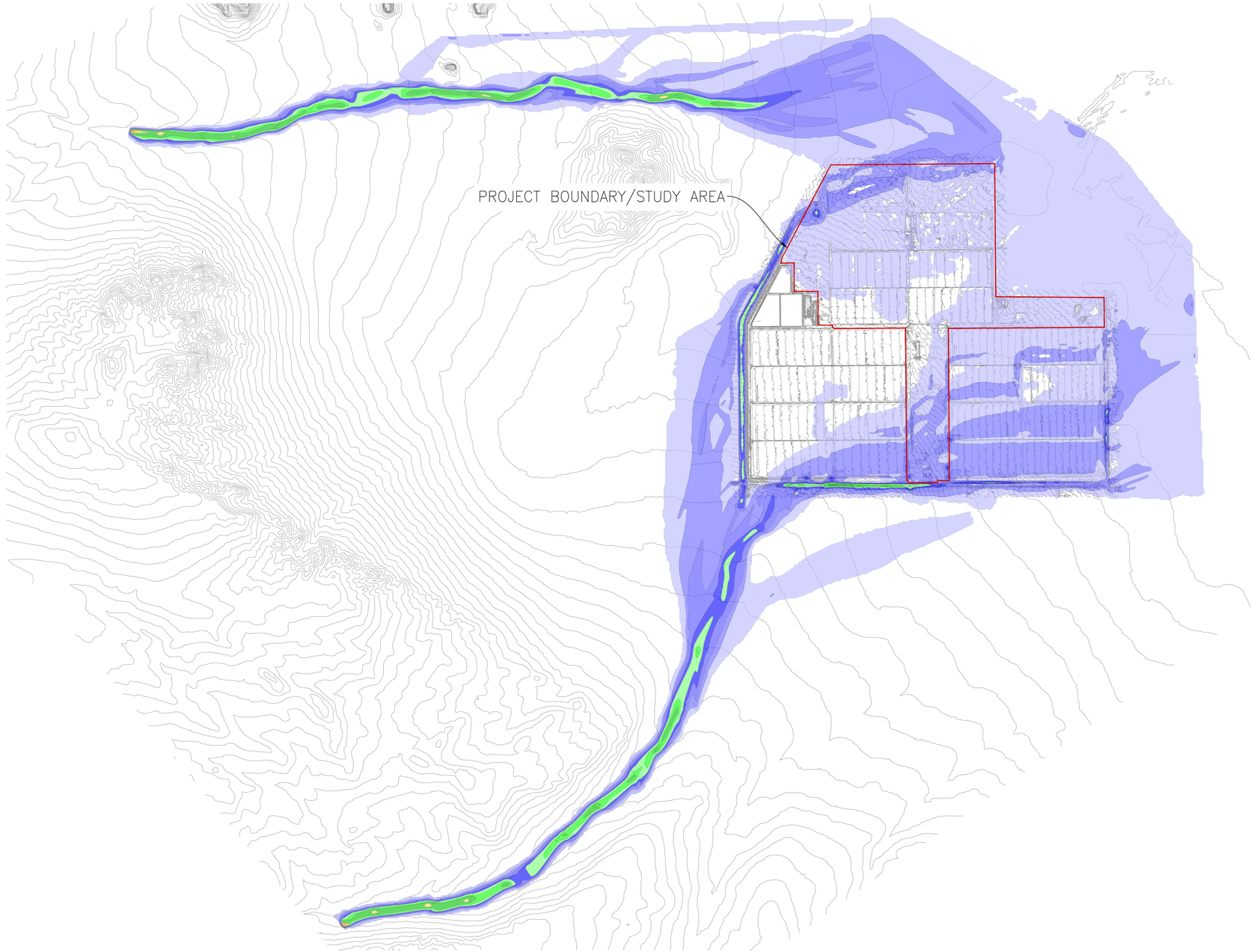
# APPENDIX 8
# Flow Velocity Results




**MAX FLOW DEPTH (FPS)**

- 0.0 FPS – 1.0 FPS
- 1.0 FPS – 2.0 FPS
- 2.0 FPS – 3.0 FPS
- 3.0 FPS – 4.0 FPS
- 4.0 FPS – 5.0 FPS
- 5.0 FPS – 6.0 FPS
- 6.0 FPS – 8.0 FPS
- 8.0 FPS – 10.0 FPS
- 10.0 FPS – 12.0 FPS
- 12.0 FPS – 15.0 FPS
- 15.0 FPS – 20.0 FPS
- 20.0 FPS – MAX

1500' 0' 750' 1500'

SCALE: 1" = 1500'

# MAXIMUM VELOCITY EXHIBIT (OVERALL)

## 100-YR STORM EVENT

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

DATE: SEPTEMBER 2021

SHEET 1 OF 2

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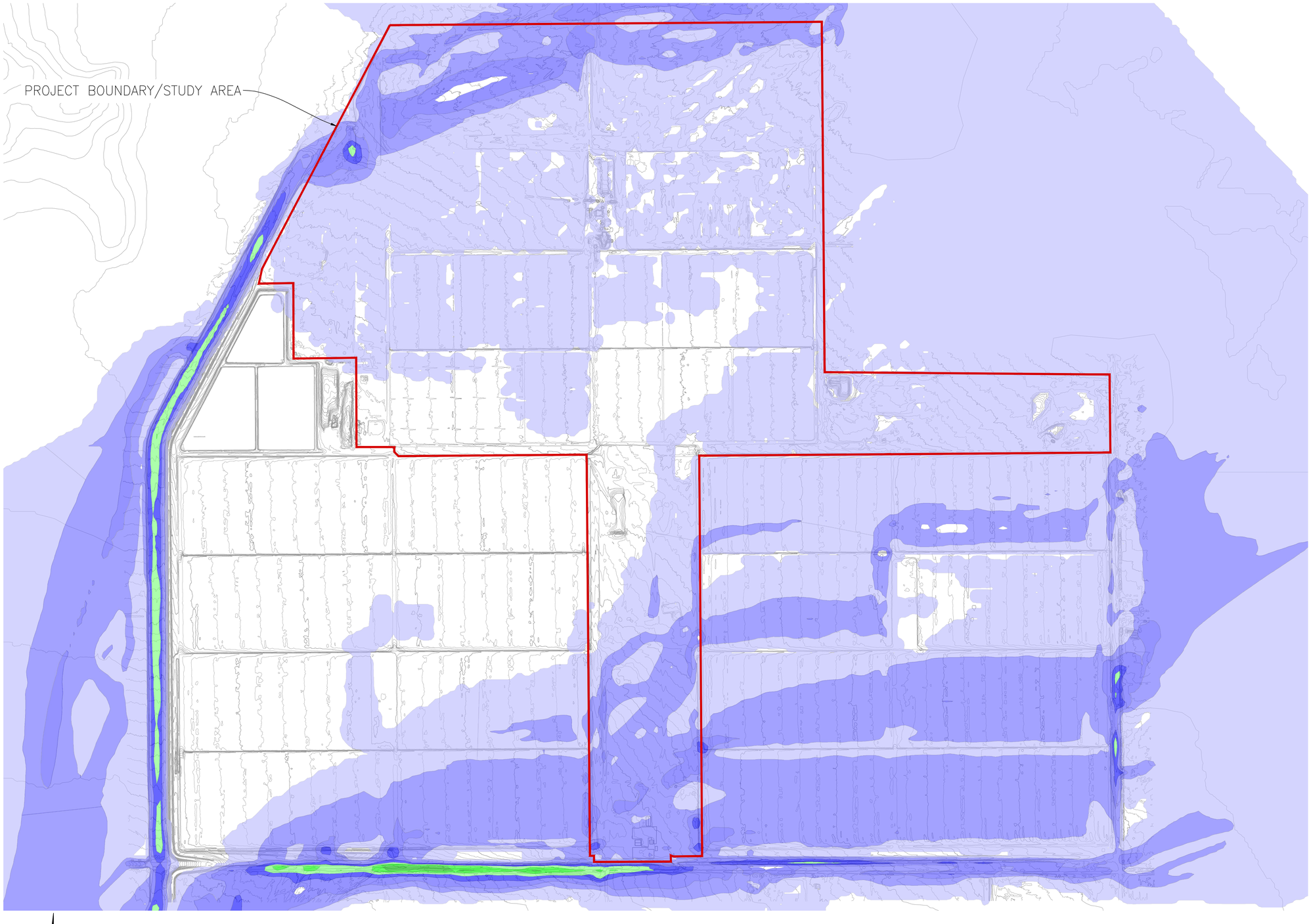


**MAX FLOW DEPTH (FPS)**

- 0.0 FPS – 1.0 FPS
- 1.0 FPS – 2.0 FPS
- 2.0 FPS – 3.0 FPS
- 3.0 FPS – 4.0 FPS
- 4.0 FPS – 5.0 FPS
- 5.0 FPS – 6.0 FPS
- 6.0 FPS – 8.0 FPS
- 8.0 FPS – 10.0 FPS
- 10.0 FPS – 12.0 FPS
- 12.0 FPS – 15.0 FPS
- 15.0 FPS – 20.0 FPS
- 20.0 FPS – MAX

N

500' 0' 250' 500'

SCALE: 1" = 500'

# MAXIMUM VELOCITY EXHIBIT

## 100-YR STORM EVENT

LOCKHART SOLAR PV II

SAN BERNARDINO COUNTY, CALIFORNIA

PROJECT NUMBER: 1859-003

DATE: SEPTEMBER 2021

SHEET 2 OF 2

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# APPENDIX 9

# Precipitation Frequency Data

**NOAA Atlas 14, Volume 6, Version 2**
**Location name: Hinkley, California, USA***
**Latitude: 35.044°, Longitude: -117.3489°**
**Elevation: 2048.76 ft****
* source: ESRI Maps
** source: USGS

**POINT PRECIPITATION FREQUENCY ESTIMATES**

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

## PF tabular

**PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]**

| Duration | Average recurrence interval (years) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 5 | 10 | 25 | 50 | 100 | 200 | 500 | 1000 |
| 5-min | **0.076** (0.062-0.094) | **0.108** (0.088-0.133) | **0.151** (0.123-0.187) | **0.188** (0.152-0.234) | **0.240** (0.188-0.309) | **0.281** (0.216-0.370) | **0.326** (0.244-0.438) | **0.373** (0.272-0.515) | **0.439** (0.309-0.632) | **0.493** (0.335-0.733) |
| 10-min | **0.109** (0.089-0.135) | **0.154** (0.126-0.191) | **0.216** (0.176-0.268) | **0.269** (0.217-0.336) | **0.343** (0.269-0.443) | **0.403** (0.310-0.530) | **0.467** (0.350-0.628) | **0.534** (0.390-0.739) | **0.630** (0.442-0.906) | **0.707** (0.481-1.05) |
| 15-min | **0.132** (0.108-0.163) | **0.187** (0.152-0.231) | **0.262** (0.213-0.324) | **0.325** (0.263-0.406) | **0.415** (0.325-0.535) | **0.488** (0.375-0.642) | **0.564** (0.423-0.760) | **0.646** (0.472-0.893) | **0.762** (0.535-1.10) | **0.855** (0.581-1.27) |
| 30-min | **0.181** (0.148-0.224) | **0.257** (0.210-0.317) | **0.360** (0.293-0.446) | **0.447** (0.361-0.559) | **0.571** (0.448-0.737) | **0.671** (0.515-0.882) | **0.776** (0.583-1.05) | **0.889** (0.649-1.23) | **1.05** (0.736-1.51) | **1.18** (0.800-1.75) |
| 60-min | **0.246** (0.201-0.304) | **0.348** (0.284-0.430) | **0.488** (0.397-0.605) | **0.606** (0.490-0.757) | **0.774** (0.607-0.998) | **0.910** (0.699-1.20) | **1.05** (0.790-1.42) | **1.21** (0.880-1.67) | **1.42** (0.998-2.04) | **1.60** (1.08-2.37) |
| 2-hr | **0.339** (0.277-0.418) | **0.461** (0.377-0.571) | **0.630** (0.514-0.781) | **0.774** (0.626-0.967) | **0.979** (0.767-1.26) | **1.15** (0.879-1.51) | **1.32** (0.990-1.78) | **1.51** (1.10-2.08) | **1.77** (1.25-2.55) | **1.99** (1.35-2.95) |
| 3-hr | **0.395** (0.323-0.488) | **0.533** (0.436-0.659) | **0.723** (0.589-0.896) | **0.885** (0.715-1.11) | **1.12** (0.874-1.44) | **1.30** (1.00-1.71) | **1.50** (1.13-2.02) | **1.71** (1.25-2.37) | **2.01** (1.41-2.89) | **2.25** (1.53-3.34) |
| 6-hr | **0.494** (0.404-0.611) | **0.665** (0.543-0.822) | **0.898** (0.732-1.11) | **1.10** (0.887-1.37) | **1.38** (1.08-1.78) | **1.61** (1.24-2.11) | **1.85** (1.39-2.49) | **2.10** (1.54-2.91) | **2.46** (1.73-3.54) | **2.75** (1.87-4.09) |
| 12-hr | **0.574** (0.470-0.709) | **0.791** (0.646-0.978) | **1.09** (0.886-1.35) | **1.34** (1.08-1.67) | **1.68** (1.32-2.17) | **1.96** (1.51-2.58) | **2.25** (1.69-3.03) | **2.55** (1.87-3.53) | **2.98** (2.09-4.28) | **3.31** (2.25-4.92) |
| 24-hr | **0.701** (0.623-0.806) | **0.999** (0.886-1.15) | **1.40** (1.24-1.61) | **1.73** (1.52-2.01) | **2.18** (1.85-2.63) | **2.54** (2.11-3.12) | **2.91** (2.36-3.66) | **3.29** (2.59-4.26) | **3.82** (2.88-5.15) | **4.22** (3.08-5.91) |
| 2-day | **0.809** (0.718-0.929) | **1.17** (1.03-1.34) | **1.64** (1.45-1.90) | **2.03** (1.78-2.37) | **2.56** (2.17-3.08) | **2.97** (2.47-3.65) | **3.39** (2.75-4.27) | **3.82** (3.01-4.95) | **4.40** (3.32-5.94) | **4.85** (3.54-6.78) |
| 3-day | **0.863** (0.766-0.992) | **1.25** (1.11-1.44) | **1.77** (1.56-2.04) | **2.19** (1.92-2.55) | **2.75** (2.33-3.31) | **3.19** (2.64-3.91) | **3.62** (2.94-4.56) | **4.07** (3.21-5.28) | **4.68** (3.53-6.32) | **5.14** (3.75-7.19) |
| 4-day | **0.906** (0.804-1.04) | **1.32** (1.17-1.52) | **1.87** (1.65-2.15) | **2.31** (2.02-2.68) | **2.90** (2.46-3.49) | **3.35** (2.78-4.12) | **3.81** (3.08-4.79) | **4.27** (3.36-5.53) | **4.89** (3.70-6.61) | **5.37** (3.91-7.51) |
| 7-day | **0.967** (0.859-1.11) | **1.41** (1.25-1.62) | **2.00** (1.77-2.30) | **2.47** (2.17-2.87) | **3.11** (2.63-3.74) | **3.59** (2.98-4.41) | **4.06** (3.29-5.12) | **4.55** (3.58-5.89) | **5.19** (3.92-7.01) | **5.67** (4.14-7.93) |
| 10-day | **1.01** (0.894-1.16) | **1.47** (1.31-1.69) | **2.09** (1.85-2.41) | **2.59** (2.27-3.02) | **3.27** (2.77-3.93) | **3.78** (3.14-4.64) | **4.28** (3.47-5.40) | **4.80** (3.78-6.21) | **5.47** (4.14-7.40) | **5.98** (4.36-8.36) |
| 20-day | **1.14** (1.01-1.31) | **1.69** (1.50-1.95) | **2.44** (2.16-2.82) | **3.05** (2.68-3.55) | **3.90** (3.30-4.69) | **4.54** (3.77-5.58) | **5.19** (4.20-6.54) | **5.85** (4.61-7.58) | **6.70** (5.06-9.06) | **7.34** (5.36-10.3) |
| 30-day | **1.28** (1.14-1.47) | **1.91** (1.70-2.20) | **2.79** (2.47-3.22) | **3.52** (3.09-4.09) | **4.54** (3.85-5.46) | **5.32** (4.42-6.54) | **6.11** (4.95-7.70) | **6.91** (5.45-8.96) | **7.97** (6.02-10.8) | **8.75** (6.39-12.2) |
| 45-day | **1.47** (1.31-1.69) | **2.22** (1.97-2.55) | **3.26** (2.88-3.76) | **4.14** (3.63-4.82) | **5.39** (4.57-6.49) | **6.38** (5.30-7.84) | **7.38** (5.98-9.30) | **8.40** (6.62-10.9) | **9.76** (7.37-13.2) | **10.8** (7.86-15.1) |
| 60-day | **1.60** (1.42-1.84) | **2.42** (2.14-2.78) | **3.58** (3.17-4.13) | **4.58** (4.02-5.33) | **6.00** (5.09-7.23) | **7.15** (5.93-8.78) | **8.32** (6.74-10.5) | **9.51** (7.49-12.3) | **11.1** (8.40-15.0) | **12.3** (9.00-17.3) |

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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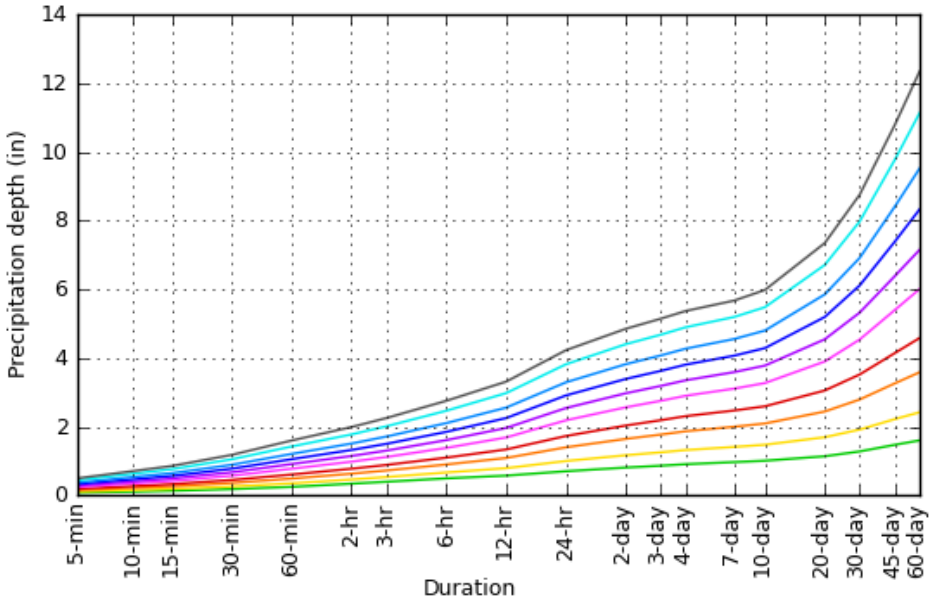
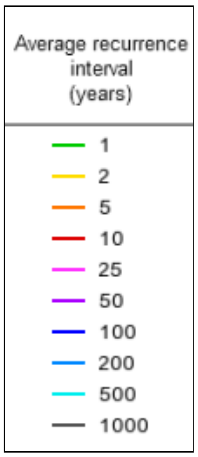
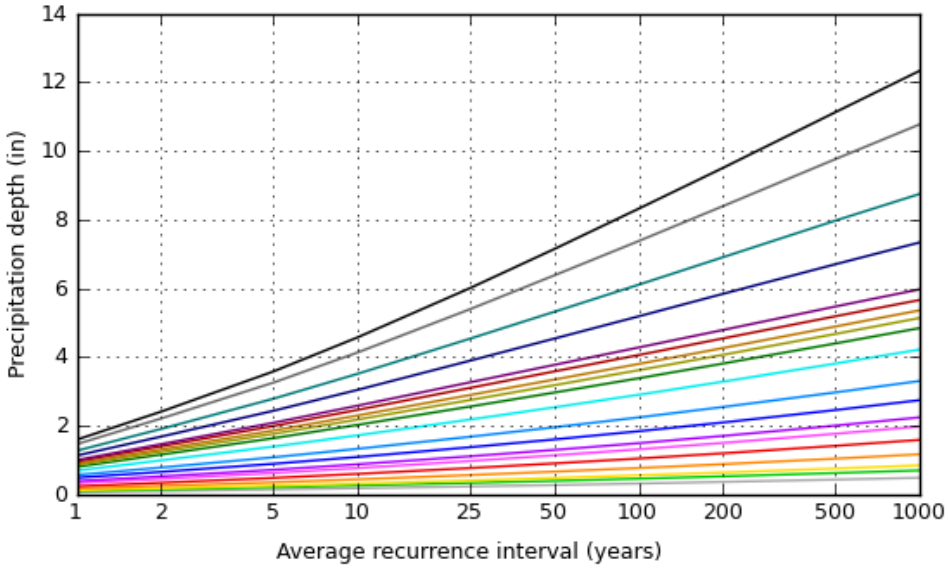
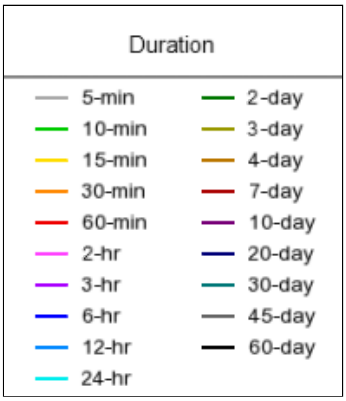
## PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 35.0440°, Longitude: -117.3489°




NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Oct 13 17:59:48 2020

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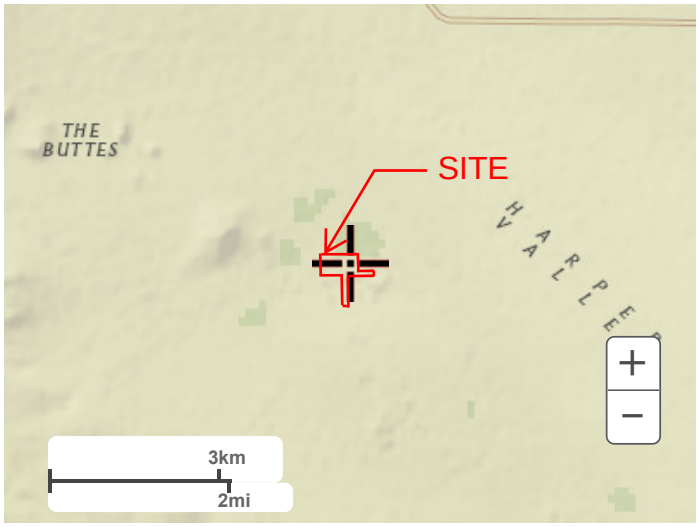
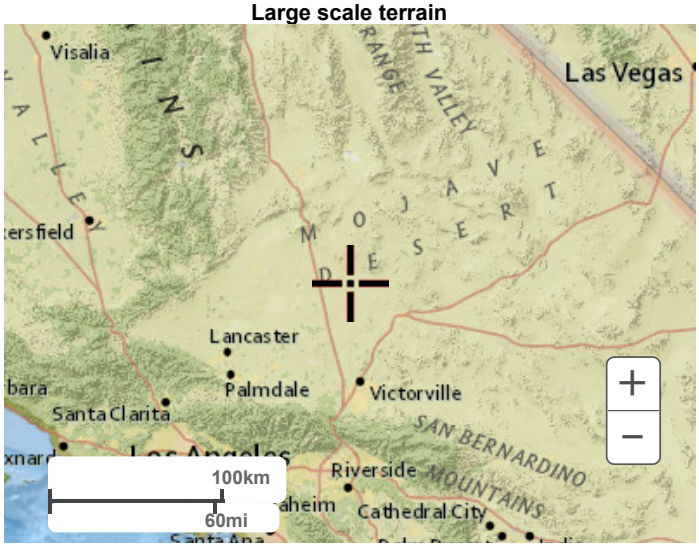
## Maps & aerials

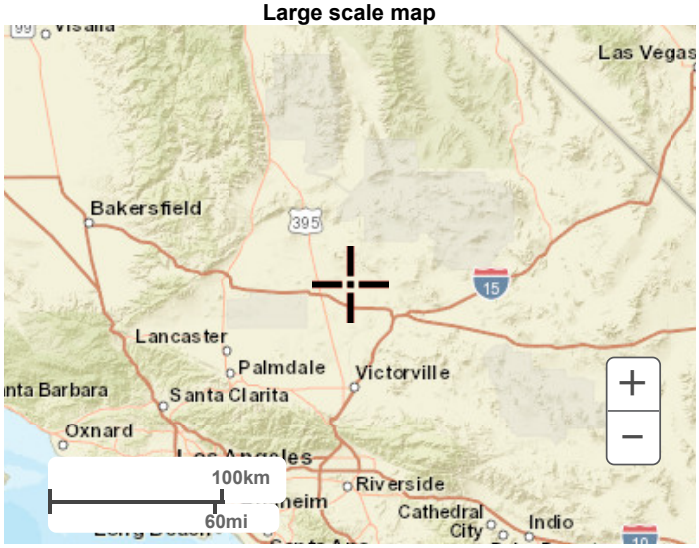
**Small scale terrain**



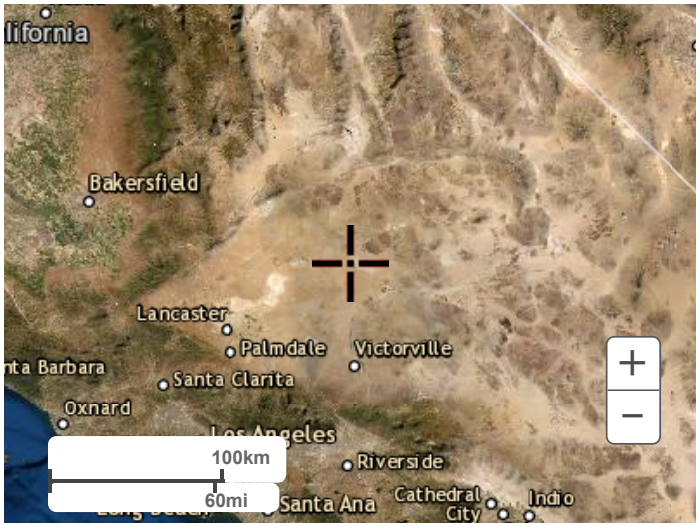

**Large scale terrain**




**Large scale map**




**Large scale aerial**

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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

# APPENDIX 10
# Hydrologic Soil Group

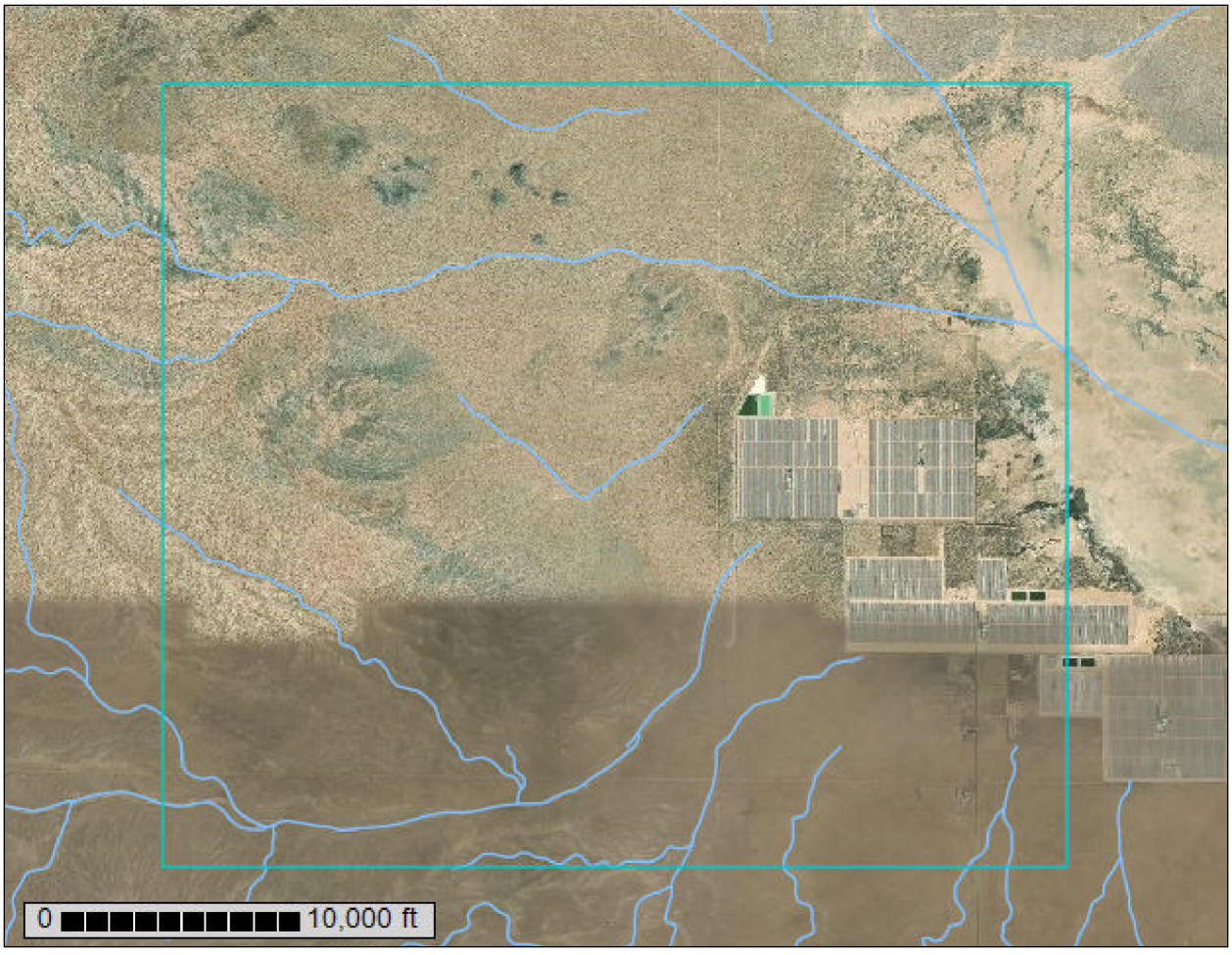
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

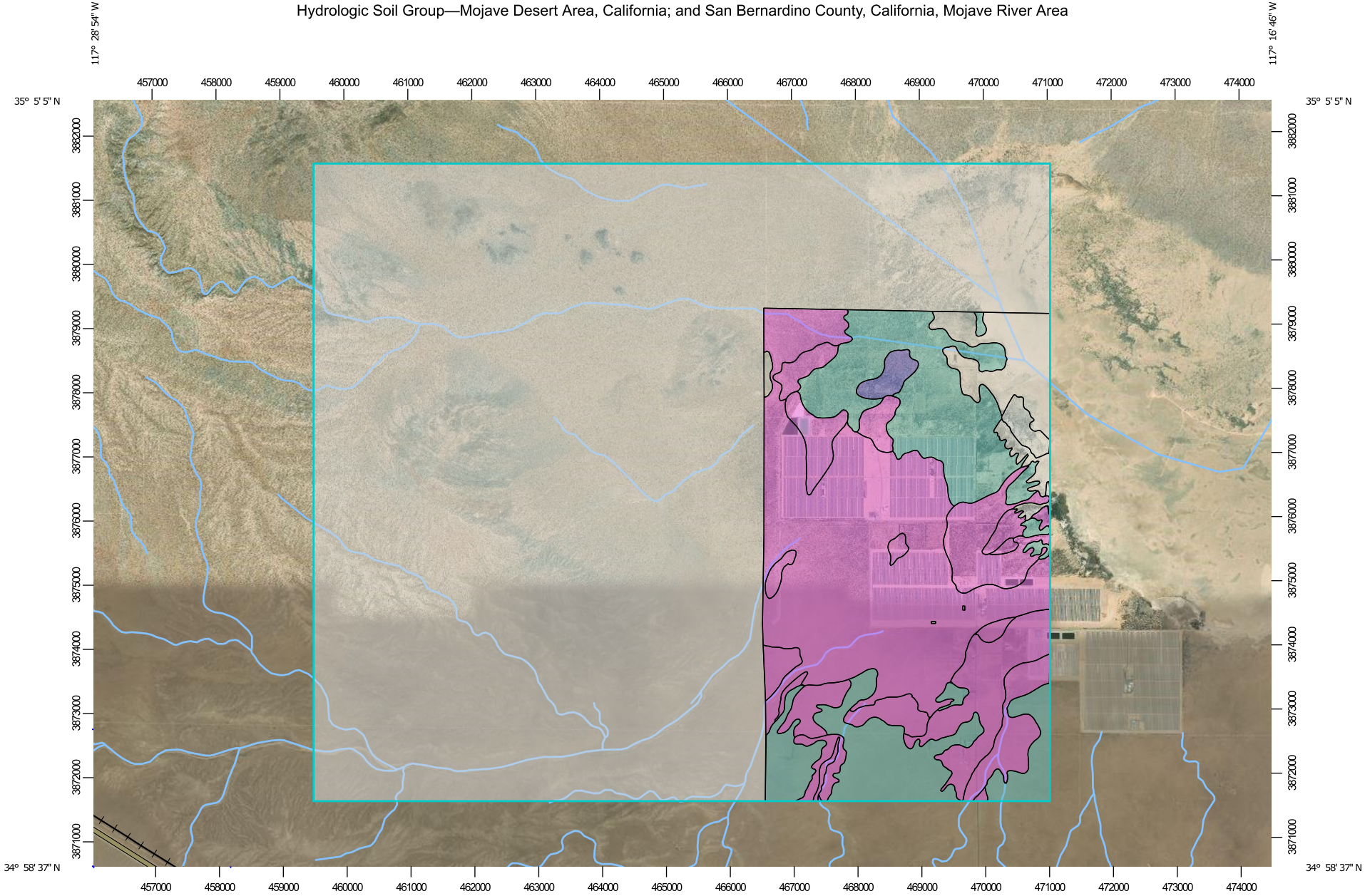
A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for Mojave Desert Area, California; and San Bernardino County, California, Mojave River Area




October 6, 2020

Hydrologic Soil Group—Mojave Desert Area, California; and San Bernardino County, California, Mojave River Area




Map Scale: 1:84,300 if printed on A landscape (11" x 8.5") sheet.

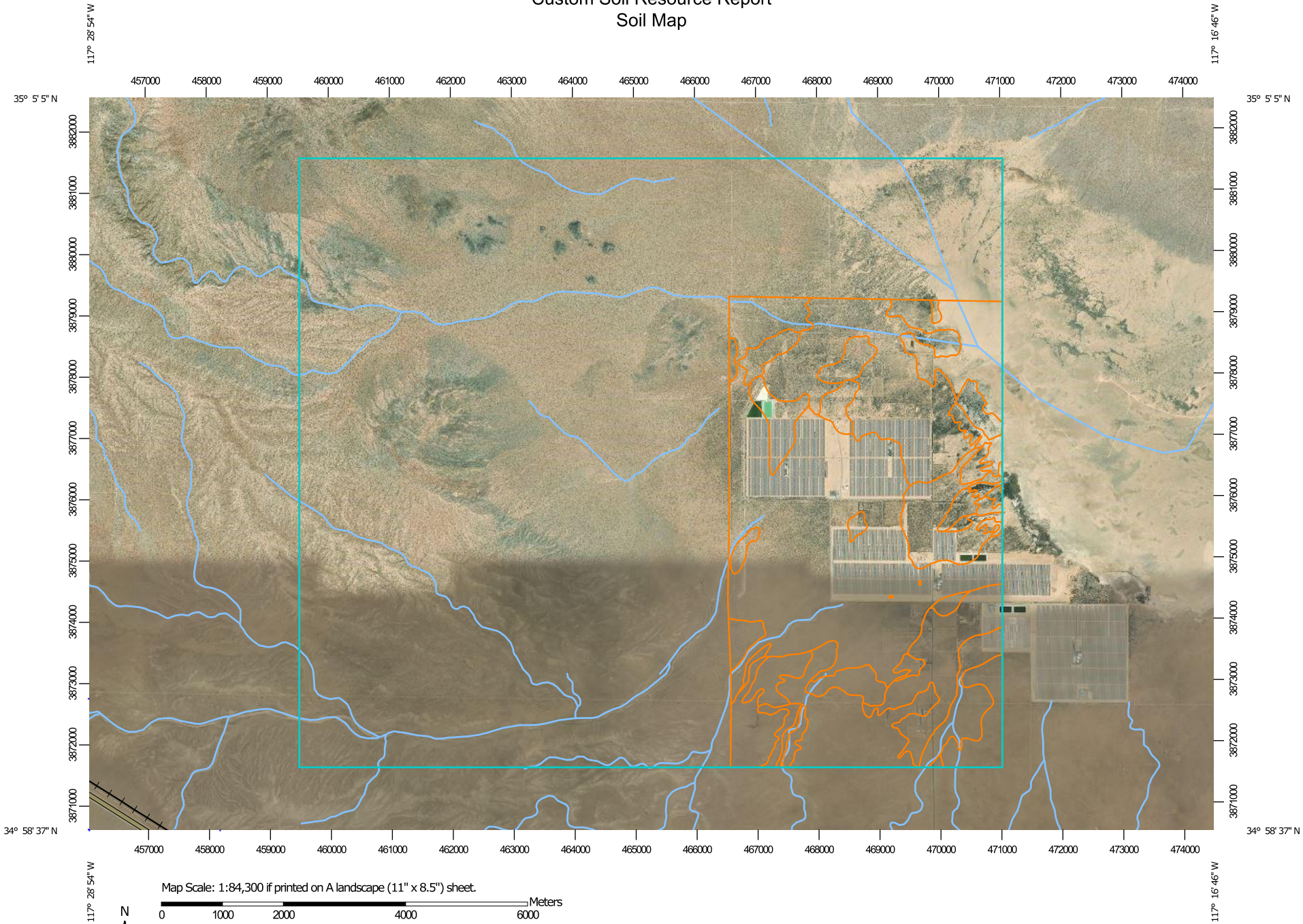
N

Meters
0 1000 2000 4000 6000

Feet
0 4000 8000 16000 24000

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

# Custom Soil Resource Report
## Soil Map



## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

**Soil Rating Polygons**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Lines**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**Soil Rating Points**

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

**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.

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: Mojave Desert Area, California
Survey Area Data: Version 18, Jun 8, 2020

Soil Survey Area: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 12, May 27, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

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

Date(s) aerial images were photographed: Dec 31, 2009—Jul 8, 2019

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.

# Hydrologic Soil Group

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| NOTCOM | No Digital Data Available | | 19,938.3 | 70.1% |
| **Subtotals for Soil Survey Area** | | | **19,938.3** | **70.1%** |
| **Totals for Area of Interest** | | | **28,425.7** | **100.0%** |

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|---|---|---|---|---|
| 112 | CAJON SAND, 0 TO 2 PERCENT SLOPES | A | 3,452.3 | 12.1% |
| 113 | CAJON SAND, 2 TO 9 PERCENT SLOPES | A | 319.1 | 1.1% |
| 117 | CAJON LOAMY SAND, LOAMY SUBSTRATUM, 0 TO 2 PERCENT SLOPES | A | 1,204.6 | 4.2% |
| 137 | KIMBERLINA LOAMY FINE SAND, COOL, 0 TO 2 PERCENT SLOPES | A | 318.2 | 1.1% |
| 152 | NOROB-HALLORAN COMPLEX, 0 TO 5 PERCENT SLOPES* | C | 2,398.9 | 8.4% |
| 156 | PLAYAS | | 570.4 | 2.0% |
| 158 | ROCK OUTCROP-LITHIC TORRIORTHENTS COMPLEX, 15 TO 50 PERCENT SLOPES* | | 19.3 | 0.1% |
| 170 | VICTORVILLE VARIANT SAND | B | 96.0 | 0.3% |
| 178 | WATER | | 108.6 | 0.4% |
| **Subtotals for Soil Survey Area** | | | **8,487.5** | **29.9%** |
| **Totals for Area of Interest** | | | **28,425.7** | **100.0%** |

## Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

## Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff: None Specified*

*Tie-break Rule:* Higher